U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration
Los Alamos Field Office
3747 West Jemez Road, A316
Los Alamos, New Mexico 87544
(505) 667-5105/Fax (505) 667-5948

Environmental Management
Los Alamos Field Office
P.O. Box 1663, M984
Los Alamos, New Mexico 87544
(505) 257-7950/Fax (505) 665-5903

Date: JUN 2 6 2020
Symbol: ESHQSS-20-030
LA-UR: 20-24479
Locates Action No.: Not applicable

Mr. Kevin Pierard, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Transmittal of the Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID #NM0890010515

Dear Mr. Pierard:

The purpose of this letter is to transmit a portion of the renewal application for the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit to the New Mexico Environment Department (NMED) on behalf of the U.S. Department of Energy (DOE). In accordance with the 2010 LANL Hazardous Waste Facility Permit, the Permittees are authorized to manage, store, and treat hazardous waste at LANL. The Permittees consist of the DOE; Triad National Security, LLC (Triad); and Newport News Nuclear BWXT-Los Alamos, LLC (N3B). Per Permit Section 1.6.5, *Permit Re-Application,* the Permittees must submit a complete application for a new permit at least 180 days before the expiration date of the 2010 Permit. The submittal of the Part B permit application fulfills the requirements in Title 40 of Code of Regulations (40 CFR) § 270.51 for continuation of a permit if a timely application is submitted.

This application addresses the required general and specific Part B information required in 40 CFR §§ 270.14 through 270.28 for the Permittees to obtain NMED approval to continue to treat and store hazardous waste in specified hazardous waste management units under the current Permit. The Permittees do not propose to modify any permitted units. However, the Permittees propose certain minor changes to the current Permit text and attachments described in the application. Additionally, changes associated with a previously submitted Class 3 permit modification request have been incorporated for completeness. DOE and Triad also seek incorporation of three interim status treatment units into the Permit.

The required Part A permit application including the required information described in 40 CFR § 270.13 will be submitted under a separate cover letter and enclosure.

The Part B application, included as Enclosure 1, consists of two volumes that do not contain sensitive information and are approved for unlimited release to the public. Specific information is submitted as part of Enclosure 2 in a separate envelope marked Unclassified Controlled Nuclear Information (UCNI) as defined by the Atomic Energy Act, Section 148 and 10 CFR §1017. This information, which is submitted as confidential information in compliance with 40 CFR § 270.12 requirements, is for NMED use only and must be managed and stored appropriately. If there are any questions as to what type of arrangements are required for management of UCNI information, please contact the Permittees.

Three hard copies and one electronic copy (omitting the UCNI information) of the application will be provided to the NMED. The hard copies include the full Part B application along with proposed text changes. The electronic copy, which will only be provided to NMED, contains a reproduction of the hard copy in portable document format (pdf) along with word processing files, modeling files, analytical data sets, and other information utilized to prepare the application. If you have comments/questions or would like to meet regarding this submittal, please contact Karen Armijo at (505) 665-7314, or Arturo Duran at (505) 665-7772.

Sincerely,

Michael J. Weis

Digitally signed by Michael J. Weis
Date: 2020.06.23 15:55:27 -06'00'

Michael J. Weis
Manager
National Nuclear Security Administration
Los Alamos Field Office
U.S. Department of Energy

Sincerely,

Kirk D. Lachman
Manager
Environmental Management
Los Alamos Field Office
U.S. Department of Energy

Enclosure(s): 1) Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID #NM0890010515 (Volumes 1 & 2)

2) Unclassified Controlled Nuclear Information for the 2020 Los Alamos National Laboratory Part A and Part B Permit Applications LA-CP-20-20363 (submitted to NMED only under a separate cover)

CC w/enclosures:
Laurie King, USEPA/Region 6, Dallas, TX, king.laurie@epa.gov
Neelam Dhawan, NMED, neelam.dhawan@state.nm.us
Siona Briley, NMED, siona.briley@state.nm.us

Mitchell Schatz, NMED, mitchell.schatz@state.nm.us
Gabriel M. Pugh, NA-LA, gabriel.pugh@nnsa.doe.gov
Karen E. Armijo, NA-LA, karen.armijo@nnsa.doe.gov
Adrienne L. Nash, NA-LA, adrienne.nash@nnsa.doe.gov
Arturo Q. Duran, EM-LA, arturo.duran@em.doe.gov
M. Lee Bishop, EM-LA, lee.bishop@em.doe.gov
Stephen Hoffman, EM-LA, stephen.hoffman@em.doe.gov
Thomas Johnson Jr., EM-LA, thomas.johnson@em.doe.gov
Jesse Kahler, EM-LA, jesse.kahler@em.doe.gov
David Nickless, EM-LA, david.nickless@em.doe.gov
Cheryl Rodriguez, EM-LA, cheryl.rodriguez@em.doe.gov
Ben Underwood, EM-LA, ben.underwood@em.doe.gov
William Alexander, N3B, william.alexander@em-la.doe.gov
Emily Day, N3B, emily.day@em-la.doe.gov
Jeff Holland, N3B, jeff.holland@em-la.doe.gov
Kim Lebak, N3B, kim.lebak@em-la.doe.gov
Joseph Legare, N3B, joseph.legare@em-la.doe.gov
Dana Lindsay, N3B, dana.lindsay@em-la.doe.gov
Frazer Lockhart, N3B, frazer.lockhart@em-la.doe.gov
Pamela Maestas, N3B, pamela.maestas@em-la.doe.gov
Glenn Morgan, N3B, glenn.morgan@em-la.doe.gov
Joseph Murdock, N3B, joseph.murdock@em-la.doe.gov
Gerald O'Leary III, N3B, gerald.oleary@em-la.doe.gov
Anthony Stone, N3B, anthony.stone@em-la.doe.gov
Larry Baker, N3B, larry.baker@em-la.doe.gov
Susan McMichael GC-ESH, smcmichael@lanl.gov
Michael Hazen, ESHQSS, mhazen@lanl.gov
Enrique Torres, EWP, etorres@lanl.gov
Jennifer E. Payne, EPC-DO, jpayne@lanl.gov
Jackie C. Hurtle, EPC-WMP, jhurtle@lanl.gov
Patrick L. Padilla, EPC-WMP, plpadilla@lanl.gov
hwmu-owners@lanl.gov
rcra-prr@lanl.gov
adesh-records@lanl.gov
locatesteam@lanl.gov
epccorrespondence@lanl.gov
emla.docs@em.doe.gov

Enclosure 1

LA-UR-20-24479
ESHQSS 20-030

Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Volume 2

EPA ID# NM0890010515

Prepared by:

Los Alamos National Laboratory
Environmental Protection and Compliance Division
Los Alamos, New Mexico 87545

Appendix 4

Open Detonation and Open Burning Information

TABLE OF CONTENTS

LIST OF TABLES

LIST OF SUPPLEMENTS

APPENDIX 4: OPEN DETONATION AND OPEN BURNING INFORMATION

The information provided in this appendix is submitted to address the applicable miscellaneous treatment unit application requirements of Title 40 of the Code of Federal Regulations (40 CFR) 270.23; Part 264, Subpart X; and Part 265, Subpart P not otherwise addressed within Sections 1 through 8 of the Permit Renewal Application. This appendix provides additional descriptions, where necessary, of the open detonation and open burning treatment units located at Los Alamos National Laboratory.

4.1. OPEN DETONATION AND OPEN BURNING UNITS AT LOS ALAMOS NATIONAL LABORATORY

Locations and site plans for the open detonation units located at Technical Area (TA) 36 and 39, and the open burning treatment unit located at TA-16 are included within Section 4.1, *Description of Open Detonation Treatment Units*, and 5.1, *Description of Open Burning Treatment Unit* of the Permit Renewal Application. Operations, authorized wastes, and waste handling information is included in Section 4.0, *Open Detonation Treatment* and Section 5.0, *Open Burning Treatment*. The following sections and supplemental documents provide specific information necessary to satisfy the requirements of 40 CFR 270.23(a-e), in a more detailed manner than within the main portions of the Permit Renewal Application. A summary of design capacities for the units are included in Table 4-1.

4.2. CONTAINMENT SYSTEMS

To meet the requirements at 40 CFR 270.15(a) and 264.175, the Permittees will ensure that secondary containment is provided as required. Existing storm water controls are discussed within Section 4.12.1 and 5.12.1, *Containment Systems*. Upgrades at all three units have been implemented since the previous applications to better ensure that migration of storm water from units is prevented to the extent possible. Specific information regarding the requirements of 40 CFR 264.601, the effectiveness and reliability of containment, confinement, and collection systems and structures that are utilized to protect human health and the environment at the open detonation and open burning units are evaluated in Sections 4.18 and 5.16, *Environmental Performance Standards*. Specific supplemental information associated with the evaluations used to ensure protection of human health and the environment, are discussed in Appendix Section 4.4, *Environmental Performance Standards*, and included as Supplements 4-2 through 4-16.

4.3. ALTERNATIVES ASSESSMENT

To provide justification for the continued use of the open detonation and open burning treatment technologies at the Los Alamos National Laboratory, an assessment was developed that explores waste minimization efforts, operational practice changes, alternative technologies, and process efficiencies that have occurred to decrease the amount and types of waste that require treatment through open detonation and open burning activities. The evaluation is included as Supplement 4-1, *Assessment of Alternatives for Open Detonation and Open Burning Activities*.

4.4. ENVIRONMENTAL PERFORMANCE STANDARDS

As referenced in Sections 4.18 and 5.16, *Environmental Performance Standards* of this permit application there were multiple evaluations and assessments that needed to be conducted in order to provide information as required by 40 CFR 264.601 to ensure protection of human health and the environment. Evaluations that were developed/revised for this Permit Renewal Application are summarized in Sections 4.18 and 5.16 of the Permit Renewal Application and are included as follows:

- Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*
- Supplement 4-3, *Screening Level Air Modeling Analysis and Risk Evaluation for Open Detonation Operations*
- Supplement 4-4, *Air Sampling at Open Detonation Units*
- Supplement 4-5, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 36-8*
- Supplement 4-6, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 39-6*
- Supplement 4-7, *Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk-Screening Assessments*
- Supplement 4-8, *Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk-Screening Assessments*
- Supplement 4-9, *Revision of 2011 Open Detonation Risk Assessment*
- Supplement 4-10, *Predicting and Controlling Noise from Detonation Activities*
- Supplement 4-11, *Open Burning Unit Groundwater Monitoring and Surface Drainage Information*
- Supplement 4-12, *Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations at Los Alamos National Laboratory*
- Supplement 4-13, *Air Sampling at Open Burning Treatment Unit*
- Supplement 4-14, *Thermal Measurements at the TA-16-388 Flash Pad*
- Supplement 4-15, *2018 Soil Sampling Results Summary Report For the Open Burning Unit at Technical Area (TA) 16-388 Flash Pad*
- Supplement 4-16, *Technical Area 16 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 16-388 Flash Pad Human Health and Ecological Risk- Screening Assessments*

Table 4-1
Open Burning and Open Detonation Hazardous Waste Management Unit Summary

Hazardous Waste Management Unit	Maximum Capacity	Type of Unit	Area
TA-16-388 Flash Pad	200 pounds per day (lbs/day)	Open burning	484 square feet (ft^2)
TA-36-8 “Minie”	2000 lbs/day	Open detonation	150,000 ft^2
TA-39-6 “Point 6”	1000 lbs/day	Open detonation	1,600 ft^2

Supplement 4-1

Assessment of Alternatives for Open Detonation and Open Burning Activities

LA-UR-20-24479

Los Alamos National Laboratory Part B Permit Application for Renewal of the LANL Hazardous Waste Facility Permit

Assessment of Alternatives for Open Burn and Open Detonation Units

Index Tables

Index Figures

List of Acronyms

AMSL	above mean sea level
BATF	Bureau of Alcohol, Tobacco, Firearms and Explosives
CFR	Code of Federal Regulations
CWP	contaminated waste processor
DOE	U.S. Department of Energy
DoD	U.S. Department of Defense
DOT	U.S. Department of Transportation
EWI	El Dorado Engineering Explosive Waste Incinerator
EPA	United States Environmental Protection Agency
ETSCP	Environmental Security Technology Certification Program
IHC	Interim Hazard Classification
JOCG	Joint Ordinance Commanders Group
LDR	Land Disposal Restriction
LANL	Los Alamos National Laboratory
MACT	maximum achievable control technology
NAP	National Academies of Sciences, Engineering, and Medicine
NAVAIR	Naval Air Systems Command
NMHWA	New Mexico Hazardous Waste Act
OB	Open Burn
OD	Open Detonation
RCRA	Resource Conservation and Recovery Act
SERD	Strategic Environmental Research and Development Program
TA	Technical Area
Triad	Triad National Security LLC
TSDF	treatment, storage, and disposal facilities
WAC	waste acceptance criteria

1.0 Introduction

Triad National Security LLC (Triad) is the operating contractor for the U.S. Department of Energy (DOE) Los Alamos National Laboratory (LANL). Since the 1940s, wastes explosives have been treated at LANL through open burning (OB) and open detonation (OD). LANL has safely treated these wastes, where no other disposition pathway was available or feasible. While the amount and types of wastes that are required to be treated through OB and/or OD at LANL have been reduced over time, today DOE/Triad operates an OB unit[1] at Technical Area (TA)-16-388 and two OD units, at TA-36-8 and TA-39-6, for the safe destruction of detonable quantities of explosive wastes and explosive-contaminated waste.

The waste explosives treated in LANL's OB and OD treatment units are considered hazardous under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act (NMHWA). As such, OB and OD have been conducted in treatment units operated under RCRA operating requirements found in Title 40 of the Code of Federal Regulations, Part 265, Part P, which states that:

> …open burning of hazardous waste is prohibited *except* for the open burning and open detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment.

In 2002, the U.S. Environmental Protection Agency (EPA), Region III, published draft guidance for permitting and operation of OB and OD treatment units (EPA, 2002). In the draft permitting guidance, the EPA acknowledged that:

> [B]ecause of safety hazards, as well as the site-specific feasibility factors for alternative treatment technologies, there are certain circumstances and energetic wastes that necessitate the use of OB/OD treatment. Thus, OB/OD treatment is not expected to be totally replaced by alternative technologies in the near future.

In 2019, the National Academies of Science, Medicine, and Engineering published a study that evaluated alternative technologies to OB/OD titled *Alternatives for the Demilitarization of Conventional Munitions* (NAS, 2019). The findings of the evaluation continue to support the 2002 EPA acknowledgement that in circumstances, such as those at LANL based on site-specific feasibility factors, it is necessary to continue to utilize OB/OD treatment. These site-specific factors are discussed below.

In 2019, the EPA published its final report titled *Alternative Treatment Technologies to Open Burning and Open Detonation of Energetic Hazardous Waste*s that identifies and describes alternative OB/OD treatment technologies. Despite technological advances made since the EPA's 2002 draft guidance, the 2019 EPA report acknowledges that:

---

[1] The term unit used throughout this document refers to a hazardous waste management unit. A hazardous waste management unit, as defined in 40 CFR 260.10, is a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed.

> …even though there are many alternative treatment technologies today, some energetic hazardous wastes cannot be treated with these technologies. As such, for [U.S. Department of Defense] DoD and possible others, OB/OD will remain as the only option for certain energetic hazardous wastes until additional viable alternatives are developed or existing technologies are modified or improved upon (EPA 2019).

In 2002, 2007, 2011, and 2013, LANL submitted assessments and re-assessments of various alternatives for OB and/or OD to the New Mexico Environment Department (Department). In 2010, the Department stated that LANL should re-evaluate the alternatives to open burning, which it did first in 2013 and has again done with this Alternatives Assessment.

This Alternatives Assessment addresses explosives waste streams that are treated by OB and OD at LANL, the units used to treat this waste, and a reassessment of potential alternatives. Alternatives assessed are based on the information from all likely sources, including those focused on demilitarization of waste munitions, DoD evaluations, and EPA alternative assessments. The draft EPA guidelines for the operations of OB/OD hazardous waste treatment units state that the selection and appropriateness of OB and OD treatment must be based upon the following (EPA, 2002):

- **Site specific safety;,**
- **Transportation hazard potential;**
- **Offsite treatment options; and**
- **Feasibility of alternatives technology considerations.**

This assessment evaluates the feasibility of using technologies other than OB and OD for treatment of LANL's explosive waste streams. The applicability of alternative treatment methodologies is evaluated based upon safety, transportation hazard potential, offsite treatment options, percentages of the total amount of waste per waste stream the technology will treat, and the feasibility of alternative technologies that may be identified for each of these waste streams.

This assessment concludes that, for the limited amounts of waste and waste streams identified, OB or OD is the only feasible alternative for treatment. In addition to the factors identified above, this assessment also outlines other important factors used for developing the conclusion that onsite treatment by OB or OD is the safest and most feasible option to treat certain explosives hazardous waste.

1.1 Overall Conceptual Approach

The overall explosives waste management approach at LANL is based on the following hierarchy of consideration:

1. **Pollution prevention** and **waste minimization activities** are first identified and implemented to the maximum extent practicable to avoid waste generation. When feasible, based on safety concerns, funding, programmatic effectiveness, and other factors, LANL strives to eliminate and/or reduce the volume of explosives wastes and explosives contaminated waste that must be treated and disposed.
2. Explosives contaminated wastes are next reviewed stream-by-stream to **identify candidates for offsite treatment.** When feasible, LANL identifies wastes that can be safely transported offsite

to permitted facilities for treatment and disposal. LANL continually takes efforts to identify new opportunities for low risk offsite shipment of waste for treatment.

3. **Only when waste generation cannot be avoided <u>and</u> offsite treatment is not feasible is onsite treatment required**. When avoiding waste generation and offsite treatment are not feasible, then an evaluation of alternatives for onsite treatment becomes relevant. Alternative treatment methodologies and technologies to OB and OD for treating the remaining explosives waste streams onsite are evaluated using this conceptual approach to determine if alternative treatment methodologies and technologies are suitable for the treatment of explosive wastes.

1.2 Facility and Unit Descriptions

This section describes LANL's one OB and two OD treatment units, explosive waste streams at LANL that are currently treated at these units, as well as the current waste minimization and waste management practices. DOE/Triad treats waste by OB or OD with strict adherence to safety principles and rigorous operating procedures.

LANL is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. LANL is divided into Technical Areas (TAs) that occupy approximately 40 square miles and is situated on the Pajarito Plateau. The plateau consists of a series of finger-like mesas separated by deep east-west trending canyons. Ephemeral, interrupted, or intermittent streams lie at the bottoms of the canyons. The mesa tops range in elevation from approximately 7,800 feet (ft.) above mean sea level (AMSL) at the flank of the Jemez Mountains, located to the west of Los Alamos, to about 6,200 ft. AMSL at their eastern extent, where they terminate above the Rio Grande.

1.2.1 Open Burn Waste Treatment (TA-16-388 Flash Pad)

Historically at LANL, OB has been conducted in numerous RCRA interim status units: (1) the TA-16 Incinerator, (2) the TA-16-387 Flash Pad, (3) the filter beds at TA-16-401 and TA-16-406, (5) the TA-16-394 Solvent Tray, (6) the TA-14-23 Q-site Burn Cage, (7) the TA-16-399 Burn Tray, and (8) the TA-16-388 Flash Pad. OB operations now occur at a single OB unit – the TA-16-388 Flash Pad at the TA-16 Burn Ground on the northeast corner of TA-16. TA-16 is situated on a broad mesa that is bounded on the north by Canon de Valle, on the south by State Road 4 and Bandelier National Monument, and on the west by West Jemez Road (State Road 501) and the Santa Fe National Forest. Elevations ranges from approximately 7,700 ft. at the west end of the TA to approximately 6,800 ft. at the lower east end. Topography is varied, ranging from steep precipitous canyon walls to sloping mesa tops.

The TA-16-388 Flash Pad consists of a 22 ft. by 22 ft. concrete pad located within a sloped area that provides secondary containment to prevent hazardous constituents from leaving the area. The Unit has a concrete base that is 12 inches (in.) thick. The entire concrete pad is over a 45-mil Hypalion liner, which is six inches below grade underneath the bottom of the pad, and the liner extends out 2 ft. from the pad perimeter and curves up to ground level on all four sides. Along the two sides and back of the concrete pad, and inset 12 in. is a 3 ft. high, eight inch thick concrete wall that prevents any potential runoff from leaving the Flash Pad. The area around the TA-16-388 Flash Pad is relatively level. The Unit is equipped with a retractable steel cover, which covers the entire pad when not in use. Three 5 ft. long forced air propane burners provide the heat source for treatment activities at the Unit.

At the TA-16-388 Flash Pad, in 2019, the average quantity per burn was approximately 40 pounds. Most treatment events are conducted in the morning, when the wind is generally the lowest of the day. Technical standards generally require that preparations to burn or place explosives waste on a pad or in a pit shall not begin until 24 hours after the previous burn at the same burning point. Most OB treatment events are conducted at a single burn in approximately 30 minutes, and in 2019 LANL conducted 57 burns.

1.2.1.1 Waste Streams Treated through Open Burning

The explosives contaminated waste and explosives waste streams that are treated at the TA-16-388 Flash Pad are primarily generated from explosives processing operations, such as machining and pressing; research and development activities; decommissioning and demolition activities; and corrective action activities. Waste streams consist of: (i) explosive machining waste; (ii) excess explosive wastes; (iii) explosives contaminated combustible debris; (iv) explosive contaminated solvents; and (v) explosives contaminated noncombustible debris. These wastes exhibit the characteristic of reactivity, as defined in 40 CFR §261.23. Explosive waste and explosives contaminated waste meet the regulatory definition of reactivity, because they are capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement. An explosive material is defined as any compound or mechanical mixture that detonates or deflagrates when subjected to heat, impact, friction, shock, or other suitable initiation stimulus.

Waste streams requiring OB treatment are:

- <u>Explosive machining waste</u> – This waste stream is generated from explosives machining and pressing and typically represents most explosive wastes treated at the TA-16-388 Flash Pad. Machining and pressing wastes consist of explosives machining chips or cuttings, machining water, filters, and filter solids. Approximately one third of this waste stream is water. Cloth filters are sometimes present in the waste. This is the most frequently treated explosives waste stream at LANL.

  Recently, expanded LANL mission requirements have required more explosives machining operations; however, the need for treatment by OB has remained the same because of continuous evaluation of the use for excessive explosives. For example, sludge, a by-product of the machining process, was previously designated as explosive waste and treated by OB. However, based on an evaluation of the excess sludge, when possible, the sludge can be reused for other explosives operations.

- <u>Excess explosives</u> – This waste stream includes large and small pieces of excess conventional explosives that may be in the form of flakes, granules, crystals, powders, pressings, plastic bonding, putties, rubberized solids, or extrudable solids. Other materials that may be present in this waste stream include plastic bags, wrapping and casings, cardboard and paper, and fiberboard containers that surround excess explosives. A fraction of the waste stream may contain metals, such as aluminum, brass, steel, stainless steel, and copper. This waste stream can include waste generated from inventory reduction efforts, off-specification explosives, damaged explosives, and salvaged explosives. The excess explosives waste stream, on average, makes up 5-15% of the total waste treated at the TA-16-388 Flash Pad. The generation of this waste stream is not predictable as that of explosives machining wastes because of the variety of materials considered excess explosives. Excess explosives are the second most common waste stream treated by OB at LANL.

- Explosives contaminated combustible debris – This waste stream includes detonable explosives contaminated debris generated in research laboratories, processing areas, and prep rooms. Debris may include filters removed from laboratory equipment, which may contain trace amounts of solvents. Other materials that may be present in this waste stream include plastic pieces, bags, wrapping and tubing, weigh boats, latex or nitrile gloves, plastic vials, cardboard and paper, fiberboard containers, paper cloths, rags, swabs, and potentially other noncombustible materials in very small quantities such as glass vials, glassware, and metal. Metal constituents may include aluminum, stainless steel, steel, brass and copper. This waste stream makes up <1% of the waste treated by OB at LANL. When generated, these types of waste are generally characterized to be nonhazardous waste and are sent off-site for disposal. The waste stream described here, must be characterized as detonable in order to be eligible for treatment.

- Explosives contaminated solvents – Explosives contaminated solvent waste is treated rarely and quantifies less than 1% of the waste treated at the TA-16-388 Flash Pad. Solvents in the waste stream may include trace quantities of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, fluor-inerts or trichloroethylene. This waste is rarely treated by OB at LANL

- Explosives contaminated noncombustible debris – This waste stream consists of explosives-contaminated equipment that includes, discarded, noncombustible equipment; debris from firing sites; noncombustible material from decommissioning and demolition activities; and material from explosives processing areas. This waste stream is most often metal (i.e., processing equipment, ductwork, or pipes) that is typically recycled after treatment or sand or carbon that has been contaminated through water filtration. The volume of this waste stream is difficult to predict because generation is related to maintenance and decommissioning and demolition activities and may not occur on a regular basis. Any oil present within discarded equipment is drained and the equipment is then disassembled and/or steam cleaned if it can be done safely.

1.2.1.2 Historic and Current Waste Generation Rates

Table 1-1 lists, by waste stream, the quantities of explosives treated at the TA-16-388 Flash Pad from 2011 to 2019. Pollution prevention and waste minimization activities (Section 2) have drastically reduced the routine generation of each of the waste streams described by eliminating some activities that generated portions of the waste streams and/or through substitution, segregation, or other waste minimization activities. From 1996 to 2000, LANL burned on average 10,833 pounds (excluding non-combustible materials) by OB (LANL, 2007). In recent years, LANL has burned an average of 2,000 pounds per year at TA-16 by OB, which represents an approximately 80% reduction (Table 1-1).

Table 1-1. Explosive Waste Streams Treated at the TA-16-388 Flash Pad (2011 – 2019)

Year	Explosives Machining Waste (lbs.)	Excess Explosives (lbs.)	Explosives Contaminated Combustible Debris (lbs.)	Explosives Contaminated Solvents (lbs.)	Explosives Contaminated Non-Combustible Debris (lbs.[1])	Total Waste Treated (lbs.)
2011	1,292	320	15	0	0	**1,627**
2012	2,555	600	0	0	73	**3,228**
2013	2,283	0	11	0	5	**2,299**
2014	935	21	0	0	4	**960**
2015	1,665	0	0	0	195	**1,860**
2016	1,465	0	71	0	133	**1,669**
2017	1,671	0	30	0	32	**1,733**
2018	1,538	0	29	0	21	**1,588**
2019	1,130	0	10	0	38	**1,178**

[1] The weight listed is the weight of the estimated explosives content that is suspected to contaminate the equipment not the total weight of the equipment, debris, or sand in the case of noncombustible material. Only the explosive is being treated, therefore, it is what is counted.

1.2.2 Open Detonation Waste Treatment (TA-36-8 [Minie Site] and TA-39-6 [Point 6])

Hazardous waste treated by OD at LANL occurs at two firing sites, TA-36-8 Unit (also known as Minie Site) and TA-39-6 Unit (also known as Point 6). Both OD units are located within the LANL boundaries and away from public access areas.

TA-36 is located in the east central portion of LANL and is spread over several mesa tops between a branch of Pajarito Canyon to the north and Water Canyon to the south. The Minie Site is located near Control Building 8 in the southern portion of TA-36. The firing site consists of an irregularly shaped sand and grass covered area that measures approximately 500 ft. east to west and 300 ft. north to south. The Minie Site has a maximum treatment capacity of 2,000 pounds of explosive waste per detonation and an annual treatment Unit limit of 15,000 pounds.

TA-39 is located in the southern portion of LANL and includes much of the mesa between Water Canyon to the north and Ancho Canyon to the south. Point 6 is located near Control Building 6 and is a relatively flat, sand covered area that measures approximately 40 ft. by 40 in a canyon bottom. Steep canyon walls rise to heights of 100 feet or more in the immediate vicinity of the OD unit, and along with a retaining wall that has been installed, form a rough semi-circle around the unit. The unit has a maximum waste treatment capacity of 1,000 pounds of explosive wastes per detonation and an annual treatment Unit limit of 15,000 pounds.

Detonations at both OD units can be conducted at ground level (surface detonation), below ground level (buried detonation), or under a pile of soil (soil-covered detonation). Buried and soil-covered detonations are usually conducted to reduce blast noise and fragment travel distance. The materials to be detonated (treated) are arranged in a pile (detonation pile) in a manner that maximizes the destruction of the materials being detonated.

From 2015 to 2019, there have been no explosive waste streams treated at the TA-36-8 and TA-39-6 OD units. From 2011 to 2014 there were 54 detonations conducted at both units with an average quantity per detonation of approximately 43 pounds.

1.2.2.1 Waste Streams Treated through Open Detonation

The waste streams treated at the OD units consist of the following:

- Excess explosives – This waste stream includes large, laboratory sized, or small amounts of excess conventional explosives, developmental energetic materials, or novel formulations. Explosives may be in the form of flakes, granules, crystals, powders, pressings, plastic bonded, putties, rubberized solids, extrudable solids, or liquids. Developmental energetic materials are synthesized in small quantities in high explosives chemical labs. Explosives infrequently contain barium or ammonium nitrate mixed with more than 0.2% combustible substances. Approximately 3% to 7% of the explosives in this waste stream contain depleted uranium. Other materials that may be present in this waste stream include plastic bags, wrapping and casings, cardboard and paper, and fiberboard containers. A fraction of the waste stream may contain metals such as aluminum, brass, steel, stainless steel, and copper. This waste stream represents 50% to 90% of explosives waste treated by OD.

- Detonators, initiators, mild detonating fuses, and blasting caps – This waste stream includes detonators, initiators, mild detonating fuses, and blasting caps containing conventional explosives. Explosives may be in metal or plastic casings and may contain lead based primaries or be in metal sheaths. This waste stream includes manufactured articulates (detonators) removed from fire protection systems. Other materials that may be present in this waste stream include plastic bags and wrapping, cardboard and paper, and fiberboard containers. This waste stream may include metals such as aluminum, lead, brass, stainless steel, nickel, and copper. This waste stream represents 1% to 2% of all explosives waste treated by OD.

- Shaped charges and test assemblies – This waste stream include shaped charges consisting of cores of explosives with metal sheaths or metal liners, or high explosives test assemblies consisting of explosives in plastic or metal holders. Assemblies may contain metal including lead, aluminum, copper, brass, steel, tantalum, glass and stainless steel. Other materials that may be present in this waste stream include plastic explosive components, bags, or wrapping, cardboard or paper, and fiberboard containers. This waste stream represents 1% to 2% of the explosives waste treated by OD.

- Projectiles and munitions larger than 50 caliber – This waste stream includes military munitions such as projectiles larger than 50 caliber. A fraction of this waste stream includes materials bonded to depleted uranium. Other materials that may be present in this waste stream include plastic bags and wrapping, cardboard and paper, fiberboard drums, and metal such as lead, brass, steel, stainless steel, copper, and aluminum. This waste stream represents 1% to 2% of the explosives waste treated by OD.

- Pressing molds – This waste stream include urethane (Adiprene) pressing molds contaminated with detonable quantities of explosives. Other materials that may be present in this waste stream include plastic bags, plastic wrapping, cardboard and paper. When treated this waste stream represents 1% to 2% of the explosives waste treated by OD.

- Explosives contaminated debris – This waste stream includes detonable explosives contaminated debris generated in laboratories and prep rooms. Debris may include filters removed from laboratory equipment or may contain solvents. This waste stream may include depleted uranium. Other materials that may be present in this waste stream include pieces of plastic from manufacturing operations including bags, wrapping and tubing, weigh boats, latex and nitrile gloves, glass or plastic vials, cardboard and paper, fiberboard containers, paper cloths, rags, and swabs. Metal constituents may include aluminum, stainless steel, steel, brass, and copper. Solvents in the waste stream may include trace quantities of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, fluor-inerts or trichloroethylene. This waste stream represents less than 1% of all the explosives hazardous waste treated at the OD units. When generated, these types of waste are generally characterized to be nonhazardous waste and are sent off-site for disposal. The waste stream described here, must be characterized as detonable in order to be eligible for treatment.

- Smaller caliber ammunition – This waste stream is rarely treated and includes small caliber munitions (less than 50 caliber) that have unknown properties as a result of testing activities or damage. These materials are managed as explosives which pose a special risk in storage and transportation. Other materials that may be present in this waste stream include plastic bags and wrapping, cardboard and paper, and metal such as steel, brass, copper, lead and zinc. This waste stream represents less than 1% of explosives treated by OD.

- Black powder or gunpowder – This waste stream is rarely treated and includes standard commercial and military grades of black powder or gunpowder. These powders are typically potassium or sodium nitrate based. Other materials that may be present in this waste stream include plastic bags, wrapping, and cardboard and paper containers, tin and fiberboard containers. When treated this waste stream represents less than 1% of the explosives waste treated by OD.

1.2.2.2 Current Waste Generation Rates

Table 1-2 lists, by waste stream, the quantities of explosives treated at the TA-36-8 OD Unit and TA-39-6 OD Unit from 2011 to 2019. Pollution prevention and waste minimization activities (Section 2) have reduced the routine generation of each of the waste streams by eliminating some activities that generated portions of the waste streams and/or through substitution, segregation, or other waste minimization activities.

As shown in **Table 1-2**, OD operations have decreased significantly the last several years because of pollution prevention measures, including the reuse of materials for other mission requirements rather than having to be treated as waste.

Table 1-2 Quantities of Explosives Treated at the TA-36-8 and TA-39-6 OD Units from 2012-2020 By Waste Stream

Year	Excess Explosives (lbs.[1])	Explosives-Contaminated Combustible Debris (lbs.[1])	Detonators, initiators, and mild detonating fuses (lbs.[1])	Shaped charges and test assemblies (lbs.[1])	Projectiles and munitions larger than 50 caliber	Pressing molds	Small caliber ammunition	Black powder or gunpowder	Total Waste Treated (lbs.[1])
2011	1,548	0	0	0	0	0	0	0	1,548
2012	374	12	0	0	0	0	0	0	386
2013	356	0	0	0	0	0	0	20	376
2014	5	2	0	0	0	0	0	0	7
2015	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0

[1] The weight listed is the total weight of the treated waste, not of the explosives content that is suspected to contaminate the equipment or debris.

2.0 Pollution Prevention and Waste Minimization

The first step in the LANL waste management conceptual approach is to identify and implement waste minimization activities to the maximum extent practicable. Waste minimization requires implementation of processes, practices, and procedures to reduce the volume of explosives and explosives contaminated waste that must be ultimately managed as hazardous waste. Considerable effort has been made at LANL to eliminate, minimize, or reuse wastes. Operations and waste management personnel rigorously apply waste minimization principles to “green” the processes and significantly reduce the quantity of high explosives wastes treated by OB/OD.

2.1 Pollution Prevention Practices Implemented

Waste generators and waste professionals work continuously to improve the management of regulated and non-regulated wastes that are generated by implementing the following waste minimization practices:

- LANL has implemented a robust site-wide Pollution Prevention Program and Environmental Management System (EMS).
- LANL policies and procedures require generators of explosives contaminated combustible debris to carefully assess whether wastes generated from production and research activities have the potential to detonate. Segregating detonable explosives contaminated debris from non-detonable contaminated debris ensures that only the combustible debris is treated onsite. Non-detonable combustibles are treated and disposed offsite through incineration. As a result of these segregation practices, treatment of explosives-contaminated debris by OB or OD has generally decreased over time and is not expected to significantly increase in the future.
- Explosives parts can be pressed into their near final shapes using previously unavailable isostatic presses, which have reduced the amount of explosives machining wastes generated. New technology allows for pressing a cone directly, so that the shape requires only minimal finishing through machining.
- Alternative uses are found for explosive pieces that do not meet quality specifications, rather than treating them for waste.
- Explosives contaminated debris is transported for OB or OD operations using reusable containers rather than in disposable plastic bags. While this option is not always viable for some waste streams, extra waste generation is eliminated for explosives contaminated combustible debris.
- The operation of a solvent recovery system for the process generating the highest quantity of explosives contaminated solvents treated onsite. After recovery, the solvents are reused in experimental processes rather than disposed.
- Explosives contaminated oils and solvents that are contaminated with less than 25% explosives are shipped offsite for treatment and disposal. Below 25% explosives in solution are not considered an explosive hazard (DOE, 2019).
- OB waste treatment operators segregate or combine wastes streams to improve waste treatment effectiveness by reducing the burn time, reducing the amount of fuel used, and minimizing the quantity of residue generated by the waste treatment process.

- Excess explosives processing equipment resulting from decommissioning or maintenance activities that is potentially contaminated with explosives is steam cleaned or pressure washed instead of being treated with OB where feasible.
- Explosives machining operations, as well as most explosives pressing operations, have been consolidated into one building, thereby reducing the potential for explosives contamination at many locations.
- When possible, plastics are steam cleaned and disposed of offsite as non-hazardous waste.
- Highly contaminated molds that cannot be steam cleaned are treated by OD rather than OB because the products of combustion are more complete because of the higher temperature and pressure present during OD reactions.
- Implementation of a centralized explosive inventory system that is available to all explosives custodians provides the opportunity for owners and users to search a common inventory system for in-stock explosives materials before ordering new materials. The explosive inventory system further reduces unnecessary explosive wastes.
- Bulk propellants and munitions containing propellants are shipped to an offsite facility for treatment and disposal when possible and practical (e.g. an off-site facility is identified that can accept the waste and the munition is not damaged).
- The implementation of mercury/explosives separation technology has reduced the amount of toxicity in waste streams and of excess explosives contaminated wastes.

In addition, LANL systematically and successfully applies pollution prevention principles to reduce the toxicity of the explosive waste streams and the amounts of excess explosives and explosives contaminated waste treated onsite. These principles have been demonstrated with the reuse of machining sludge and the reduction of overall OD treatments.

2.2 Anticipated Waste Generation Practices and Continual Improvement

The waste minimization efforts have significantly reduced the quantity of waste that is treated onsite through OB or OD. Current onsite waste treatment activities by OB or OD is less than waste treatment quantities in the past because of careful evaluation of waste generating practices. From 2011 through 2019, LANL has treated an average of 1,794 pounds per year by OB and 257 pounds per year by OD. It is anticipated that future waste treatment quantities would remain at, or be less than, the current quantities. However, risk reduction efforts at LANL may increase the overall amounts of waste needing treatment in specific years, and may occasionally increase the annual quantity of waste to be treated in the future.

Explosive inventory reduction efforts will continue to reduce the explosives waste inventory. These efforts have included the increased shipment of explosives offsite for disposal, as well as onsite reuse and onsite treatment of excess explosives as necessary. Explosives are only treated by OB or OD when other options have not proved viable.

3.0 General and Site-Specific Safety and Feasibility Factors

DOE has an active role in research and development of explosive formulations, explosives synthesis, charge geometry, and explosive assemblies for national defense. DOE and operating organizations maintain explosives safety standards that fully address potential risks. Maintaining worker and public safety is paramount in all DOE explosives handling operations. The most important consideration when managing explosives waste streams is to minimize or eliminate, if possible, the danger and exposure to workers and the public from accidental ignition of the waste. At LANL, all work activities associated with explosives and other energetic materials are carefully controlled, and safety is maintained through compliance with the requirements outlined in the *DOE Standard for Explosive Safety* (DOE, 2019).

Site-specific safety and security are important concerns in every decision to treat explosives waste on- or offsite at LANL. Each onsite waste treatment activity at LANL is carefully planned to minimize worker exposure and handling of explosives. Personnel trained in explosives handling and familiar with the explosives' characteristics conduct the onsite waste treatment operations. This reduces the potential for compromising the energetic material and for the likelihood of serious injury or death. LANL explosive waste streams vary widely in form and constituents. Onsite explosives professionals are familiar with the specific types of explosives waste generated at LANL and the processes that generate them. Therefore, due to this site-specific knowledge and capability, it is safer to treat many of these specialized wastes onsite at LANL than to ship them offsite.

Likewise, site-specific safety concerns have been critically important in LANL's decisions regarding waste storage. Explosive wastes must be stored for a time to accumulate sufficient quantities for treatment or disposal, whether on- or offsite. Rigorous administrative processes are used to maintain explosives safety at LANL. Specific safety procedures address the precautions routinely taken in order to ensure compliance with established explosive weight limits in each explosives work area, in order to prevent overloading a facility or area. LANL has used multiple generator accumulation locations for explosive wastes in smaller quantities to prevent propagation of accidental explosions.

Any decision to further increase the types or quantities of explosives waste streams shipped offsite, or to adopt other onsite treatment technologies, would require additional storage areas and/or longer-term storage of explosives waste streams, which increases site-specific safety risks at LANL. Any increase in site-specific safety risks at LANL is not acceptable. Therefore, the additional safety hazards due to requiring additional storage must be taken into account when comparing treatment alternatives.

Additional site-specific feasibility factors include that the presence of depleted uranium and security considerations can also complicate the ability to treat LANL explosive waste offsite. Explosive wastes that contain depleted uranium are not accepted at offsite facilities. Security related considerations significantly delay or prohibit the acceptance by, or transport to, an offsite treatment facility. Both of these factors further affect the decision to treat waste onsite.

4.0 Transportation Hazard Potential

Section 1.0 and 2.0 describe the composition of explosive waste streams and efforts to avoid or minimize the generation of these wastes to the maximum extent practicable. The remaining wastes must be treated or disposed in accordance with applicable requirements. As described in the Section 1.1, the next step in the waste management conceptual approach is to review the remaining explosives contaminated waste stream-by-stream to identify candidate wastes that could be safely transported offsite to permitted facilities for treatment and disposal.

Most LANL wastes can be safely and securely shipped offsite. LANL continues to review its explosive wastes to identify additional opportunities for increased offsite shipment where feasible and where it can be done safely. However, as energetic materials age or are subjected to testing, the resulting waste may develop properties that are unpredictable. LANL explosive waste that are aged, sensitive, or otherwise-unstable and cannot be stabilized are legally prohibited from transportation on public roadways, in accordance with United States Department of Transportation (DOT) regulations (49 CFR Part 173, Subpart C, §173.53). When stabilized through desensitization, or another process, to lower the sensitivity, energy output, and flame temperature of the composition, these types of explosive wastes can be transported on public roadways and, when possible, this is LANL's practice. For those LANL explosives wastes that cannot be stabilized for offsite transportation because the transportation hazard potential is too great or is legally prohibited, the wastes are accumulated onsite in compliance with generator accumulation requirements and waste storage hazards are minimized by performing OB and/or OD treatment onsite as often as needed to avoid accumulating excess waste inventory and exceeding the work areas' explosives safety limits.

4.1 Transportation Safety and DOT Transportation Requirements

Shipments of numerous types of hazardous materials (including explosives) on public roads pose hazards and risks for both public and worker safety. Because of this, the DOT and States have imposed restrictions and prohibitions on transport of explosives and explosives contaminated wastes. Some waste streams generated at LANL cannot be legally or safely transported on public roadways to offsite commercial facilities. Waste streams that cannot be safely transported on public roadways are those that cannot be properly stabilized or do not meet offsite facilities waste acceptance criteria. In some cases, noncombustible debris contaminated with explosives cannot be released from LANL explosives areas without being flashed. DOT specifies explosives transportation requirements within the hazardous materials requirements in Title 49 CFR. The 49 CFR § 173.54 list of "Forbidden Explosives" that may not be offered for transport or transported includes:

- New explosives that have not been examined, classed and approved for transport;
- Explosives containing chlorates either as an ammonium salt or an acidic substance;
- Damaged packages or articles;
- Propellants that are unstable, condemned or deteriorated;
- Explosives specifically forbidden in the Table of Hazardous Materials (49 CFR § 172.101); and
- Explosives that fail to pass specified sensitivity, stability and burning tests.

LANL explosives include wastes that may not be offered for transport.

In addition, all LANL explosives waste streams that have not been previously shipped offsite must be tested, classified, and assigned proper shipping names and an EX number[2] by the DOT Associate Administrator in accordance with DOT requirements in 49 CFR §§ 173.56 through 173.58 in order to transport explosives wastes on public roads or highways. Any explosives waste streams that fail the required testing series cannot be assigned numbers or transported to commercial facilities. There is currently a substantial backlog of new explosives document requests pending review by the DOT Associate Administrator's office. Review of new requests may take several years. An Interim Hazard Classification (IHC), valid for up to one year, theoretically could be issued by DOE for new explosives in

[2] An EX number is issued by DOT to identify an explosive which has been tested and classified by DOT (49 CFR 171.8 and 49 CFR 173.56).

lieu of an EX-ID-number, if a commercial facility was willing to accept a waste transported under this condition; but, this too is a difficult and lengthy process, and few commercial facilities are willing to accept such wastes.

Therefore, because of the transportation hazards, and storage and security requirements, LANL will always need to maintain onsite waste treatment capability to safely disposition those materials which are prohibited from transport by DOT.

4.2 Federal Requirements for Transfer of Weapons Materials and Explosive Material to Commercial Facilities

Federal security and property requirements for classified waste and military munitions (as applicable) add to the complexity of handling, transport, and treatment of explosives wastes generated at LANL. Many of the LANL explosives waste streams that require OB or OD treatment, when unreacted, may contain classified components or features. These components or features complicate LANL's ability to transport an explosive hazardous waste offsite and add to the transportation hazard for LANL wastes. Offsite treatment may be entirely prohibited or may be significantly delayed due to prohibitions and restrictions on transportation of that waste to an offsite facility. Likewise, some explosive items may be controlled property according to DOE or DoD requirements, and may not be eligible for release to an offsite disposal facility, even for purposes of destruction.

5.0 Offsite Treatment Options

LANL currently maintains the capability to ship several of its explosive wastes offsite to RCRA permitted commercial treatment facilities. LANL ships permissible bulk propellants, munitions containing propellants, and excess explosives to offsite facilities for treatment, storage, and disposal when the waste meets the facility's waste acceptance criteria (WAC), offsite disposal is economically feasible, and the waste can be safely transported.

In order to be sent to an offsite permitted commercial treatment, storage, and disposal facility (TSDF), any explosive waste candidates must meet the following requirements:

- The TSDF's WAC comply with applicable Land Disposal Restriction (LDR) requirements;
- The Department of Transportation (DOT) requirements; and
- The Federal requirements for transfer of weapons materials and explosive materials to commercial facilities, including security and property requirements for classified waste and military munitions (as applicable).

Offsite treatment decreases the overall quantity of explosive waste that must be treated onsite by OB or OD. However, wastes awaiting shipment must be accumulated and stored onsite until the treatment facility approves the waste shipments which, as noted above in Section 3, is a significant site-specific safety consideration.

5.1 Offsite Facilities' Waste Acceptance Criteria and Acceptance Process

Offsite commercial TSDFs establish criteria to ensure that explosive waste streams accepted for disposition meet the facility's individual RCRA permit requirements and can be safely handled and properly treated by the facility (i.e., to ensure compliance with applicable LDR standards). Requests for treatment and disposal must include documentation that confirms compliance with the facility's WAC including a description of the physical form, chemical constituents, EPA Hazardous Waste Numbers (EPA HW No.), DOT Proper Shipping Name (PSN), and explosive ID number.

Shipments of LANL's explosive wastes offsite are also subject to the availability of appropriate storage and treatment capacity at the receiving facility. Wastes cannot be transported until shipments are approved by the facility. The elapsed time between submitting a request for transport and receiving authorization to ship can sometimes be significant (up to six months).

5.2 Current Offsite Treatment Options

Options for waste treatment offsite are limited because explosive wastes streams that are considered detonable, or have the capability of exploding, require a special permit to be shipped as non-regulated waste. There are currently three commercial facilities capable of accepting and/or treating some of the explosives waste streams generated at LANL, including the Clean Harbors, Colfax Facility; the General Dynamics Ordnance and Tactical Systems, Main Office and Disposal Facility; and the Veolia ES Technical Solutions-Trade Waste Incineration (Veolia-TWI). At this time, LANL will typically send explosive waste streams to Veolia-TWI and Clean Harbors, Colfax Facility.

The Clean Harbors, Colfax Facility, located in Colfax, Louisiana, consists of twenty separate treatment units (40 CFR Part 264, Subpart X, Thermal Treatment Units) with the capability of treating reactive (D003) characteristic hazardous wastes through OB processes. The facility is capable of treating up to 480,000 pounds of explosives waste annually and has the capability of storing up to 50,000 pounds of explosives (Clean Harbors, 2019).

Veolia-TWI, located in Sauget, Illinois, consists of three permitted treatment units (two fixed hearth thermal treatment units and one rotary kiln thermal treatment unit) with the capability of treating explosives waste that has been properly characterized; provided that the waste does not contain any prohibited wastes as listed within the facility permit (Veolia Environmental Services, 2019). The facility includes a magazine that is used to store up to 100,000 pounds Bureau of Alcohol, Tobacco, Firearms and Explosives (BATF) low explosives. The facility has no capability to store BATF high explosives or detonators, but it can process them.

The General Dynamics Ordinance and Tactical Systems facility, located in Joplin, Missouri, consists of two RCRA Part B permitted and maximum achievable control technology (MACT) compliant incinerators (one of which is a rotary kiln incinerator) and a car bottom furnace (General Dynamics, 2019).

5.3 Public and Worker Safety Issues with Offsite Treatment

Each of the available offsite facilities is located at some distance from LANL. Clean Harbors, Colfax Facility is located 842 miles east of LANL; General Dynamics Ordnance and Tactical Systems, Carthage, is located approximately 800 miles east of LANL; and Veolia-Trade Waste Incineration Facility is located 1,084 miles northeast of LANL. Transportation of waste from LANL to any of these facilities would be via motor carrier over public roads. Transportation of explosives by motor carrier occurs nationwide on a daily basis, but not without risk to the public. In contrast, the public has limited contact with or access to explosives transported for onsite treatment at LANL. By treating onsite, LANL can control the transportation of the waste by controlling the traffic in the area, the speed at which it can travel, and can limit the area within which the waste is moved. Treatment of waste onsite decreases the potential for the public to be exposed to these hazards. Onsite treatment also decreases the handling of waste required by workers. Packaging and transport for onsite treatment are conducted by explosives personnel that have experience handling the specific wastes generated at LANL that are not in pristine condition, have been subjected to damage, and/or are generated from unique processes. Shipment to offsite facilities requires that explosives wastes be handled by personnel who are less knowledgeable and experienced with these particular waste streams. In addition, offsite transportation increases offsite human and environmental impact along the transportation route, the overall carbon emissions from transport vehicles and the increased risk of transportation incidents, theft, or diversion.

Most TSDFs require a minimum volume per shipment, as specified in the facility's WAC. Quantities of explosives waste streams generated at LANL have been generally decreasing with the implementation of waste reduction initiatives; however, generation rates are not consistent because they are based on programmatic activities from year to year. Wastes treated onsite are currently treated within days or weeks of generation. Without the treatment capabilities, LANL shippable wastes would have to be accumulated until the minimum volume accepted by an offsite treatment facility was reached or a lesser quantity for transport can be brokered with the receiving facility (see Section 2.3 for additional discussion on the hazards of increased storage). Explosives may deteriorate or become unsuitable for transport while waiting for disposal approval. The inability to promptly remove and dispose of excess, aging, or insulted explosives rapidly and minimize time and amounts in storage unnecessarily exposes workers to greater hazards.

5.4 National Security Considerations for Offsite Treatment

As part of its national security mission, DOE/Triad will continue to develop explosive formulations and assemblies that may be related to threat reduction, homeland security, and enhanced security projects. During times of heightened security risk, LANL has prohibited the shipment of certain explosives waste because of the increased risk of transportation-related incidents, theft, or diversion. These concerns affect the selection of alternatives for treating such non-shippable wastes onsite.

5.5 Summary of Offsite Treatment Options

Although LANL has worked to increase the amounts and types of explosive waste streams shipped offsite for treatment and disposal and further to reduce the overall quantity of explosives waste treated onsite, increased offsite treatment and disposal is not feasible at this time. LANL employs offsite treatment whenever practicable. However, options for increased offsite treatment are often limited and the following factors are taken into account:

- Explosives may deteriorate or become unsuitable for transport while waiting for disposal approval, presenting site-specific safety considerations and increased transportation volume pose some public risk;
- Additional storage requirements would pose greater permitting liability and increased hazards to accumulate effective shipment quantities; and
- Under any scenario, onsite treatment via both OB and OD at LANL will always be required to treat the excess explosives, non-shippable and classified wastes, and noncombustible debris wastes that cannot be shipped offsite for disposal without prior treatment.

6.0 Feasibility of Onsite Treatment through Alternative Technology

A part of LANL's explosive waste management practice is to address the wastes that must be treated onsite. Currently, these wastes are treated through OB and OD. The following sections of this chapter describe how alternative technologies to OB or OD were identified and categorized for treatment of current and future explosives wastes, screened and compared, and rigorously evaluated for effectiveness as alternative candidates to OB or OD.

In accordance with the approach outlined in the 2002 EPA Region III *Draft Permitting Guidelines*, the following approach was used:

1. Identify and categorize alternative treatment technologies other than OB or OD to treat explosives contaminated waste onsite.
2. Screen each candidate technology for its state of development and availability, and for its applicability to treat LANL's energetic waste streams.
3. Evaluate the effectiveness of each alternative technology relative to OB or OD using a rigorous set of evaluation criteria.

6.1 Identification of Candidate Technologies

OB/OD treatment alternatives have been researched for nearly three decades, primarily by the DoD military munitions community in support of global demilitarization efforts. Most research on alternative technologies has been oriented toward the disposition of excess military munitions due to the volumes of unwanted excess munitions stockpiled at DoD facilities throughout the world and the cleanup of firing ranges. Waste munitions consist primarily of encased weapons, such as rockets, missiles, bombs, mortar rounds, artillery ammunition, grenades, cluster munitions, and land mines. Technology development has focused mainly on production-scale demilitarization activities, with little consideration of wastes from explosives research and development.

In an effort to exercise due diligence in considering all possible alternatives, DOE/Triad sought to obtain information from all likely sources, including those focused more on demilitarization of waste munitions. Publicly available information was collected and reviewed from the national and global demilitarization communities including from organizations, such as the Defense Technical Information Center (DTIC, 2019), the DoD facilities and programs recent reviews of alternatives (e.g., Naval Air Warfare Center Weapons Division (NAVAIR-WD, 2004)); the National Academy of Sciences (NAP, 2019); the EPA (EPA, 2019); the Global Demilitarization Symposium (JOCG 2010, 2011); the Strategic Environmental Research and Development Program (ETSCP, 2006 and SERDP, 2013); and from private industry (Eldorado Engineering, 2019; Dynasafe; 2019). LANL screened each candidate's technology for its state of development and availability, and for its applicability to treat LANL's energetic waste stream.

Candidate technologies were first pre-screened to eliminate methods or technologies that are either inapplicable to the explosive waste streams at LANL, those that are pre- or post-processing steps in a treatment train rather than primary treatment processes, and those that were not considered sustainable for LANL site-specific requirements. Therefore, treatment technologies that were identified as pre-treatment, mitigation methods, or in-situ techniques were screened from identified candidate technologies. The rationale is described further below:

Demilitarization/pre-treatment methods. Demilitarization/pre-treatment methods are not applicable to OB or OD at LANL. Demilitarization focuses on reclaiming and recovering the explosives from munitions for sale or reuse, and on disassembling surplus military equipment for recycling and disposal. At LANL, explosives encased in metal or plastic comprise an extremely small amount of LANL's explosives waste stream and cannot be recovered or reclaimed for sale or reuse.

Mitigation technologies. Mitigation technologies do not destroy the explosive, but rather mitigate effects of the primary treatment activity taking place. For example, foam may be used with OD to prevent fragment dispersal and mitigate the sound of the destruction technology (i.e., sometimes, earth fill has been placed atop an OD shot for this purpose). As such, mitigation technologies are not applicable alternatives to the explosives waste streams discussed here.

In-situ technologies. In-situ technologies such as biodegradation are applied to environmental media (soils and groundwater) as part of remedial actions. As such, they are not applicable to the LANL explosives waste streams discussed here, which do not include explosives-contaminated environmental media.

After prescreening, a list of nineteen potential technologies that could treat explosives contaminated waste to meet LDRs was compiled. Commercially available technologies identified for further evaluation are listed in **Table 6-1**. These technologies include alternatives for both OB and OD, such as case opening, chemical conversion, co-firing in boilers, contained burn (i.e., confined burn facility and energetic-contaminated waste), contained detonation, incinerator (i.e., plasma arc and rotary kiln), and oxidation (i.e., base hydrolysis). Some technologies are potential alternatives for only open burn, including a contaminated waste processor, cryofracture, flashing furnace, open detonation, and oxidation (cerium-catalyzed). Other technologies are considered potential alternatives for only open detonation, including cryogenic cutting, hydromilling, liquid ammonia extraction, and open burn.

Table 6-1. Initial Identified Technology Candidate List

	Technology	Treatment Type	Description
1	Case Opening	OB/OD	Case opening involves a variety of techniques to separate a munitions' body (projectile) from the cartridge case. The remaining energetic material will need to be treated and/or destroyed using alternative technologies.
2	Chemical Conversion	OB, OD	Chemical conversion involves using processes such as solvent extraction and solvolytic extraction to convert recovered explosives and propellants to other products. This technology can only treat specific types of explosives waste based upon the specific chemical makeup of the explosive. Extraction technologies frequently create a secondary hazardous waste stream consisting of organic solvents.
3	Co-firing in Boilers	OB, OD	Co-firing in boilers can be utilized for explosives that can be desensitized so that they can be co-fired with traditional fuels in commercial boilers for heating. The explosive must be soluble in fuel oil #2.
4	Contained Burn (#1), at a Confined Burn Facility	OB, OD	Contained burn at a confined burn facility consists of explosives contaminated wastes that are treated in blast-reinforced chambers. In some cases additional fuel (such as kerosene) must be added to the waste stream. The combustion gases are contained and processed through air emissions control equipment. This treatment is frequently used by the military to destroy small caliber ammunition and bulk explosives. Small-scale confined burn facilities are currently in use by law enforcement agencies nationwide. The waste is ignited using a squib and allowed to burn of its own accord.
5	Contained Burn (#2), Energetic-Contaminated Waste	OB, OD	Energetic-contaminated waste technology is designed for wastes contaminated with small amounts of explosive material. It is similar to contained burning, but is targeted more toward burning combustible wastes contaminated with explosives rather than ammunition or bulk explosives. It is used mostly for combustible wastes (e.g., rags, gloves, wipes, plastic, etc.) that are contaminated with small amounts of explosives. Because there is no controlled fuel supply or "controlled flame device", a contained burn unit may be permitted as a miscellaneous unit under RCRA Subpart X, rather than being permitted as an incinerator. This waste is ignited using a squib and is allowed to burn of its own accord, with the aid of added fuel (e.g. kerosene) in some cases.
6	Contained Detonation	OB, OD	Contained detonation involves the detonation of explosive wastes inside a steel chamber constructed to dampen the blast. After burning reactions are suppressed to protect the integrity of the chamber. Particulates are filtered from the detonation gases. This technology is best suited for small pieces of explosives, and residuals may transform into toxic or more complex compounds than those created when treating the same waste by OB or OD.

Table 6-1 Initial Identified Technology Candidate List (continued)

	Technology	Treatment Type	Description
7	Contaminated Waste Processor	OB	A contaminated waste processor (CWP) consists of a car bottom furnace that treats contaminated combustible waste, such as rags, gloves, wipes, fiber drums, pallets, plastic, coveralls, etc. Typically, the CWP does not require a RCRA permit and is capable of batch or continuous feed operations.
8	Cryofracture	OB	Cyrofracture process used to cool ferrous munition bodies below their embrittlement temperature and allow the munitions to be fractured in a hydraulic press. This process allows access to the energetics so they can be treated by thermal destruction. This technology is suitable for size reduction prior to a thermal treatment. This treatment method has mostly been used for projectile explosives and is not suitable for explosive materials at LANL.
9	Cryogenic cutting	OD	Cyrogenic cutting technology uses liquid nitrogen that is pressurized and then ejected through a small orifice at high velocities. The system includes a cryogenic fluid supply system, a pressurization system, a temperature control system, a nozzle system, a recovery system, and a manipulation system. This treatment is effective as a pre-treatment to cut through casings for the purpose of removing the casing from the explosive prior to treatment; however, a static charge can build up under certain circumstances and is a safety concern. Secondary materials spray is an additional waste stream. This treatment method is not suitable for explosive materials at LANL.
10	Flashing Furnace	OB	A flashing furnace thermally decontaminates metal parts with explosive contamination. Up to 10,000 pounds of contaminated metal can be flashed per hour. The furnace can be installed in a fixed location or can be trailer mounted for field applications. Because this technology is enclosed and has a controlled flame device, permitting of the unit may require adherence to 40 CFR 264, Subpart O (incinerator) requirements.
11	Incinerator, Fluidized Bed	OB, OD	A fluidized bed incineration is an enclosed incinerator that utilizes the injection of explosives waste into a turbulent bed of hot sand, created by forced air. Emissions are filtered prior to release to the environment. This process is limited to liquids, slurries, and powders with low organic content. The powders must be homogeneous in size.
12	Incinerator, Plasma Arc	OB, OD	A plasma arc incineration uses molten slag (i.e., soil with iron fluxing agent) which destroys inorganic compounds. The technology encapsulates inorganic toxic solid wastes in the molten slag and when hardened is disposed. Emissions are filtered prior to release to the atmosphere. This is an enclosed alternative to incineration that can be utilized for explosive wastes that are high in organic compounds (e.g., paint, solvents).
13	Incinerator, Rotary Kiln	OB, OD	A rotary kiln incineration is an enclosed incinerator treatment technology. The rotary kiln slowly moves waste from one end to the other and waste detonates or combusts within the chamber;

Table 6-1 Initial Identified Technology Candidate List (continued)

	Technology	Treatment Type	Description
			therefore, only small amounts of explosive waste can be treated at one time. Emissions are filtered prior to release to the atmosphere. Small explosive items with casings (<40 grams energetic material) can also be treated with this technology. Uniform explosive waste streams are treated most efficiently.
14	Hydromilling	OD	Hydromilling of explosive waste uses high pressure water jets to "cut" through the material. This is a pre-treatment technology that is not conducive for experimental explosive waste streams. A secondary hazardous waste stream of water and explosives is created by this process.
15	Liquid Ammonia Extraction	OD	Liquid ammonia extraction uses propellant, explosive fuel and oxidizer ingredients to extract, separate, and recover the explosive using liquid ammonia. This treatment method can treat explosive wastes that have a plastic binder associated with the waste in a limited capacity.
16	Open Burning	OB	Open burn of explosives waste destroys waste by self-sustained combustion after being ignited or by controlled burning in an open environment. This technology best serves waste generated during machining of explosives, excess explosive powders and pieces, explosive contaminated combustible wastes, laboratory samples of experimental explosives, and large pieces of equipment that must be flashed prior to shipment offsite for recycle or disposal.
17	Open Detonation	OD	Open detonation involves the detonation of explosive wastes in an open air environment. This technology is best suited for small or large pieces of explosives. OD is especially appropriate for aged explosive material with difficult to predict properties because OD requires a minimum of moving and handling.
18	Oxidation, Cerium-catalyzed	OB	Cerium-catalyzed electrochemical oxidation operates at atmospheric pressure and can convert organic hazardous waste materials into carbon dioxide and water. This technology is used to treat organic pumpable fluids.
19	Oxidation, Base Hydrolysis	OB, OD	Base hydrolysis oxidation heats waste to mild temperatures (90 to 150 ˚C) and usually elevated pressures (200 pounds per square in. gauge) with a strong base (pH>12). The explosive waste is converted to water-soluble, non-energetic products. The resulting solution is hazardous and must be further treated using bio-remediation or supercritical water oxidation.

6.2 Screening for State of Development and Availability and for Applicability to Treat LANL's Energetic Waste Streams

The screening, summarized in **Table 6-2**, used the following criteria to determine which, if any, of the initial candidates could be viable technology alternatives to OB or OD for onsite treatment:

1. Which of the explosives waste streams (and/or what percentage of all the explosives wastes) can be effectively treated with this technology?
2. What are the limitations of the technology regarding its implementability and/or short-term effectiveness (e.g., size and weight limitations to input; the need for multi-step processes; safety issues; and production of secondary hazardous waste streams)?
3. Is the technology a viable alternative to OB or OD? In this context, to be considered 'viable' by LANL, the technology must be commercially available today (from a qualified vendor), and must have a proven track record of performance in treating explosive wastes. Only proven, commercially-available alternatives should be considered. Technologies that are still in the bench- or pilot-scale or demonstration phase of development are candidates for future further assessment but, currently, are not feasible alternatives.

Through this screening process, LANL determined that five of the candidate alternative technologies could potentially treat at least some portions of LANL's explosives waste streams. There is no alternative that could eliminate OB/OD treatment for all LANL explosive waste streams. The technologies that could treat some LANL explosive waste streams are: (1) contained burn in a confined burn facility (to treat excess explosives), (2) contained burn for explosives contaminated waste, (3) contained detonation (to treat smaller amounts of excess explosives and smaller combustible debris items), (4) a flashing furnace (to treat some noncombustible debris), and (5) rotary kiln incineration (to treat machining waste and powdered explosives). A graphical representation of the screening process is included as **Figure 6-1**.

Table 6-2. Comparison of Alternative Technologies for Opening Burning/Open Detonation Waste Treatment

Treatment Technology	OB Waste Stream Applicability	OD Waste Stream Applicability	Waste Streams that can be Treated by Technology	Limitations	Viable Alternative to OB/OD	RCRA Permit needed?
Case Opening	None	None	None	• Only used for treating thinned-and thick cased munitions	NO	YES (Subpart X)
Chemical conversion	None	None	None	• Creates a secondary waste stream • Not suitable for any explosive waste streams routinely generated	NO	YES (Subpart X)
Co-firing in Boilers	None	None	None	• Not suitable for any explosive waste streams routinely generated • Limited to explosives that are soluble in Fuel Oil #2	NO	YES (Subpart X)
Contained Burn Facility	~7%	~50%	• Excess explosives (small sized only)	• Limited by the size of explosives • Secondary waste streams created are scrubber waste and bag house dust	YES	YES (Subpart X)
Contained burn for explosives-contaminated wastes	<1%	<1%	• Explosives-contaminated combustible debris	• Limited to explosives-contaminated combustible debris	OB – NO OD - YES	YES (Subpart X)

Table 6-2 Comparison of Alternative Technologies for Opening Burning/Open Detonation Waste Treatment (continued)

Treatment Technology	OB Waste Stream Applicability	OD Waste Stream Applicability	Waste Streams that can be Treated by Technology	Limitations	Viable Alternative to OB/OD	RCRA Permit needed?
Contained Detonation	~5%	~50%	• Explosives-contaminated combustible debris (smaller)	• Limited to small bulk explosives and combustible debris • Secondary waste stream consists of ash and fragments • Limited lifetime on number of detonations the chamber can treat • Chamber becomes a difficult to dispose of hazardous waste	YES	YES (Subpart X)
Contaminated waste processor	<1%	None	• Explosives-contaminated combustible debris	• Limited to combustible debris	NO	Need for Subpart X Permit questioned
Flashing furnace	~3%	None	• Explosives-contaminated non-combustible debris	• Limited to noncombustible debris	YES	Need for Subpart X Permit questioned
Incineration, Fluidized Bed	~70%	<1%	• Explosives machining waste (powdered only)	• Limited to treating powders, liquids and slurries • Cannot treat most bulk explosives or noncombustible debris • Secondary waste streams include ash and scrubber residues	NO	YES (Subpart O)

Table 6-2 Comparison of Alternative Technologies for Opening Burning/Open Detonation Waste Treatment (continued)

Treatment Technology	OB Waste Stream Applicability	OD Waste Stream Applicability	Waste Streams that can be Treated by Technology	Limitations	Viable Alternative to OB/OD	RCRA Permit needed?
Molten salt oxidation	~70%	None	• Explosives machining Waste (no filters)	• Limited to homogenous waste like machining waste with no filters • May be interference with chlorine in explosives binders	NO	YES (Subpart X)
Incineration, Rotary Kiln	~95%	<1%	• Explosives machining waste (powdered only)	• Limited types and amount of explosives that can be treated at one time • Cannot treat most bulk explosives or noncombustible debris • Secondary waste streams include ash and scrubber residues	OB – YES OD - NO	YES (Subpart O)
Incineration, Plasma Arc	~5%	~50%	• Explosives-contaminated solvents (powdered only)	• Limited to bulk explosives and solvent waste • Secondary waste streams created are ash, scrubber residue and slag	NO	YES (Subpart O)
Base Hydrolysis /Supercritical Water Oxidation	None	~25%	None	• Limited to organic waste streams with no plastic	NO	YES (Subpart X)

6.3 Focused Evaluation of Potential Alternative Technologies

Based on the initial screening provide in **Table 6-2**, LANL determined that there is no single alternative OB or OD technology that is capable of treating the breadth of explosives contaminated waste streams that exist at LANL. However, an evaluation was conducted to determine if a combination of alternative treatment technologies could replace OB and OD for wastes that must be treated onsite. The evaluation entails a comparison of OB and OD to the four remaining alternative technologies identified in **Table 6-2** using rigorous evaluation criteria. These evaluation criteria include:

- The percentage of LANL's OB or OD hazardous energetic waste stream each technology is capable of treating;
- Industry proven technology;
- Public acceptance of the technology;
- Potential secondary hazardous waste streams created from the treatment technology, reliability and maintenance of treatment equipment;
- Personnel safety; and
- Whether the technology meets RCRA regulatory guidelines.

In order for a technology to replace OB and/or OD, the alternative technology would need to meet each criteria in a similar manner as OB or OD. The results of the focused evaluation are included in **Table 6-3**. Based on this evaluation, there is no combination of the four alternative treatment technologies that would be capable of treating all the LANL explosives waste streams currently treated by OB and OD. Therefore, regardless of whether these alternative technologies were used, LANL still requires permitted OB and OD units.

6.4 Summary of Open Burn/Open Detonation Onsite Treatment

Based on the evaluation of alternative OB and OD technologies, there is no way to eliminate the need for permitted OB and OD units at LANL at this time. The implementation of alternative technologies would not alleviate the explosive waste treatment requirements that OB and OD provide. Based on the LANL waste management practices, LANL will continue to minimize explosives wastes or transport to offsite treatment facilities when available; however, for wastes streams that cannot meet these requirements, onsite treatment through OB or OD is the best available option based on site-specific safety, security requirements, effectiveness, public safety, and feasibility.

Table 6-1 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning/Open Detonation

Criteria	Open Burning (OB)	Open detonation (OD)	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Contained detonation
Waste Streams Treated	All	Explosives contaminated combustible debris	Excess explosives (small sized only)	Explosives machining waste (powdered only)	Explosives contaminated non-combustible debris	Explosives contaminated combustible debris (smaller)
Proven Technology	Yes	Yes- Most waste streams that can be open detonated are treated with this method rather than open burning.	Yes- Although larger explosive pieces, machining waste, liquids or noncombustible debris cannot be treated and may require a burn study to evaluate treatment of LANL waste streams.	Yes- Although cannot treat most sizes of explosives or noncombustible debris, and technology is not proven with undetermined or insulted explosives.	Yes- Although can only treat one explosives waste stream generated at LANL.	Yes – Although the size and quantity of the waste is limited per treatment. Larger pieces of explosives and odd-sized equipment cannot be treated in a contained detonation unit as fragments or the pressure from a large explosion will damage the chamber.
Public Acceptance	Limited- Public opposition has been voiced concerning open burning.	Limited- Public concerns about contamination and opposition to noise have been voiced.	Limited- Previous public opposition to operation of incinerators. Support of confined burn facilities during open burning permit process.	Limited- Historic public opposition has led to the closure of formerly permitted facilities	Unknown	Unknown

Table 6-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning/Open Detonation (continued)

Criteria	Open Burning (OB)	Open detonation (OD)	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Contained detonation
Process effluents	Residual ash is analyzed for hazardous constituents. Expected emissions are CO, CO_2, H_2O, NO_x N_2, and little to no secondary combustion products due to short residence time.	Metal fragments, CO_2, H_2O, and N_2.	Emissions from scrubbing system, burn and scrubber residue, residues from quench rinse, and decontamination waters. Emissions scrubbing system must be designed to capture dioxins/furans that may be generated during the process, as the temperature is not controlled.	Emissions from scrubbing system, burn and scrubber residue, residues from quench rinse, and decontamination waters.	Expected emissions are CO, CO_2, H_2O, NO_x N_2, and little to no secondary combustion products due to short residence. Residual ash is not expected.	Metal fragments, pulverized gravel, air pollution control unit residue, major burn emissions including CO, CO_2, H_2O, NO_x N_2; secondary combustion products due to residence time; and limited lifetime of chamber with replacement required and disposal of used chamber

Table 6-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning/Open Detonation (continued)

Criteria	Open Burning (OB)	Open detonation (OD)	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Contained detonation
Reliability and Maintainability	Very reliable and maintenance is minimal. Maintenance of burn trays, propane burners, and electronic matches are minimal.	Very reliable with experienced technicians. Requires minimal maintenance of pit area and run-on run-off controls.	Maintenance for the unit would require replacement of filters and periodic assessment of containment structure for damage.	The reliability and maintenance requirements are unknown at this time for LANL variable and unique explosive waste streams.	The reliability and maintenance requirements are unknown at this time for LANL variable and unique explosive waste streams.	Smaller units have proven reliable. Larger units (100 pounds) experienced leaking seals, weld failures and weak points. Fragments may damage chamber and increase maintenance.

Table 6-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning/Open Detonation (continued)

Criteria	Open Burning (OB)	Open detonation (OD)	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Contained detonation
Personnel Safety	Specific training for operators and explosives safety personnel are required and the area must be secured. The burn is monitored remotely through cameras. Specific operating parameters are invoked for open burning to assure the safety of personnel and protect human health and the environment.	Larger detonations for explosives pieces that are greater than the capacity of a confined detonation chamber. This requires less handling for workers. Also, the explosive would not have to be size-reduced prior to treatment by OD. LANL conducts detonations from a remote location inside the control building following specific operating procedures for OD to assure the safety of human health and the environment.	With undetermined or insulted explosives waste, a contained burn is an unacceptable risk to personnel. There is no controlled flame to ensure complete detonation or burn of the explosive or a capability to view if the explosive has been fully treated prior to opening the chamber. Unit increases the potential for catastrophic failure (explosion) when compared to current treatment technique.	Specific training for operators and explosives safety personnel would be required and would have to be conducted within a secure area. Training on treatment techniques for limited waste streams would also be necessary. Confinement of explosives within a treatment unit could additionally lead to a build-up of residual pressure from breakdown products within the unit—a potential explosion hazard.	If the unit is mobile, precautions will have to be in place to ensure that fuel can be located at each specific location within the explosives area. Trained personnel would be required to conduct treatment activities.	Large pieces of explosives may require size reduction prior to treatment in order to meet the operating capacity of the unit. This requires more handling by the worker and subsequent safety concerns. Potential for catastrophic failure

Table 6-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning/Open Detonation (continued)

Criteria	Open Burning (OB)	Open detonation (OD)	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Contained detonation
Meet regulatory guidelines	Yes with applicable RCRA Hazardous waste permits for the facility.	Yes with applicable RCRA Hazardous waste permits for the facility.	Yes with applicable RCRA Hazardous waste permits for the facility.	Yes with applicable RCRA Hazardous waste permits for the facility.	RCRA hazardous waste permit is not required for some states. New Mexico may require Subpart X (Miscellaneous Unit) Permit.	Yes with applicable RCRA Hazardous waste permits for the facility.

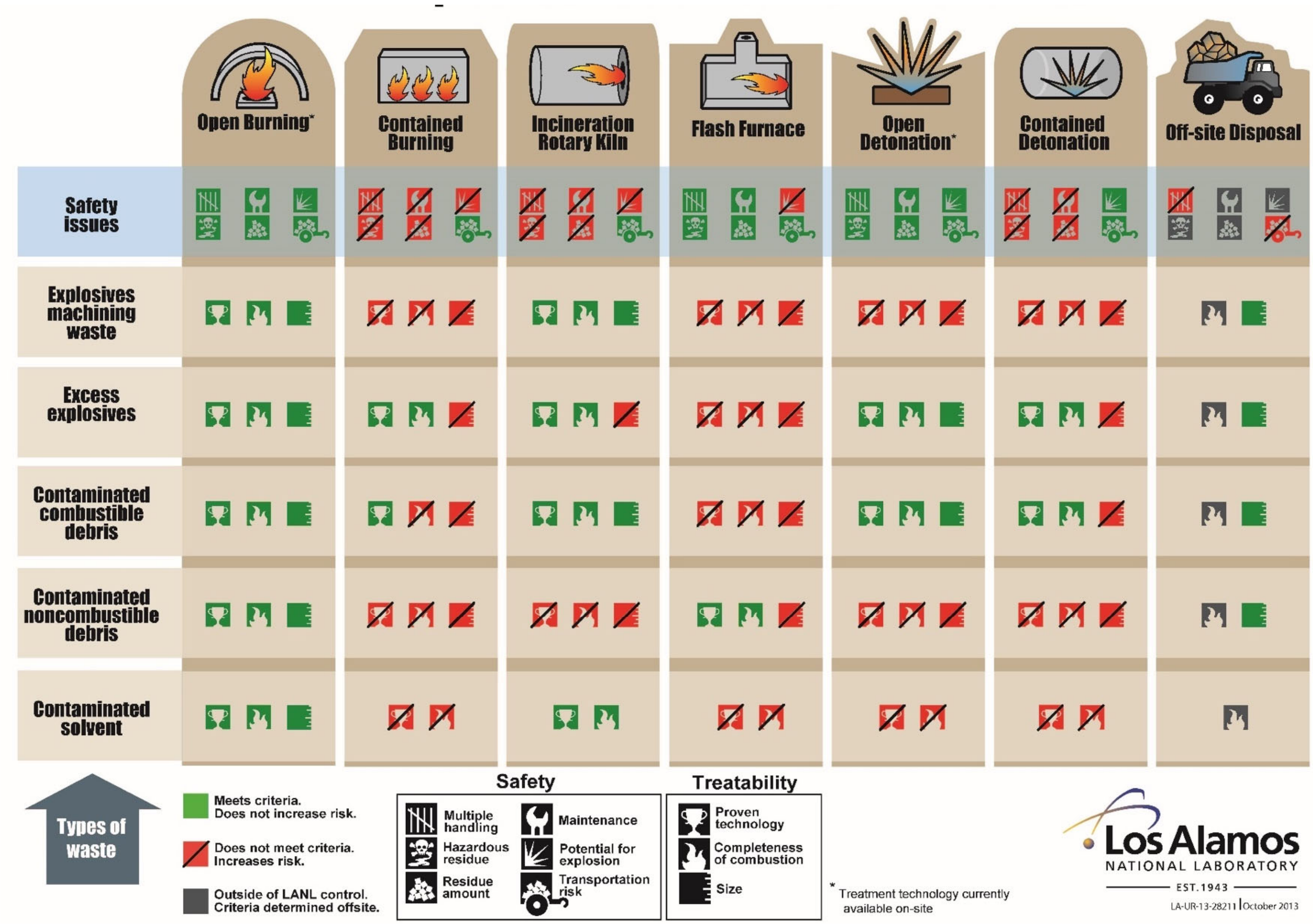


Figure 1 Explosives Waste Treatment Alternatives

7.0 Conclusions

In Section 2.0 of this alternatives assessment report, DOE/Triad described aggressive waste minimization efforts, operational practice changes, and process efficiencies which have significantly decreased the overall volume of explosives waste generated at LANL during routine operations. These efforts are effective and are continuing, but they cannot eliminate the need for continued onsite OB and OD treatment in the foreseeable future.

For over seventy years, OB and OD have been shown to be effective treatment technologies for explosives waste streams at LANL that cannot be minimized or transported offsite for treatment. These waste streams include the explosive waste streams listed in Table 1-1. The baseline risk assessment evaluates the effect of past OB and OD operations at the current and past waste treatment units and demonstrates that there is no unacceptable risk to either human health or ecological receptors from past operations. These evaluations can be found in the following supplements to the Permit Renewal Application:

- Supplement 4-7, *Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk-Screening Assessments*
- Supplement 4-8, *Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk-Screening Assessments*
- Supplement 4-16, *Technical Area 16 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 16-388 Flash Pad Human Health and Ecological Risk- Screening Assessments*

In Section 5.0 it was determined that there are no technically viable offsite alternatives to OB or OD that can address every explosives waste generated at LANL and that OB and OD would still be required. In addition, there are explosives waste streams generated at LANL that cannot be safely transported or securely disposed at offsite facilities. All explosives waste streams that have not been previously shipped offsite would have to be tested, categorized, and assigned proper shipping names and an EX-ID No. in accordance with the requirements set forth in 49 CFR §173.56 by the DOT Associate Administrator before being shipped offsite. In order to complete this process additional onsite storage will be required. The potential for degradation of explosives during the extended storage period would result in unnecessary additional risk to workers and the environment. The potential need to stockpile explosive contaminated waste in order to meet minimum treatment quantity requirements for transporting waste to offsite treatment facilities, likewise would result in unnecessary additional risk to workers and the environment. In addition, explosives that present export complications in accordance with 22 CFR §§120-130 cannot be shipped offsite for treatment and all explosives contaminated noncombustible debris that cannot be steam cleaned, must undergo treatment per Section 18 of the DOE Explosives Safety Standard (DOE, 2019) prior to leaving the firing site.

In Section 6.0, it was determined that there is no alternative single treatment technology that can treat onsite all of the explosives wastes streams generated at LANL that are currently treated onsite by OB/OD; therefore, multiple treatment technologies would have to be acquired, constructed, permitted, and operated onsite in order to accomplish the same waste treatment effort. These other treatment technologies are an incinerator (to treat machining waste, explosives-contaminated combustible debris and explosives-contaminated solvent waste), and a flashing furnace (to treat noncombustible debris). All three thermal treatment units would require RCRA permits and still involve the burning or detonation of explosive wastes.

Therefore, for all of these reasons, and those previously submitted to the New Mexico Environment Department, continued OB and OD treatment is the only feasible alternative for LANL explosives contaminated waste based on site-specific safety considerations, transportation hazard potential and prohibitions, offsite treatment options, and the feasibility of alternative technologies. While LANL will continue to seek methods to reduce the need for treatment of explosives contaminated waste and ship such wastes offsite to the extent practicable, continued OB and OD treatment at levels maintained in recent years is most protective of worker and public safety.

References

EPA, U.S. Environmental Protection Agency. Environmental Protection Agency, Region III. Open Burning/Open Detonation Permitting Guidelines. February 2002.

EPA, U.S. Environmental Protection Agency. Alternative Treatment Technologies to Open Burning and Open Detonation of Energetic Hazardous Wastes – Final Report. December 2019.

NAP, National Academies of Sciences, Engineering, and Medicine. 2019. *Alternatives for the Demilitarization of Conventional Munitions*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25140

DOE, U.S. Department of Energy. Department of Energy Standard for Explosives Safety, DOE-STD-1212-2019. November 27, 2019.

Clean Harbors, Clean Harbors Colfax Facility. Accessed 2019, https://www.cleanharbors.com/location/colfax-facility

General Dynamics, General Dynamics Ordnance and Tactical Systems. Accessed 2019, https://www.cleanharbors.com/location/colfax-facility

Veolia Environmental Services, Veolia Environmental Services Incineration Services. Accessed 2019, https://www.veolianorthamerica.com/what-we-do/waste-capabilities/incineration-services

NAVAIR, Naval Air Systems Command. Evaluation of Alternative Technologies to Open Detonation for Treatment of Energetic Wastes at the Naval Air Weapons Station, China Lake, California. January 2004.

Dynasafe. Accessed 2019,. https://www.dynasafe.com/

Eldorado Engineering, El Dorado Engineering Explosive Waste Incinerator (EWI). Accessed 2019, https://www.eldoradoengineering.com/thermal-disposal/explosive-waste-incinerator-ewi/

ETSCP, Environmental Security Technology Certification Program (ESTCP) et al. *Survey of Munitions Response Technologies*. June 2006.

SERD, Strategic Environmental Research and Development Program. Accessed 2019, http://www.serdp.org

Joint Ordinance Commanders Group (JOCG) Demil Express. 2010, 2011. Accessed at
*https://tpm.dac.army.mil/events/Docs/**DemilExpress**/Vol27.pdf*
*https://tpm.dac.army.mil/events/Docs/**DemilExpress**/Vol28.pdf*

LANL, Los Alamos National Laboratory. 2007. Update to Assessment of Open Burning Alternatives for Los Alamos National Laboratory, LA-UR-07-1904. March 2007.

Supplement 4-2

Open Detonation Unit Groundwater Monitoring and Surface Drainage Information

Table 4.2-1. Pertinent Groundwater Data At or Above Regulatory Standards for Monitoring the TA-36-8 OD Unit, 2000 - 2019

Location	Analyte	# of Analyses	# of Detects	% Detects	Detects versus Nondetects	Minimum Report Result	Maximum Report Result	Action Limit	Units	Action Limit Type	# of Exceedances	First Sample Date	Last Sample Date
Alluvial													
WCO-1r	Iron	4	4	100.0	4/0	113	1560	1000	µg/L	NM GW STD	1	9/20/2010	8/16/2019
Regional													
R-19 S3	Gross alpha	15	1	6.7	1/14	16.5	16.5	15	pCi/L	EPA MCL	1	9/26/2000	4/14/2015
R-19 S3	Iron	45	6	13.3	6/39	32.3	1100	1000	µg/L	NM GW STD	1	9/26/2000	4/14/2015
R-19 S3	Radium-226	7	3	42.9	3/4	0.462	10.4	5	pCi/L	NM GW STD	1	4/9/2001	9/14/2009
R-20 S1	Nitrate-Nitrite as Nitrogen	30	16	53.3	16/14	0.0587	748	10	mg/L	EPA MCL	1	3/11/2004	10/23/2019
R-20 S1	Radium-226	8	4	50.0	4/4	0.578	32.1	5	pCi/L	NM GW STD	3	3/15/2004	10/23/2019
R-20 S2	Dioxane[1,4-]	35	1	2.9	1/34	61.4	61.4	4.59	µg/L	NMED A1 TAP SCRN LVL	1	7/19/2005	10/17/2019
R-20 S2	Manganese	48	48	100.0	48/0	38.5	388	200	µg/L	NM GW STD	10	3/10/2004	10/17/2019
R-20 S2	Perchlorate	32	21	65.6	21/11	0.0923	32.5	13.8	µg/L	NMED A1 TAP SCRN LVL	1	3/10/2004	10/17/2019
R-20 S2	Radium-226	9	5	55.6	5/4	0.559	62.2	5	pCi/L	NM GW STD	3	3/10/2004	10/17/2019
R-23	Acetone	54	8	14.8	8/46	1.35	21100	14100	µg/L	NMED A1 TAP SCRN LVL	2	9/24/2002	10/23/2019
R-23	Benzo(a)anthracene	39	1	2.6	1/38	0.255	0.255	0.12	µg/L	NMED A1 TAP SCRN LVL	1	9/24/2002	10/23/2019
R-23	Bis(2-ethylhexyl)phthalate	38	5	13.2	5/33	0.769	7.6	6	µg/L	EPA MCL	1	9/24/2002	10/23/2019
R-23	Manganese	62	33	53.2	33/29	2.5	604	200	µg/L	NM GW STD	2	12/17/2003	10/23/2019
R-23	Radium-226	14	5	35.7	5/9	0.524	13.9	5	pCi/L	NM GW STD	3	9/24/2002	10/23/2019
R-27	Indeno(1,2,3-cd)pyrene	17	1	5.9	1/16	0.4	0.4	0.343	µg/L	NMED A1 TAP SCRN LVL	1	7/1/2006	2/8/2019
R-31 S3	Iron	7	7	100.0	7/0	250	5190	1000	µg/L	NM GW STD	6	12/16/2000	5/21/2007
R-31 S3	Manganese	7	7	100.0	7/0	257	3500	200	µg/L	NM GW STD	7	12/16/2000	5/21/2007
R-32 S1	Bis(2-ethylhexyl)phthalate	34	5	14.7	5/29	2.37	6	6	µg/L	EPA MCL	1	3/1/2004	10/15/2019
R-32 S1	Radium-226	11	1	9.1	1/10	21.4	21.4	5	pCi/L	NM GW STD	1	3/1/2004	10/15/2019
R-39	Bis(2-ethylhexyl)phthalate	21	4	19.0	4/17	7.04	9.8	6	µg/L	EPA MCL	4	2/19/2009	10/23/2019
R-49 S1	Dibenz(a,h)anthracene	20	1	5.0	1/19	0.0515	0.0515	0.0343	µg/L	NMED A1 TAP SCRN LVL	1	6/23/2009	10/29/2019
R-54 S1	Bis(2-ethylhexyl)phthalate	8	1	12.5	1/7	11.2	11.2	6	µg/L	EPA MCL	1	2/15/2010	11/2/2011
R-54 S1	Iron	16	16	100.0	16/0	101	4600	1000	µg/L	NM GW STD	9	2/15/2010	11/2/2011
R-54 S1	Manganese	16	16	100.0	16/0	42.1	306	200	µg/L	NM GW STD	8	2/15/2010	11/2/2011

EPA TAP SCRN LVL = U.S. Environmental Protection Agency screening level for tap water.
NMED A1 TAP SCRN LVL = New Mexico Environment Department screening level for tap water.
NM GW STD = New Mexico groundwater standard.

Table 4.2-2. Pertinent Groundwater Data At or Above Regulatory Standards for Monitoring the TA-39-6 OD Unit, 2000-2019

Location	Analyte	# of analyses	# of Detects	% Detects	Detects versus Nondetects	Minimum Report Result	Maximum Report Result	Action Limit	Units	Action Limit Type	# of Exceedances	First Sample Date	Last Sample Date
Regional													
R-31 S3	Iron	7	7	100.0	7/0	250	5190	1000	µg/L	NM GW STD	7	12/16/2000	5/21/2007
R-31 S3	Manganese	7	7	100.0	7/0	257	3500	200	µg/L	NM GW STD	7	12/16/2000	5/21/2007
Spring 8A	Dichlorobenzidine[3,3'-]	11	1	9.1	1/10	9.6	9.6	1.25	µg/L	NMED A1 TAP SCRN LVL	1	9/26/2000	10/12/2017

EPA TAP SCRN LVL = U.S. Environmental Protection Agency screening level for tap water.
NMED A1 TAP SCRN LVL = New Mexico Environment Department screening level for tap water.
NM GW STD = New Mexico groundwater standard.

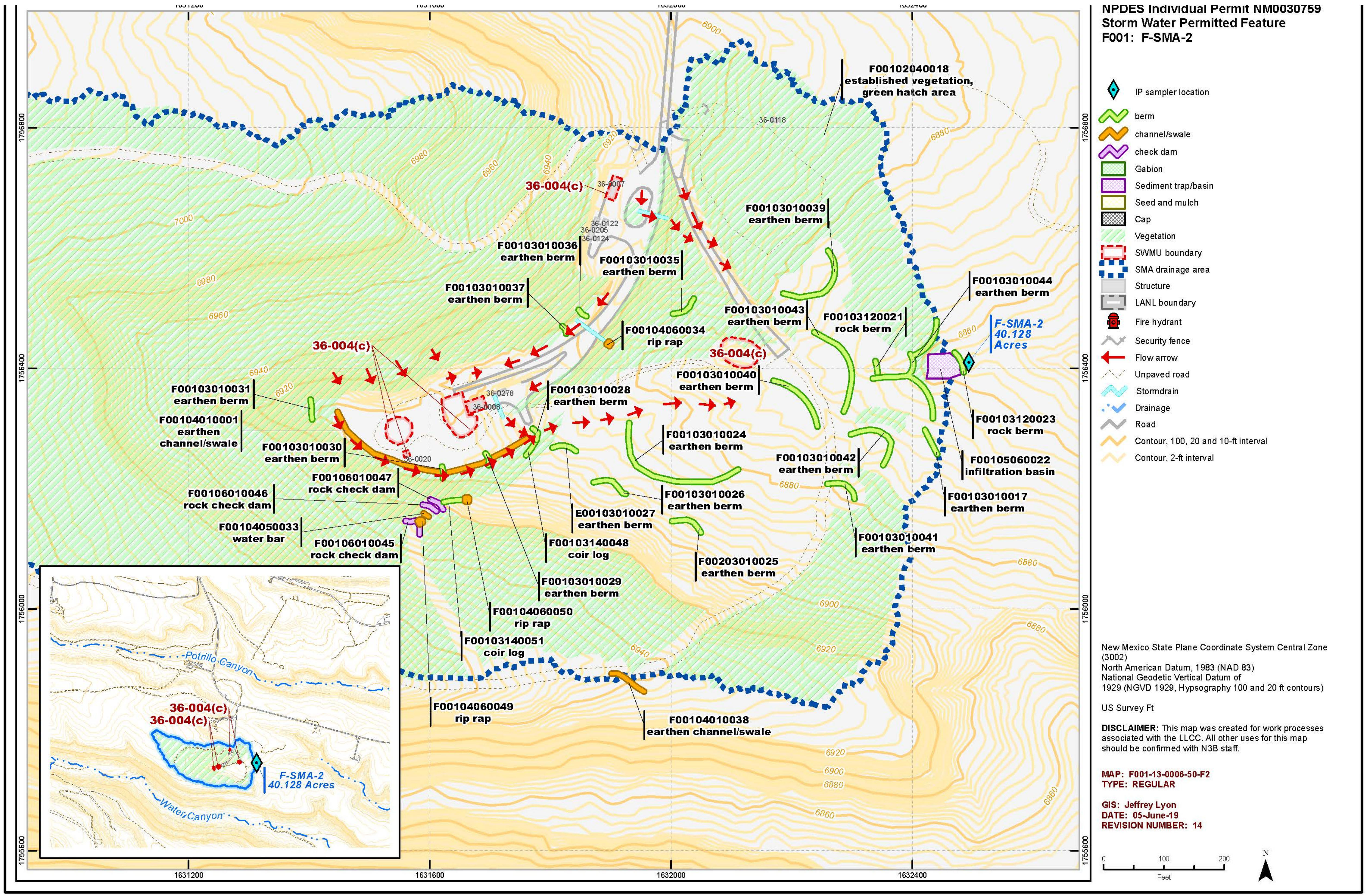


Figure 4.2-1. Drainage Control Features Near the TA-36-8 OD Unit.

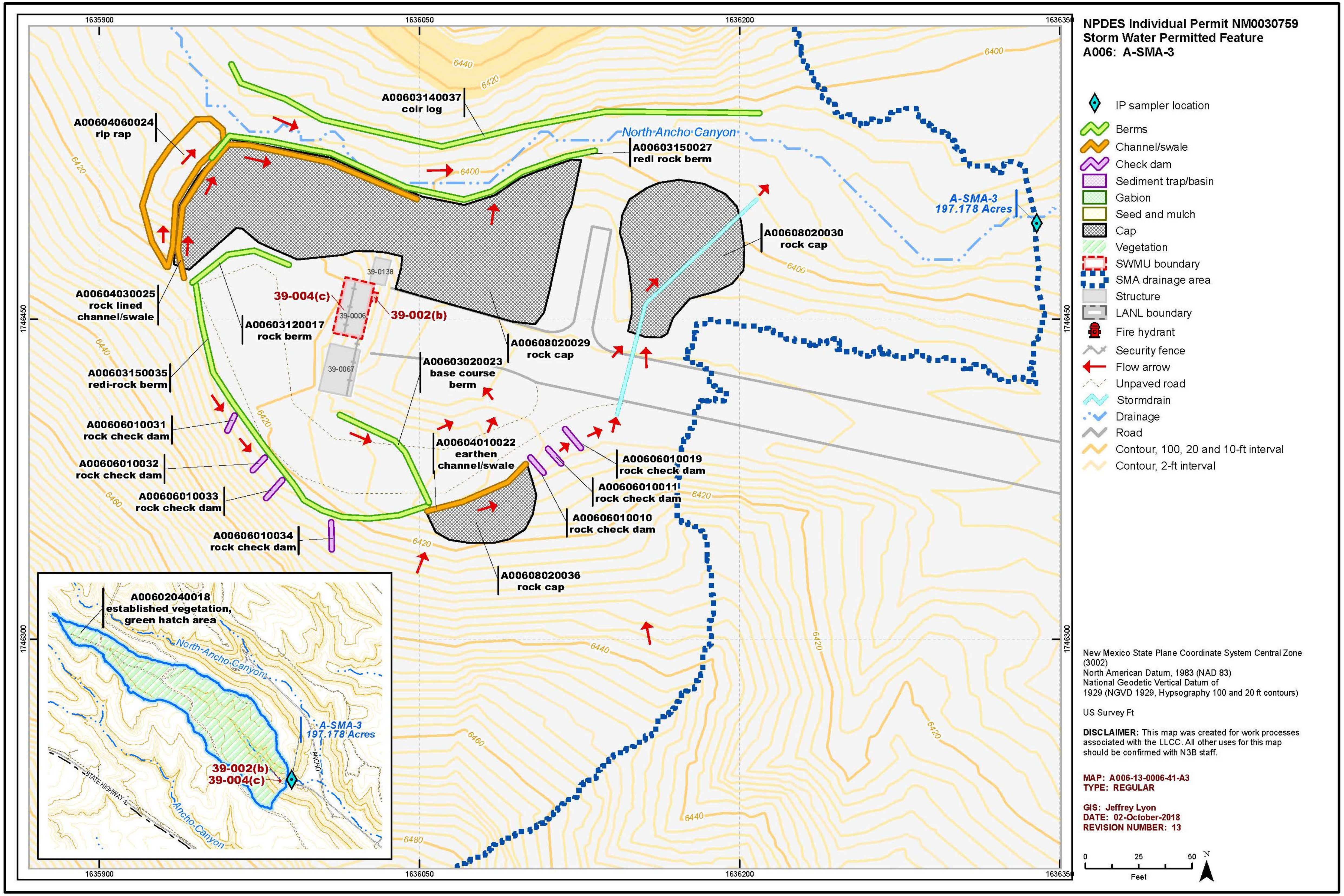


Figure 4.2-2. Drainage Control Features Near the TA-39-6 OD Unit.

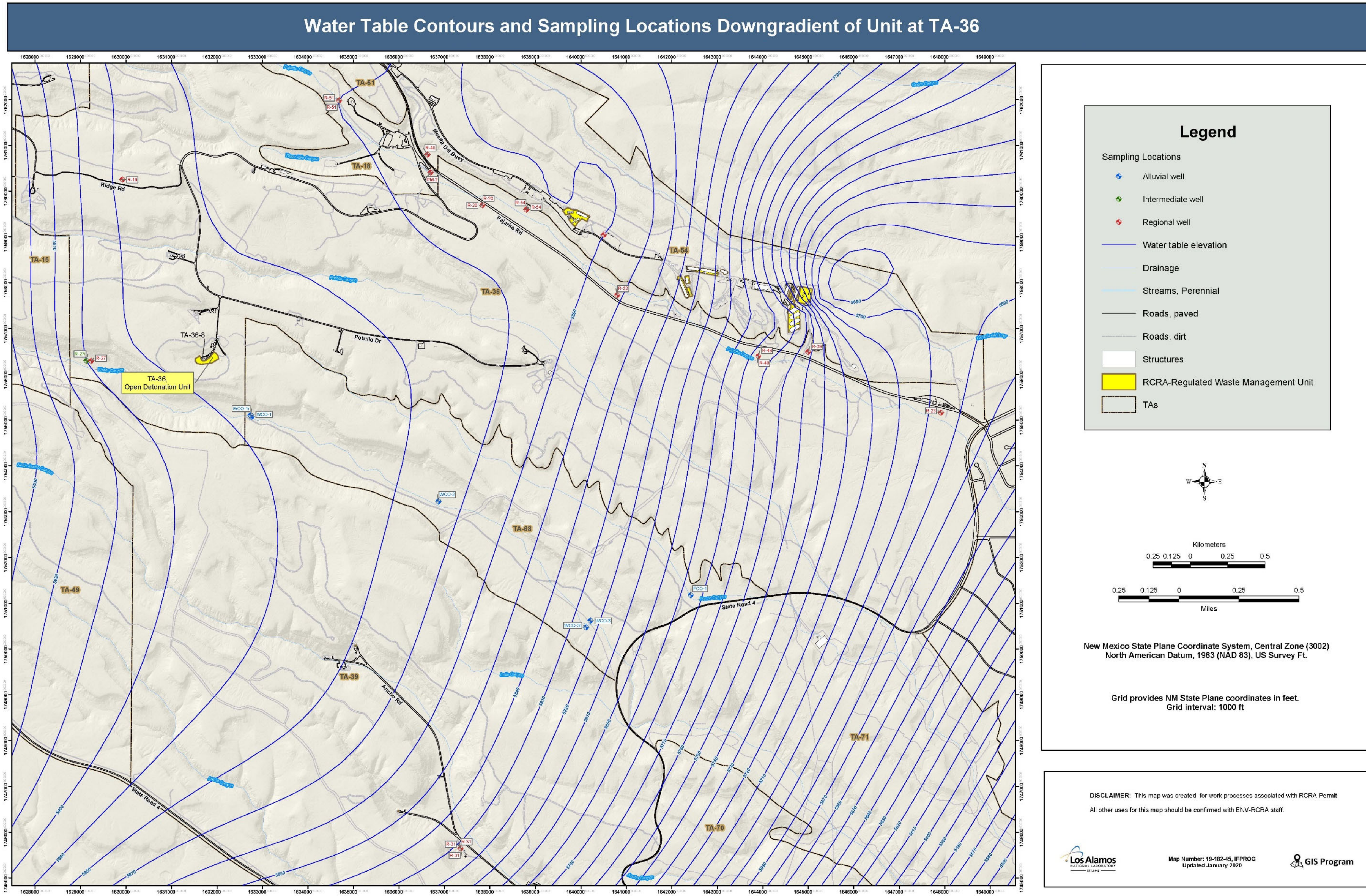


Figure 4.2-3. Water Table Contours and Sampling Locations Downgradient of Unit at Technical Area 36

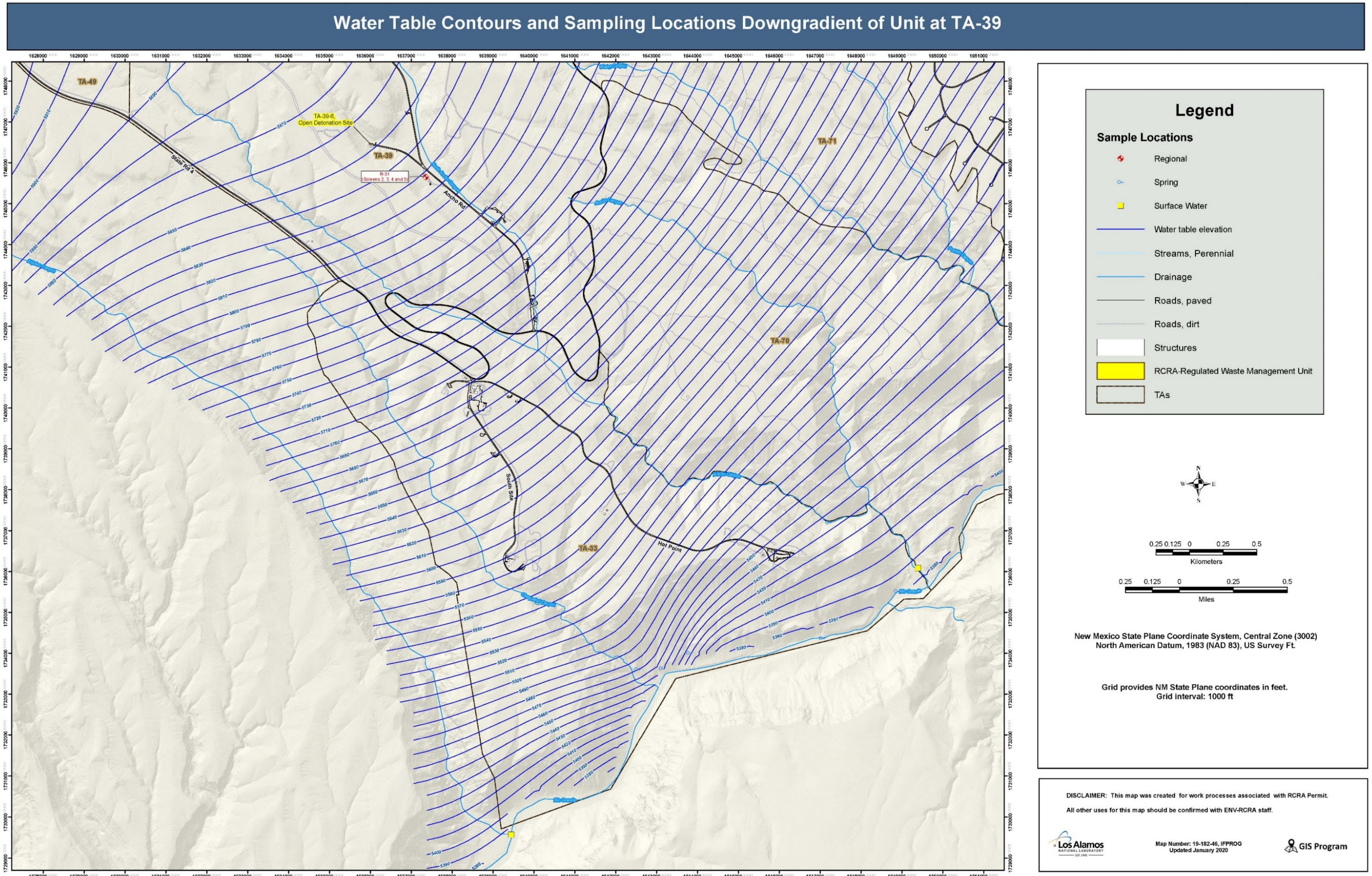


Figure 4.2-4. Water Table Contours and Sampling Locations Downgradient of Unit at Technical Area 39

Supplement 4-3

Screening Level Air Modeling Analysis and Risk Evaluation for Open Detonation Operations

LA-UR-20-24479

Screening Level Air Modeling Analysis and Risk Evaluation for Open Detonation Operations

for

Los Alamos National Laboratory

Operated by:

Triad National Security, LLC

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

Owned by:

U.S. Department of Energy

National Nuclear Security Administration

Office of Los Alamos Site Operations

Los Alamos, New Mexico 87544

Contents

List of Tables

List of Figures

List of Attachments

List of Acronyms

AIEC	acute inhalation exposure concentrations
CCS	Chemical Compliance Systems, Inc.
DOE	U.S. Department of Energy
EF	emission factor
EPA	U.S. Environmental Protection Agency
ESL	ecological screening level
GLC	ground level concentration
LANL	Los Alamos National Laboratory
NAAQS	National Ambient Air Quality Standards
NMAAQS	New Mexico Ambient Air Quality Standards
NMED	New Mexico Environment Department
OBODM	Open Burn Open Detonation Model
OD	open air detonation
REL	Reference Exposure Levels
RSL	Regional Screening Level
SL	Screening Level
SR	State Road
SSL	Soil Screening Levels
TA	Technical Area

1.0 Introduction

This report describes the air modeling analysis and risk evaluation for open detonation (OD) operations conducted at Technical Area (TA) 36 and TA-39 located at Los Alamos National Laboratory (LANL). The purpose of this air modeling exercise is to develop reasonable estimates of air quality impacts from OD treatment operations at these units.

LANL is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The facility and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The facility is owned and co-operated by the U.S. Department of Energy (DOE) and Triad National Security, LLC. The location of LANL and the OD units addressed in this report is shown in Figure 1-1.

1.1 Description of the OD Units and Operations

TA-36 is located in the east-central portion of LANL and is spread over several mesa tops between a branch of Pajarito Canyon to the north and Water Canyon to the south. Mesa-top elevations at TA-36 range from approximately 6,380 to 7,120 feet above mean sea level. TA-36 contains an OD unit, several firing sites, and supporting offices where research is conducted with various types of explosives. The OD unit at TA-36 is located in the southern portion of TA-36 near Building TA-36-8 and is shown in Figure 1-2. The TA-36-8 OD unit consists of an irregularly shaped, sand- and grass-covered area that measures approximately 500 feet east to west and 300 feet north to south. The western portion is relatively flat; the eastern portion is concave to minimize fragment dispersion. The TA-36-8 OD unit may be used to treat solid and liquid hazardous explosive waste.

The TA-36-8 OD unit has a maximum treatment capacity of 2,000 pounds of explosive waste per detonation. Due to preparation time and monitoring requirements at this unit, only one detonation is performed per hour. The unit is used primarily for nontreatment-related experimental test detonations and may occasionally be used for treatment of hazardous explosive waste. Following waste placement at the unit, detonation operations are conducted from Building TA-36-8, the control building.

TA-39 is located in the southern portion of LANL and includes much of the mesa between Water Canyon to the north and Ancho Canyon to the south. Mesa-top elevations at TA-39 range from approximately 6,500 to 7,000 feet above mean sea level. The area was established in 1959 for testing of explosive materials and has been used continuously for that purpose. The OD unit at TA-39 consists of a relatively flat, sand-covered area that measures approximately 40 feet by 40 feet in a canyon bottom. Steep canyon walls rise to heights of 100 feet or more in the immediate vicinity of the OD unit, roughly forming a semicircle around the unit. Additionally, the area has recently been reconfigured to have a retaining wall in front of the canyon wall. The canyon and retaining walls serve to attenuate the force of the detonations. The OD unit at TA-39 is associated with Building TA-39-6 as shown in Figure 1-3. Building TA-39-6 is a reinforced concrete structure extending partially beneath the detonation area. The TA-39-6 OD unit may be used to treat solid and liquid hazardous explosive waste.

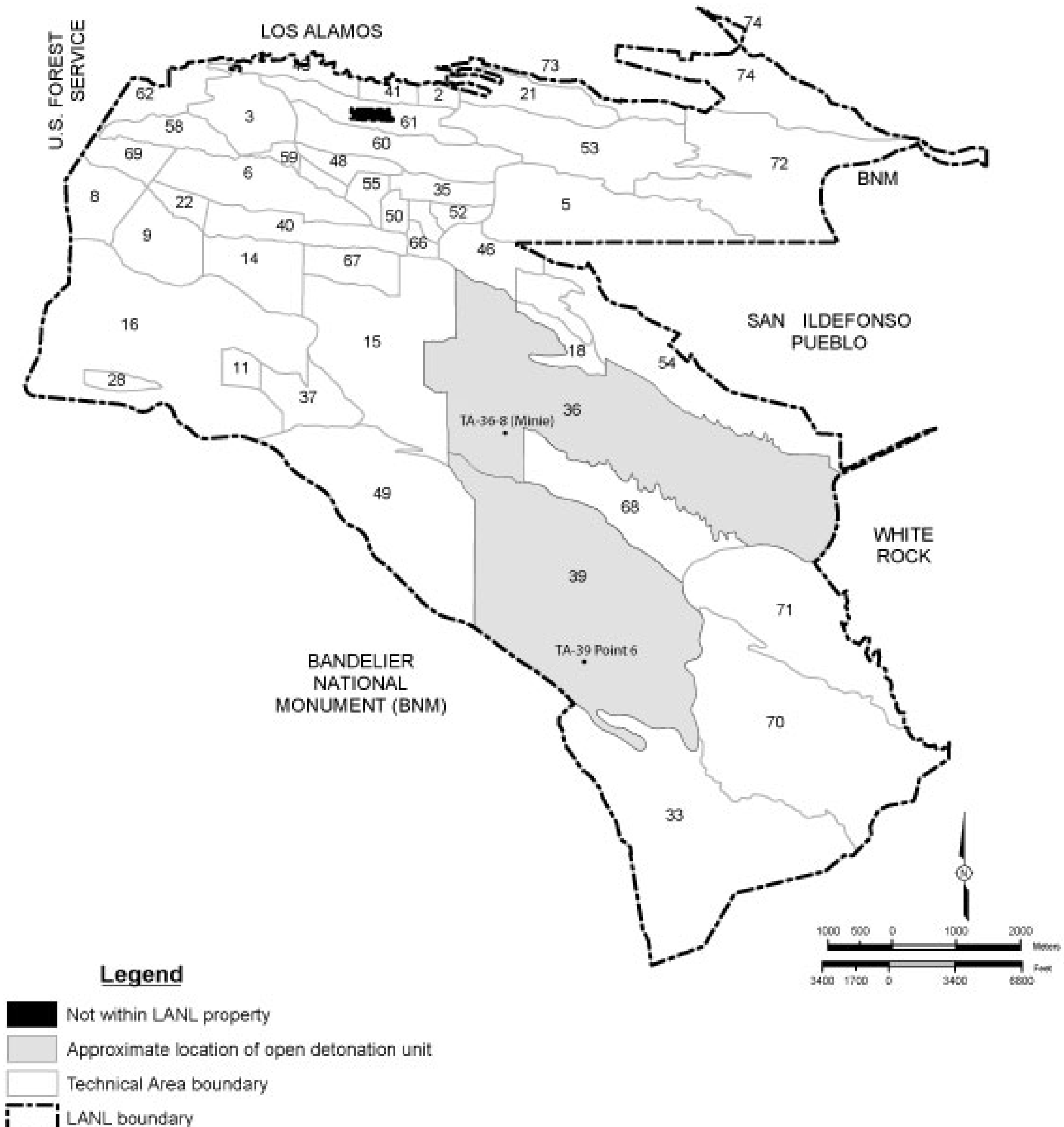


Figure 1-1
Location Map of Open Detonation Units at Los Alamos National Laboratory

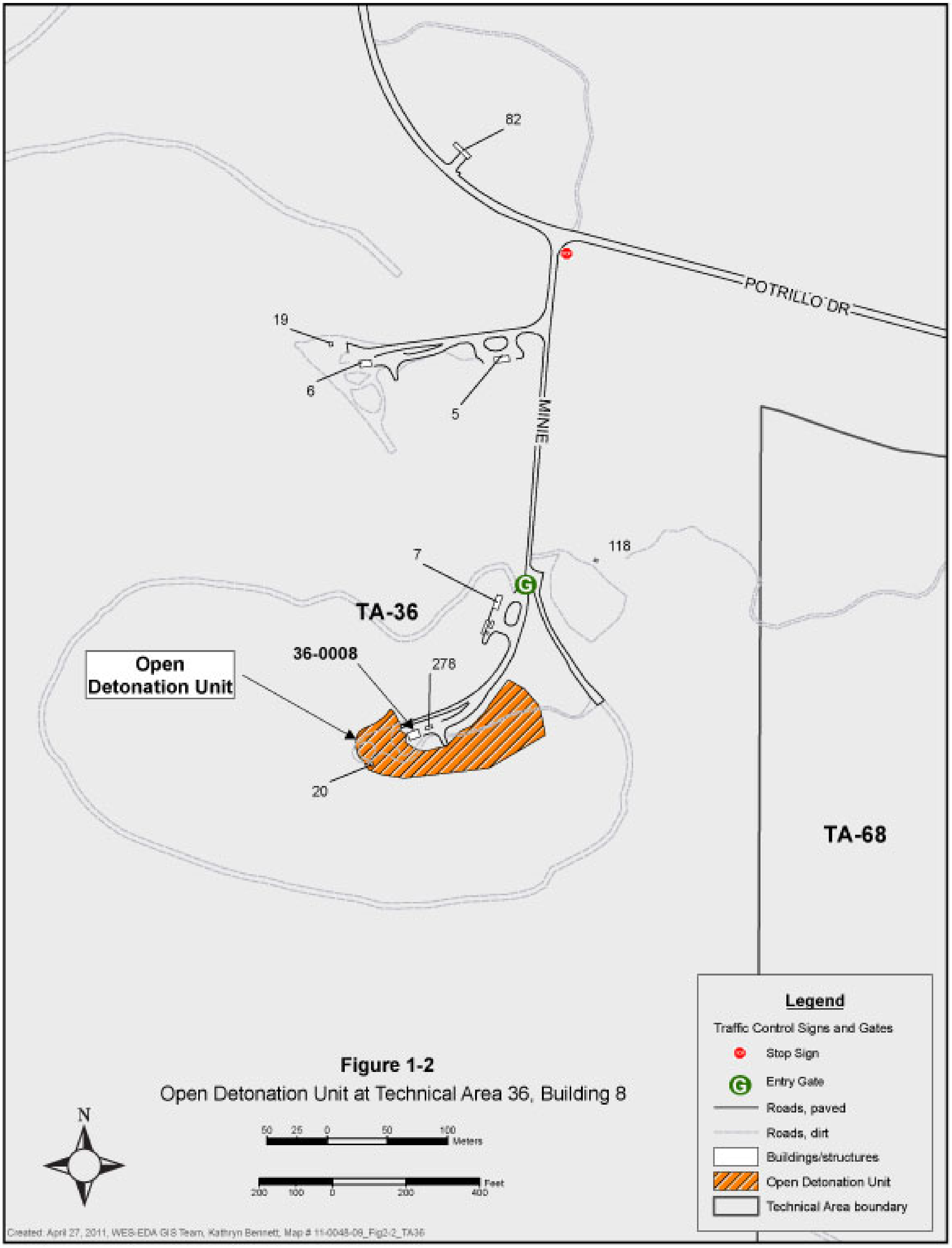


Figure 1-2
Open Detonation Unit at Technical Area 36, Building 8

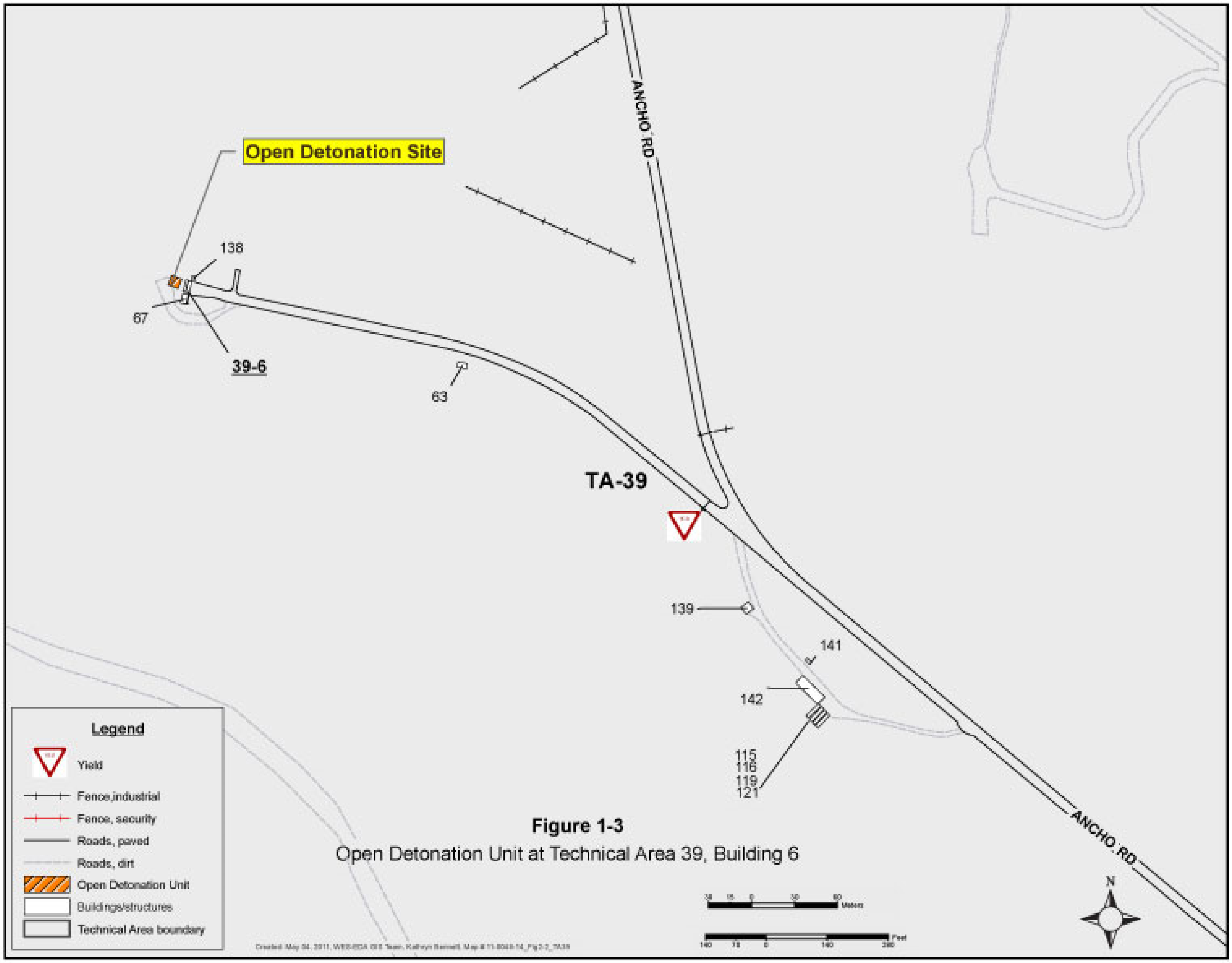


Figure 1-3
Open Detonation Unit at Technical Area 39, Building 6

The TA-39-6 OD unit has a maximum waste treatment capacity of 250 pounds of explosive waste per detonation. Up to four detonations may be performed per hour. The unit is used primarily for nontreatment-related experimental test detonations and may occasionally be used for treatment of hazardous explosive waste. Following waste placement at the unit, detonation operations are conducted from Building TA-39-6 (the control building).

1.2 Waste Treated Through Open Detonation

OD operations are necessary for hazardous waste treatment to remove the characteristic of reactivity. Treatment by OD renders hazardous waste nonreactive and any infrequent residue amenable to handling and dispositioning. Nontreatment-related experimental test detonations (i.e., shots) are also currently performed at these locations.

Solid and liquid hazardous explosive waste may be treated (i.e., open detonated) at the unit. Waste streams treated through OD include the following:

- Excess explosives varying from large pieces of explosives, small amounts of standard explosives, and developmental explosives;
- Detonators, initiators, and mild detonating fuses that may be in metal or plastic casings and may contain lead-based primaries or be in a lead sheath;
- Shaped charges and test assemblies with metal or plastic liners, sheaths, or holders;
- Projectiles and munitions that may be larger than 50 caliber or smaller caliber ammunition that is damaged;
- Pressing molds that are contaminated with explosives;
- Explosives-contaminated waste generated in laboratories, make-up rooms, and at the firing site; and
- Black powder or gun powder.

The listing above breaks up the two basic categories of explosives that may be managed at the OD treatment units. One category consists of explosives-contaminated waste and another category consists of explosive waste. Most of the waste treated at the OD units is explosive waste.

Explosives-contaminated waste includes make-up room (also called preparation room) wastes, laboratory wastes, contaminated molds, firing site debris, and decommissioning and demolition waste. Make-up room waste and laboratory waste consist of explosives-contaminated waste, such as paper towels, swabs, and similar materials that contain no tangible pieces of explosives but are used in the preparation of shots in the make-up building or as part of research and development processes. Firing site debris that consists of wood scraps, cardboard, burlap, Plexiglas®/Lexan®, plastic, glass, styrofoam, electrical cables, and metallic foils used for pin switches or metals such as target plates is not generally explosives contaminated; however, occasionally potentially explosives-contaminated firing site debris can be generated. If the debris is explosives-contaminated and not rendered safe immediately, it is stored in the satellite accumulation area within the make-up building and treated as soon as possible. Decommissioning and demolition waste can come as buildings are upgraded or removed from service. These wastes may be metal or glass piping that is not amenable to steam cleaning or open burning. Firing site debris could also include corrective action wastes or wastes generated as a result of investigation or remediation in the future. Other explosives-contaminated waste includes molds and other materials used in manufacturing high explosives parts that may become contaminated and cannot be steam cleaned.

Explosive waste includes identifiable excess explosives that are safe to handle. It includes explosives assemblies and explosives, identifiable booster charge scrap, and any other process or cleanup wastes that are believed to be potentially reactive. Waste containers for explosives-contaminated waste and explosive waste generally consist of plastic bags or paper-lined cardboard boxes. These wastes make up most of the waste treated through OD at LANL. Up to 90% of the wastes treated within a year are excess explosives. Munitions, detonators, projectiles, and initiators make up an estimated annual quantity of approximately 2% of waste treated through OD.

2.0 Air Dispersion Modeling

Air dispersion modeling was conducted to estimate the ground level concentrations (GLC) that occur downwind following an OD event. The GLC is required to compare potential air quality impacts of OD operations with health-based screening levels for air and soil. Dispersion modeling is a standard technique accepted by the U.S. Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) to estimate downwind concentrations.

2.1 Model Selection

The NMED specified this analysis should be conducted using the Open Burn and Open Detonation Model (OBODM). The U.S. EPA has approved the use of OBODM for modeling open burning/open detonation operations. Previously, NMED used OBODM to model air emissions from LANL's TA-16 Burn Ground during the Resource Conservation and Recovery Act permit application process.

Models such as OBODM are used for predicting downwind concentrations assume dispersion follows a uniform Gaussian distribution within the plume. In reality, atmospheric dispersion is far more complex and dependent on unique source and terrain features than a model is capable of considering. Nevertheless, dispersion models are a long accepted tool to assess source impacts for regulatory purposes.

Considering numerous studies over time, the U.S. EPA states in Title 40 of the Code of Federal Regulations 51, *Appendix W – Guideline on Air Quality Models* that models are reasonably reliable for estimating the magnitude of the highest concentrations occurring within an area. Errors in the highest estimated concentrations of plus or minus 10 to 40 percent are found to be typical. However, estimates of concentrations that occur at a specific time and location are less reliable. Models are also more reliable in estimating longer time-averaged concentrations, such as annual averages, than for estimating short-term concentrations at specific locations.

OBODM is intended for use in evaluating the potential air quality impacts of the open-air burning and detonation of obsolete munitions and solid propellants at U.S. Department of Defense and DOE installations (Bjorklund, et al., 1998a). OBODM predicts the downwind transport of pollutants using cloud rise and dispersion model algorithms from existing dispersion models. A complete description of the plume rise and dispersion algorithms used in OBODM is found in Volume II of the user's manual (Bjorklund, et al., 1998b). The OBODM allows for a simplistic representation of local meteorology and includes a screening-level complex terrain algorithm. All OBODM source and receptor locations are defined relative to a rectangular or a polar coordinate system in which north (0 degrees) is the positive Y-axis and east (90 degrees) is the positive X-axis. All vertical (z) coordinates are heights above ground level except when the OBODM complex terrain screening mode is used, in which case the z coordinates are terrain heights above mean sea level.

2.2 Methodology Steps

OBODM runs were conducted to determine the maximum GLC for acute and chronic exposures. Emission factors (EFs) for specific contaminants generated by OD operations were then applied to model results to obtain concentrations for comparison to ambient air quality standards and health screening levels. The methodology was comprised of the following steps:

1. For each detonation site, a source strength model input file was prepared for short-term GLCs using the maximum hourly waste quantity for each site. The input file contained the maximum waste quantity for each hour from 8 AM to 5 PM for each day of the year.
2. Using a one-year continuous hourly on-site meteorological data set, OBODM was run for each site using the hourly source strength file for the short-term 1-, 3-, 8-, and 24-hour averaging periods.
3. The hourly model results were used to create a source strength input file for estimating annual or chronic GLCs. In a descending order, maximum hourly waste quantities were assigned to the hours of the year with the highest predicted GLC from the hourly model runs. This was done until the sum of the hourly values equaled the maximum annual waste quantity.
4. OBODM was run for each site using the annual source strength file and the same one-year on-site meteorological data set for the annual averaging period.
5. In each model run, the contaminant emission rate was set at 1 gram per second (1 g/sec). Thus, the maximum GLC predicted was for a contaminant emission rate of 1 g/sec. The maximum GLC over the 1-g/sec emission rate, referenced as the X/Q value, has units of $\mu g/m^3$ per 1 g/sec.
6. EFs together with maximum waste quantities were used to calculate the emission rate in g/sec for each specific pollutant or contaminant projected to occur from a detonation.
7. Contaminant-specific GLCs for all averaging periods were calculated by multiplying the model result X/Q value ($\mu g/m^3$ divided by g/sec) times each chemical-specific emission rate (g/sec).
8. The calculated GLCs were compared to ambient air quality standards and health risk screening levels.

2.3 Model Input Values

The input values used in the model runs are summarized in Table 2-1. The fuel heat content specified is representative of the range of wastes treated. The fuel quantities are maximum hourly and annual values. Note that for the TA-39-6 site, the hourly waste quantity for one detonation was used. Since it is possible to have four detonations per hour at this site, model results were then scaled upwards by a factor of four. Selection of the instantaneous emission type in model setup resulted in the model calculated fuel burn rate of 2.5 seconds. The fuel burn rates were calculated from the hourly fuel quantity divided by the fuel burn time. The release height was not specified. Instead, the model option using OBODM to calculate this value was selected.

Table 2-1
Model Input Values

Parameter	TA-36-8	TA-39-6
Fuel Heat Content, cal/g	1,000	1,000
Hourly Fuel Quantity, lbs	2,000	250
Annual Fuel Quantity, lbs	15,000	15,000
Fuel Burn Time, sec	2.5	2.5
Fuel Burn Rate, lb/s	800	100
Fuel Burn Rate, g/sec	362,874	45,359
Contaminant Emission Rate, g/sec	1	1

2.4 Meteorological Data

LANL maintains a network of on-site meteorological stations that is adequate to predict maximum downwind concentrations from open detonation operations when using a full year of meteorological data. The centrally located TA-6 station is the official meteorological station for LANL and data from it are reported to the National Weather Service. The station consists of a 92-meter tower that is instrumented for wind and temperature at four levels. A one-year continuous hourly record from this station was used in the model input. This data set has been approved for use by NMED and was used by NMED in the modeling and health screening for the TA-16 Burn Ground. Elevations of the open detonation sites are 6,895 feet for TA-36-8 and 6,422 feet for TA-39-6 and the elevation of the TA-6 Meteorological Station is 7,424 feet. The use of an official meteorological station consistently lessens uncertainty and increases the ability to compare current, previous, and future modeling.

Figure 2-1 illustrates daytime and nighttime wind rose diagrams for the meteorological stations at LANL. The TA-6 tower and associated near-surface instrumentation are located on the Pajarito Plateau in an east-west meadow on Two-mile Mesa. The TA-6 meteorological station is sited on a mesa top and is surrounded by sparse vegetation that is similar to each of the open detonation sites. The fetch within a few hundred meters of the tower is over short grasses and widely scattered low shrubs. The roughness length, based on turbulence, varies from 0.4 m to 0.8 m depending on wind direction.

Open detonations are restricted to daytime only; however, both day and night are included on Figure 2-1. Comparing the wind rose for the TA-6 and TA-49 stations that are included on Figure 2-1, winds are predominantly from the south-southwest for each station. Overall, the two wind roses are quite similar in all respects for each of the 16 wind directions which are plotted. There is no meteorological data measured or collected at the detonation sites themselves. Although the TA-49 meteorological station is physically closer to the two open detonation sites than the TA-6 tower, meteorological data from the TA-6 station was used as input, as it is the official station for LANL. The stations are sited on mesa tops at similar elevations, both surrounded by similar sparse vegetation, and elevations for the stations are similar.

Table 2-2 below contrasts the physical location of the relationship of the two closest towers to the two OD sites.

Table 2-2

Comparison of LANL Meteorological Stations at TA-6 and TA-49

Parameter	TA-6 Station	TA-49 Station
Elevation, feet	7,424	7,045
Surrounding Vegetation	Short grasses/scattered shrubs	Short grasses/scattered shrubs
Distance to TA-36-8, miles	3.2	1.5
Distance to TA-39-6, miles	5.2	2.1

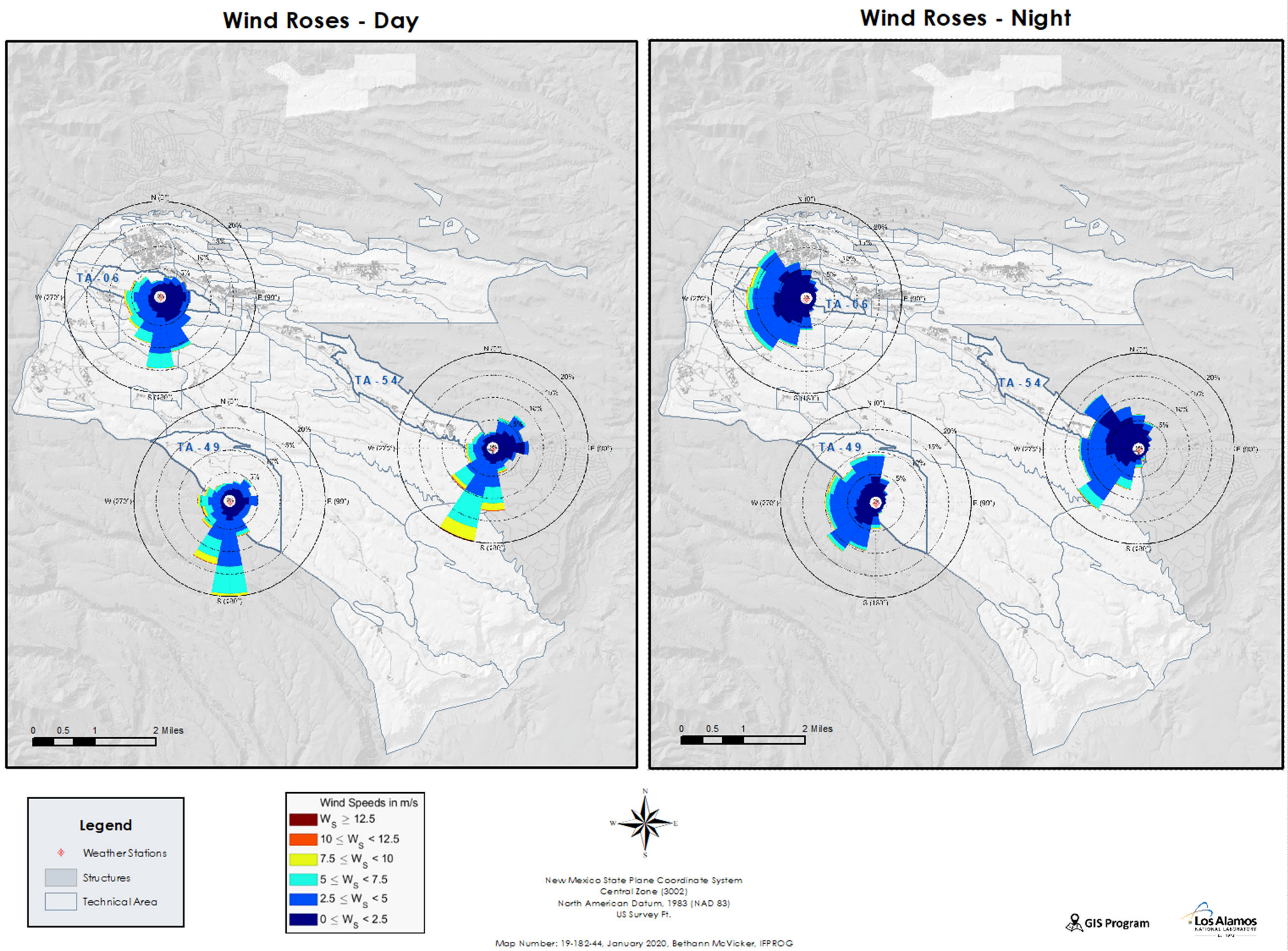


Figure 2-1
Annual Wind Rose Diagrams for Meteorological Stations at Los Alamos National Laboratory

2.5 Receptors

Receptors with terrain elevations were established to ensure the maximum downwind concentrations were captured in the model runs. A Cartesian receptor grid was set up for each detonation site with the site being the center point of a 1,000- by 1,000-meter grid with 100-meter spacing between receptors. Public receptors included nearby roadways, recreation areas, schools, hospitals, and tribal land. A list of public receptors is shown in Table 2-2.

Figure 2-2 shows the LANL property boundary, roadways, and the receptors used in the analysis. LANL property is shaded darker than the surrounding land in the figure. The two sites and associated receptor grids are indicated in the black grid squares with TA-36 north of the TA-39 site. Public receptors are indicated in yellow.

Table 2-2
Public Receptors

Receptor	X-Coordinate[1] (meters)	Y-Coordinate[1] (meters)	Elevation[2] (feet)
Bandelier Entrance at State Road (SR) 4	384789.7	3962060.7	2031.2
Bandelier Visitor Center	385202.9	3960086.4	1845.1
Midpoint 2 OD Sites	385071.3	3964015.1	2058.1
TA-36-8 Proximity	384473.6	3965417.7	2117.9
San Ildefonso West of SR 4	388891.3	3967279.6	2006.7
White Rock Overlook Park	393146.0	3965274.7	1911.6
Piñon Elementary School, White Rock	390207.5	3964769.6	1981.0
Royal Crest Trailer Park	382432.8	3970723.1	2228.0
Los Alamos Medical Center	381001.8	3971679.6	2226.7
West Jemez Road	377585.0	3969284.5	2386.7
Ponderosa Campground	377386.1	3966238.8	2311.2
TA-39 Entrance	386855.8	3961142.4	1916.8
LANL SE Boundary	388723.0	3958724.3	1643.8
SR 4 SE	387161.9	3961999.5	1993.5
SR 4 SE	387131.3	3963223.8	1952.0
SR 4 SE	388019.0	3963805.4	1985.6
Pajarito Rd	388416.9	3965488.9	2003.9
Pajarito Rd	386702.8	3966284.8	2035.8
Pajarito Rd	385417.2	3967692.8	2130.0
Pajarito Rd	383764.3	3968549.8	2180.4
Pajarito Rd	382142.0	3969498.7	2220.6
West Jemez Rd	377367.0	3967907.1	2364.6
West Jemez Rd	378132.2	3970600.7	2406.3
SR 4 SW	383427.6	3962917.7	2105.2
SR 4 SW	382264.4	3964080.9	2156.9
SR 4 SW	380948.2	3965427.7	2208.7
SR 4 SW	379142.3	3966223.5	2260.6

[1] All Universal Transverse Mercator (UTM) coordinates are based on the datum, North American Datum (NAD) 83.

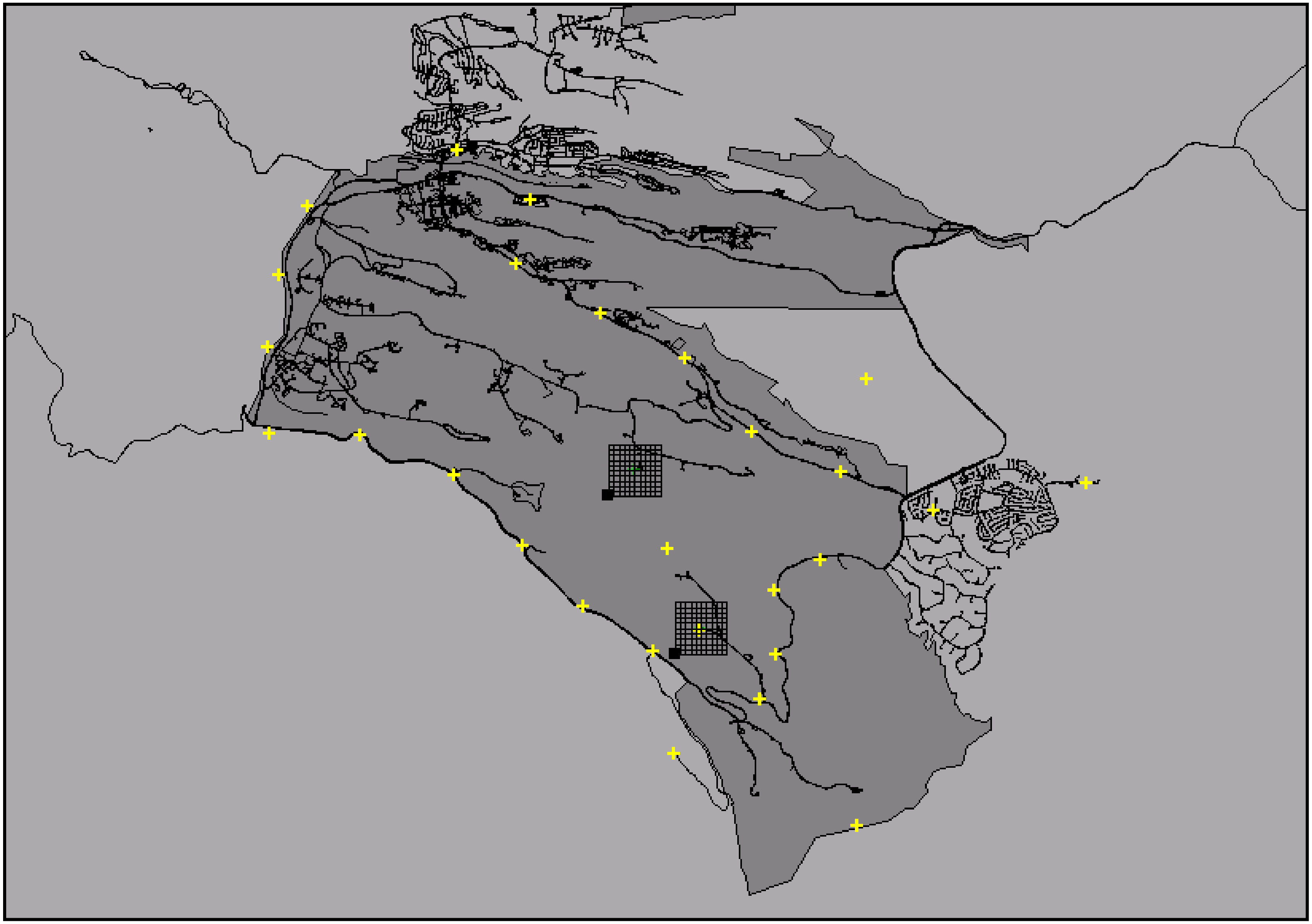


Figure 2-2
Location of Public Receptors and Receptor Grids

2.6 Model Methodology Description

OBODM runs were conducted for each site to determine the maximum 1-, 3-, 8-, and 24-hour and annual air concentrations. The annual air concentration was used to calculate the 10-year soil concentration from pollutant deposition. Details of the technical approach are provided below.

OD operations at TA-36 and TA-39 occur from 8 AM to 5 PM local time in the summer and from 9 AM to 4 PM in the winter. At TA-36-8, up to 2,000 lbs of high explosives waste is treated in each open air surface detonation; and a maximum of 15,000 lbs of waste per year. Due to preparation and radiation monitoring requirements, only one shot per hour is conducted. At TA-39-6, up to 250 lbs of high explosives waste is treated per open air surface detonation—and a maximum of 15,000 lbs of waste per year. Because preparation times are less, four shots may be conducted in an hour.

Typically, only one detonation occurs daily. However, to ensure the maximum hourly concentration was captured; all hours of the year from 8 AM to 5 PM were modeled. This was done by using as input a source strength file with the maximum hourly high explosives waste quantity for each site of 2,000 lbs for TA-36 and 250 lbs for TA-39 for each hour from 8 AM to 5 PM. All other hours were specified as 0 lbs of waste. In the calculations comparing model results to health screening levels, the hourly concentration for TA-39 was scaled upwards by a factor of four to account for the potential of four detonations in one hour for that site.

To ensure the maximum annual air concentration was captured by the analysis, annual source strength files for each site were created based on the results of the hourly model run. Using an annual file with 8,760 hours per year, hourly waste quantities were placed within the file for the hour of the year, which corresponded to the hours that showed the highest concentrations in the hourly model runs. This was done in a descending manner starting with the hour showing the highest concentration and moving down the hourly results until the annual waste quantities of 15,000 lbs/yr were reached.

In all model runs, a 1-g/sec contaminant emission rate was specified. The contaminant for model purposes was non-specific. The model results for this analysis were not dependent on specification of a particular contaminant or pollutant. The model does not consider any reactivity or unique characteristic of a pollutant as it travels downwind for the emission source. Although within OBODM a user can specify the molecular weight for a specific pollutant, the value is only used by the model if results are requested in terms of parts per million, which was not the case in this analysis where results in $\mu g/m^3$ were used.

Plume rise was calculated for each hour of each day by OBODM. The maximum one hour concentration predicted for the TA-39-6 site occurred on March 1 (Day 60) of the annual data set at a time of 0800. The plume rise present for this maximum concentration was 88.7 meters. This maximum impact was projected to occur on LANL property approximately 360 meters from the detonation site and within the canyon surrounding the site.

Overall, four model runs were conducted. Each run was conducted using the appropriate source strength file described above, the one-year hourly meteorological data set from the LANL TA-6 Station, and the receptors described in Section 2.5. Table 2-3 summarizes the four scenarios modeled.

Table 2-3

Four Modeling Scenarios

OD Site	Averaging Time	Waste Quantity	Input/output File Name[1]
TA-36-8	1, 3, 8, and 24 hours[2]	2,000 lbs	ODTA36V.INP ODTA36V.OUT
TA-36-8	Annual	15,000 lbs[3]	ODTA36A1.INP ODTA36A1.OUT
TA-39-6	1, 3, 8, and 24 hours	250 lbs	ODTA39V.INP ODTA39V.OUT
TA-39-6	Annual	15,000 lbs	ODTA39A4.INP ODTA39A4.OUT

[1] OBODM input and output files, the accompanying hourly source strength files, and the model-ready meteorological data file have been provided to the NMED in electronic format for review purposes.

[2] The 1-, 3-, 8-, and 24-hour averaging periods were needed to assess compliance with ambient air quality standards for those averaging times.

[3] The annual source strength file for this site had 8 hours with 2,000 lbs per hour rather than use of a single hour with 1,000 lbs waste to produce a 15,000-lb total. Thus, the maximum concentration is conservative.

2.7 Model Results

The maximum GLCs from each model run are shown in Table 2-4 together with the X and Y coordinates where each maximum occurred. All UTM coordinates used in the analysis are based on the datum North American Datum (NAD) 83. The elevation for each receptor is listed in Table 2-2. All maximum GLCs occurred close to the detonation sites on LANL property at receptors within the 1,000- by 1,000-meter receptor grids centered on the detonation sites. The highest single GLC for the nearby public receptors is also shown. The high public receptor value is one to two orders of magnitude lower than the maximum GLC on LANL property. The values shown represent results using the 1-g/sec contaminant emission rates. Specific concentrations for individual pollutants were calculated using these results. Each of these locations with the predicted maximum GLC is shown on Figures 2-3 and 2-4.

Table 2-4
Maximum Ground Level Concentrations By Location and Averaging Times

OD Site / Averaging Times	Maximum GLC ($\mu g/m^3$)	X-Coordinate (meters)	Y-Coordinate (meters)	Public Receptor Maximum GLC ($\mu g/m^3$)	Public Receptor Location
TA-36-8		384428.8	3965530.0		
1-hour	2.37×10^{-1}	384030.0	3965830.0	7.67×10^{-3}	West Jemez Rd
3-hour	8.21×10^{-2}	384230.0	3965730.0	4.26×10^{-3}	Midpoint 2 OD Sites
8-hour	3.30×10^{-2}	384330.0	3965630.0	2.28×10^{-3}	Pajarito Rd
24-hour	1.22×10^{-2}	384330.0	3965630.0	7.87×10^{-4}	Pajarito Rd
Annual	6.16×10^{-5}	384130.0	3965730.0	3.87×10^{-7}	West Jemez Rd
TA-39-6		385714.0	3962501.0		
1-hour	1.54	385414.0	3962701.0	6.53×10^{-2}	Bandelier Entrance SR4
3-hour	6.53×10^{-1}	385714.0	3962701.0	2.81×10^{-2}	Bandelier Entrance SR4
8-hour	5.68×10^{-1}	385714.0	3962701.0	1.93×10^{-2}	Bandelier Entrance SR4
24-hour	1.89×10^{-1}	385714.0	3962701.0	6.42×10^{-3}	Bandelier Entrance SR4
Annual	1.79×10^{-3}	385614.0	3962401.0	4.83×10^{-5}	Bandelier Entrance SR4

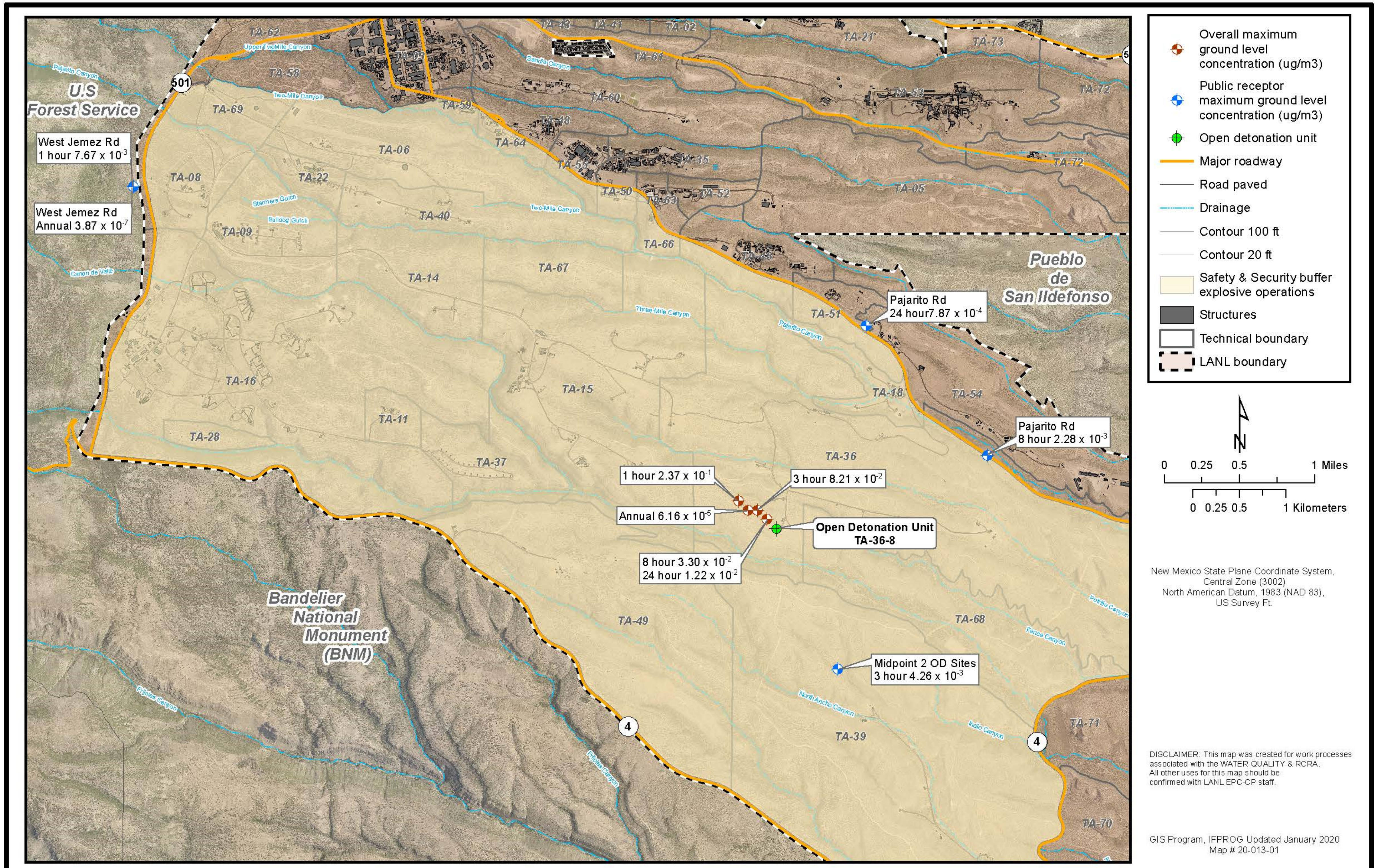


Figure 2-3
Locations of Highest Predicted Ground Level Concentrations from TA-36-8 Open Detonation Unit

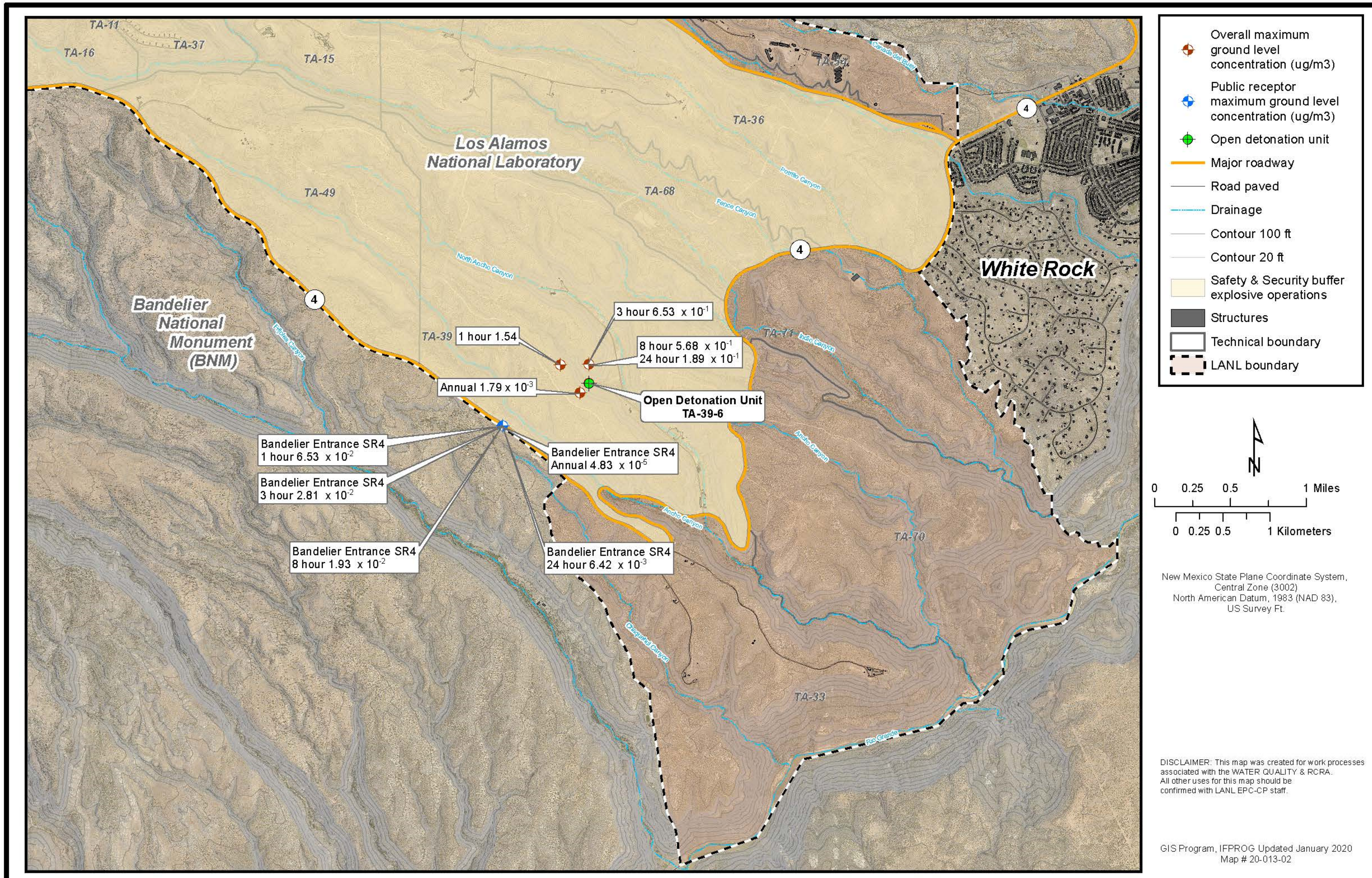


Figure 2-4
Locations of Highest Predicted Ground Level Concentrations from TA-39-6 Open Detonation Unit

3.0 Emission Factors

Waste streams treated through OD are described in Section 1.2 of this document. After review of the operating record, it was determined that wastes treated during calendar year 2006 were varied and represented a data set that encompassed all waste streams and waste stream components expected to be treated at the units throughout the current and future waste treatment uses. For the treatment units, emission factors (EFs) were chosen based on the components within the waste streams treated in 2006 using the draft Chapter 16 for AP-42 (AP-42, 2009). The emission factors provided in AP-42, draft Chapter 16 are a summary of the data publicly available through 1995. Based on the draft Chapter 16, section 16.2.1, the emission factors were obtained from a series of emission characterization studies conducted on an open test range (OTR) and in a 32,900 ft^3, 50-ft diameter hemispherical detonation chamber. These studies were conducted at Dugway Proving Grounds, UT (DPG) between 1989 and 1995.

As stated draft Chapter 16, section 16.1.1, in 1988, the United States Army conducted a highly successful study using a detonation chamber at Sandia National Laboratories (SNL) in Albuquerque, NM. Based on the test results, DOD concluded that the plumes released when energetic materials are destroyed by OB and OD processes do not contain sufficient quantities of toxic or hazardous pollutants to pose a danger to human health or the environment. The study also concluded that the emission factors for the predominant EPs produced in the emissions tests were statistically equivalent to those produced in the DPG open range tests. That is, the EPs did not change substantially even when the quantity of energetic material detonated increased by a factor of 32,000.

In this document, the primary reference for emission factors (EF) is Table 16.2-14, Summary Statistics for the Detonation Data Sets. In this table, many of the units of measure for the Emission Products (EP) are expressed in such forms as lb/lb NEW (Net Explosive Weight), where NEW is the total weight of all explosives substances (i.e., high explosive weight, propellant weight, and pyrotechnic weight). Other listed EFs are provided as lb/lb N, lb/lb C, or lb/lb S, etc. These EFs allow a more reasonable and less conservative estimate of emissions if applied. For most of the modeling assessments to determine the environmental impacts, the amount of NEW, nitrogen, carbon or sulfur were not assessed in the LANL waste materials; however, the lb metal/lb waste was assessed for this application based on the waste assessments presented in Attachment A. The maximum amount of metals was assessed for computing the amount of metal emissions for these constituents. Otherwise, all other calculations were based on the total mass of explosive waste used in the detonation. Applying lb/lb explosive waste for the unit of measure in lieu of the specific EFs where lb/lb NEW, lb/lb N or lb/lb C, etc. are not known, increases the conservativeness of the estimate of environmental impact for the risk assessment, since the total mass of combined waste is greater than any one of the constituents, such as net explosive weight, carbon or nitrogen, etc. To add to the conservativeness of the estimates for environmental impact, LANL applied the maximum EF values listed in Table 16.2-14 rather than the mean value listed in the table.

Research on OD emissions at the Naval Air Warfare Center Weapons Division at China Lake, California, addressed the fate of metals from munitions during OD treatment operations (NAVAIR, 2004). This research showed that metal components of waste (e.g., casings, projectiles, platings, paints, coatings) do not melt or vaporize during OD, but rather fragment. During OD, explosives quickly transform from solid to high-temperature and high-pressure gases, which cause the metal components to fracture. The metal fragments are in contact with the hot gases, but not long enough to cause the metal to melt or vaporize. The metal fragments are accelerated outside of the detonation zone by the initial blast and are not exposed to the afterburning (fireball) phase of the detonation. The majority of metal components end up as fragments, with a minor proportion becoming particulates. In this regard, the emission calculations for metals is an overestimate of particulate by allowing the assumption that the fragment portion is modeled as particulate.

For CDD/CDF emissions, EPA (EPA, 2006) states there are three primary mechanisms for controlled combustion sources. The first mechanism is "pass through". This mechanism involves CDDs/CDFs contained in the feed passing through the combustor intact and being subsequently released into the environment. For most controlled combustor systems, this is not thought to be a major contributor to CDD/CDF emissions; however, for an uncontrolled open burn condition this may be otherwise.

The second mechanism (EPA, 2006) involves the formation of CDDs/CDFs from the thermal breakdown and molecular rearrangement of aromatic precursors either originating in the feed or forming as a product of incomplete combustion. Gaseous benzene is the most abundant aromatic compound associated with products of incomplete combustion of waste. Benzene reacts with Cl within the combustion gas plasma, causing aromatic H abstraction and the subsequent formation of chlorobenzenes and chlorophenols. Homogeneous gas-phase formation of CDDs/CDFs occurs from these precursor compounds at temperatures >500°C, catalyzed by the presence of copper compounds. In addition, the CDDs/CDFs can form from gas-phase precursors as heterogeneous, catalytic reactions with reactive fly ash surfaces. This reaction has been observed to be catalyzed by the presence of a transition metal sorbed to the fly ash. The most potent catalyst is $CuCl_2$. Relatively low temperatures—in the range of 200 to 450°C—have been identified as a necessary condition for these heterogeneous reactions to occur, with either lower or higher temperatures inhibiting the process.

Because these reactions involve homogeneous gas-phase and heterogeneous solid-phase chemistry, the rate of emissions is less dependent on reactant concentration than on conditions that are favorable to formation, such as temperature, retention time, source and species of chlorine, and the presence of a catalyst.

PCDD/Fs and their precursors actively arise within two temperature windows: between 500 and 800°C "homogeneous" pyrogenic routes proceed in the gas phase and the "heterogeneous" catalytic routes relate to entrained and deposited particles between 200 and 500°C (M. Zhang, et.al. 2017).

The third mechanism (EPA, 2006) for controlled combustion is *de novo* synthesis (from elemental carbon) involving the heterogeneous solid-phase formation of CDDs/CDFs in the post-combustion environment on the surface of fly ash. Such heterogeneous chemistry occurs in two ways: (1) directly from the oxidation of carbon within the fly ash and subsequent reactions with organic and inorganic chlorine, and (2) the oxidative breakdown of macromolecular carbon structures (e.g., graphite) and oxychlorination reactions of aromatic precursors (such as chlorobenzenes and chlorophenols) on fly ash surfaces, leading to CDD/CDF formation. In either case, formation kinetics is most favored at temperatures in the range of 200 to 450°C and is promoted by the catalytic properties of either the fly ash or the presence of a transition metal compound.

EPA (EPA, 2006) states that the second and third mechanisms (for controlled combustion processes) can occur simultaneously, share a number of common reaction pathways, and occur in the same physical environment, and they are controlled by many of the same physical conditions. In well-designed and well-operated combustion systems, the precursor species needed for the second mechanism are reduced; consequently *de novo* synthesis can become the dominant pathway for formation. In systems with incomplete combustion (such as open burning), it is difficult to sort out the relative contribution of these mechanisms to total emissions. The mechanisms, however, can be curtailed if steps are taken to minimize the physical conditions needed to support formation (i.e., time, temperature, and reactive surface).

Additional research conducted by the Navy at China Lake, California, addressed the formation of dioxins during OD treatment operations (NAVAIR, 2005). This research pointed out significant differences between OD of wastes and incineration of wastes. During incineration, dioxins are formed through recombination of combustion gases (e.g., oxygen, chlorine). Very specific conditions are needed to form dioxins, including a temperature range of 250 to 450 degrees Celsius (° C) (482° F to 842° F), and a residence time of seconds to minutes. These conditions are common in incinerators, but not present during OD operations. OD occurs in microseconds and the afterburning phase is complete in seconds. Temperatures during OD operations can range from about 2500° C to 5600° C and the temperatures associated with afterburning are on the order of 1700° C (Boggs, T., et.al., 2004). These higher temperature causes the dioxin precursor molecules to fall apart. Also, OD operations occur at very high pressures on the order of hundreds of kilo bars, while incinerators operate at ambient pressure.

As described in the draft AP-42, Chapter 16 (AP-42, 2009) for detonations, the intramolecular rearrangement is so fast that only a small percentage of the atoms in one molecule have time to react with atoms in adjacent energetic molecules that are decomposing at the exact same time. Because the detonation of explosives does not require air, it can occur in a vacuum, in an inert atmosphere, or even under water. The initial detonation products are free carbon (soot), carbon monoxide, hydrogen, methane, ethane, formaldehyde, nitrogen, carbon dioxide, water vapor, small hydrocarbons and small CxHy fragments. The initial stage of the detonation process is over in less than 10 microseconds and is followed by a 2 to 10 second duration fireball (afterburn). In this second stage of the process, combustible detonation reaction products (e.g., carbon monoxide, methane, ethane, formaldehyde, hydrogen and the CxHy fragments) are spontaneously oxidized (combusted) to CO2 and H2O. Fireball temperatures are on the order of 1,700 to 3,100° F. As the plume expands it entrains additional air which allows further combustion reactions to take place until the plume temperature falls to approximately 1,500° F (815° C) where these reactions stop.

Because of this, dioxins are not formed during OD operations and so dioxins/furans are not considered emissions during OD operations at TA-36 and TA-39 and are not included in the modeling exercise.

For VOC emissions, section 2.1.4.3 of the background document for the draft Chapter 16, the SNL and DPG test results had demonstrated conclusively that the VOCs emitted were almost exclusively the first members of the alkane, alkene, and alkyne classes of hydrocarbons and the first members of the aromatic hydrocarbon class, of which benzene is the most toxic. A key point was that for every energetic material detonated in the SNL study and on the test range at DPG, benzene represented a substantial percentage of the total mass of the aromatic hydrocarbons found, but was only 2.0% of the total mass for all of the non-methane hydrocarbons (TNMHCs).

The emission products and related EFs used in the modeling exercise for OD operations at TA-36 and TA-39 are shown in Table 3-1. These emission factors are based primarily on Table 16.2-14, Summary Statistics for the Detonation Data Sets from the Draft AP-42 Chapter 16. A list of explosives detonated at the units was developed from the operating record and is included in Attachment A (List of all RCRA waste explosives detonated). The chemicals have been placed into categories and there is a single EF for each category. Categories can generally be described to be components of the waste stream itself (e.g. energetics, metals, and fuel) or constituents produced as part of the treatment process (i.e. Emissions Products). The list of emission products (EPs) and EFs in Attachment B were derived from a list of explosives and explosive-contaminated waste detonated at the TA-36-8 OD unit as described in Attachment A.

Subsequent work and OD plume studies have been conducted since 2010 as part of program under the direction of Dr. Clift and the program studies have been conducted by a group led by Dr. Brian Gullett. Dr. Keith Clift is the Demil Capabilities Division Chief for the Demil Directorate at the Joint Munitions Command. Dr. Clift's program has continued OB/OD emissions testing with Dr. Gullet's team for the two-fold purpose: 1) to continue to fill data gaps for OB/OD emissions factors (i.e., covered OD data gaps, etc.), and 2) to increase both the quantity and representativeness of the data by collecting open air/live fire data from actual production OB/OD demil operations. Some of the testing is being done because of the improved sampling methods and/or analytical methods available. This includes the use of drones allowing for much improved latitude to sample emissions within the dynamic OB/OD plume. Presently, interim data processing is being performed. The program is an ongoing effort to enhance and improve the data quality of existing OB/OD emission factors.

Dr. Gullett is the Senior Professional Research Engineer for the Air and Energy Management Division at the National Risk Management Research Laboratory at the Office of Research and Development for the U.S. Environmental Protection Agency in the Research Triangle Park in North Carolina. Dr. Gullett is the lead researcher for the Joint Munitions Command (JMC) demil program for OB/OD studies. Dr. Gullett's team has compiled a database on OB/OD EFs since 2010 for the military's Joint Munitions Command. This database references data that have gone through the EPA's QA review process and are published in public journals or DoD reports. Presently, the published journals and DoD reports available for public review have little or no additional information on (uncovered) open range detonations, such as those being conducted at LANL. Additional studies, including those for uncovered open range detonations are planned for 2020. Once the database is available, the data should be more representative and extensive than that obtained in past measurements.

For this application submittal, the draft Chapter 16 for AP-42 represents the most current publicly available information as prepared for the U.S. Army Defense Ammunition Center, McAlester, OK under Contract Number DACA 87-02-D0028.

Table 3-1

Emission Products and Emission Factors Used in Screening Analysis for OD Operations

Emission Products	CAS RN	Maximum EF[1] for OD	UOM as listed in draft AP-42 Ch. 16	UOM as applied for modeling
PM-10	N/A	1.1E+01	lb/lb NEW	lb/lb Waste[2]
Carbon Monoxide	630-08-0	2.0E-01	lb/lb C	lb/lb Waste[2]
Carbon Dioxide	124-38-9	3.90E+00	lb/lb C	lb/lb Waste[2]
Nitrogen Oxides	N/A	3.2E-01	lb/lb N	lb/lb Waste[2]
Sulfur Dioxide	7446-09-5	1.4E-03	lb/lb NEW	lb/lb Waste[2]
Energetics	N/A	2.0E-06	lb/lb Energetic	lb/lb Waste[2]
Semi-volatile organic compounds (SVOCs) in Energetic	N/A	1.00E-08	lb/ lb SVOC	lb/lb Waste
SVOCs Not in Energetic	N/A	2.0E-06	lb/lb NEW	lb/lb Waste[2]
Benzene	71-43-2	6.0E-04	lb/lb C	lb/lb Waste[2]
TNMHC	N/A	3.4E-02	lb/lb C	lb/lb Waste[2]
Acetylene	74-86-2	1.8E-03	lb/lb C	lb/lb Waste[2]
Ethylene	74-85-1	2.3E-03	lb/lb C	lb/lb Waste[2]
Methylene Chloride	75-09-2	2.4E-03	lb/lb C	lb/lb Waste[2]
Propylene	115-07-1	4.1E-04	lb/lb C	lb/lb Waste[2]
Toluene	108-88-3	1.9E-04	lb/lb C	lb/lb Waste[2]
Naphthalene (as SVOC)	91-20-3	2.0E-06	lb/lb NEW	lb/lb Waste[2]
Metals in Energetic As Particle (or Elemental)	N/A	1.4E-01	lb/lb Metal	lb metal/lb Waste[2,3]
Metals In Energetic As Compound	N/A	7.8E-01	lb/lb Metal	lb metal/lb Waste[2,3]
Metals In Alloys	N/A	2.0E-01	lb/lb Metal	lb metal/lb Waste[2,3]

[1] EF = emission factor. The maximum EF as listed in AP-42 Chapter 16 draft are used in the calculation of the ground level concentration.

[2] Application of the EF to the weight of waste processed in lieu of the initial draft Ch. 16 value is a conservative estimate of emissions.

[3] Based on the data listed in Attachment A, the lb/lb waste calculation is adjusted for the amount of metal per lb of waste using a factor of 0.092 lb metal/lb waste.

4.0 Screening Levels

Air quality impacts were evaluated against EPA National Ambient Air Quality Standards (NAAQS) and New Mexico Ambient Air Quality Standards (NMAAQS) and EPA-recommended toxic air pollutant screening levels for acute and chronic exposures. Deposition impacts were evaluated with NMED and EPA screening levels.

4.1 Ambient Air Quality Standards

EPA has NAAQS for particulate matter (PM_{10} and $PM_{2.5}$), lead, sulfur dioxide, carbon monoxide, nitrogen dioxide, and ozone. NMAAQS are established for sulfur dioxide, carbon monoxide, and nitrogen dioxide. Both the NAAQS and NMAAQS are set for multiple averaging periods ranging from 1 hour to an annual basis for EPA and NMED air permitting purposes. The ambient standards do not apply within the boundary of the permitted facility. This analysis followed this long-standing protocol. The screening analysis did not include the NAAQS for ozone. Dispersion models such as OBODM for OD sources do not simulate photochemical reactions and ozone formation impacts are not considered significant (EPA, 2002).

4.2 Toxic Air Pollutant Screening Levels

EPA's *OBOD Permitting Guidelines* (EPA, 2002) suggest evaluating both short-term (acute) and long-term (chronic and cancer) risk-based impacts, as follows:

Short-term impacts were evaluated using the acute inhalation exposure concentrations (AIEC) from the Human Health Risk Assessment Protocol Companion Database (HHRAP Database) to EPA's *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA, 2005). This database includes the acute inhalation sources listed in Section 4.1.4 of the *OBOD Permitting Guidelines* (EPA, 2002). The Non-Cancer Acute Inhalation RELs for Airborne Toxicants were also listed as established in the Air Toxics Hot Spots Program's Guidance Manual for Preparation of Health Risk Assessments (Appendix L) developed by the California Office of Environmental Health Hazard Assessment (OEHHA, February 2015). The available data from the HHRAP Database (AEIC) or the RELs were used for the assessments in Table 5-3 and 5-4. Where both databases provided a value for a given constituent, the lesser and more conservative of the two values was applied. The OEHHA data was also used for the Non-Cancer Chronic Inhalation RELs.

Long-term chronic non-cancer impacts were evaluated using the Regional Screening Levels (RSLs) - Generic Tables (November 2019) (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables). For the EPA RSLs, the Non-Cancer Resident Air RSL Chronic value for THI = 0.1 was listed in the table provided in Attachment B. This value was compared to the CA-OEHHA non-cancer chronic reference exposure level (REL) provided in $\mu g/m^3$. Where the two databases provided a chronic RSL for the same chemical constituent, the lesser and more conservative of the two values was used to compare to the annual impact concentrations, i.e. acrylonitrile.

4.3 Deposition Screening Levels

Screening levels for deposition were compared to an estimated 10-year impact to show a quantitative estimate over the anticipated lifetime of the permit. Deposition of pollutants was compared to the NMED Cancer and Non-Cancer Human Health Residential Soil Screening Levels (SSLs) (NMED, 2019), or the EPA Cancer and Non-Cancer RSLs for Resident Soil (EPA, 2019) where NMED values are not listed. For Attachment B, the lesser screening level for the Cancer (TR=1E-06) and Non-Cancer (HI=0.1) EPA RSLs is listed. The EPA RSL is applied when an NMED value is not available. The estimated 10-year soil concentrations were also compared to the LANL-derived ecological screening levels (ESLs) obtained from the ECORSK Database, Version 2.5 (LANL, 2019).

5.0 Results

Modeled impacts through the use of OBODM in this report assumed the detonation plume travels in a straight line in each given hour. This conservatively calculates the maximum impact at a given receptor by maintaining the target receptor along the plume centerline for the averaging period with the least amount of dispersion. For receptors in complex terrain, this is unlikely to occur with additional dispersion occurring in practicality. In addition, the modeling approach used did not use any option to reduce downwind concentrations through either deposition or depletion of the detonation plume as it moves from the site to a given receptor. In reality, these mechanisms would lower projected impacts.

EXCEL® spreadsheets were used to calculate constituent-specific air and soil concentrations and for comparison to appropriate screening levels (see Attachment C). For each OD site the following calculations and comparisons were made:

- Maximum 1-, 3-, 8-, 24-hour, quarterly (Pb) concentrations and annual average concentrations were calculated and compared to the NAAQS and NMAAQS for public receptors;
- Maximum 1-hour concentrations were calculated and compared to AIEC acute values or CA-OEHHA acute RELs, or the lesser of the two where both values exist;
- Annual average air concentrations were calculated and compared to the lesser of the CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3) and EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3);
- Soil concentrations from deposition were calculated and compared to NMED Human Health Cancer and Non-Cancer Residential Soil SSLs. Where NMED data was not available, EPA RSL screening levels for Residential Soil were applied. Where both Cancer and Non-Cancer values existed, the lesser of the two was listed in the table provided in Attachment A. EPA Carcinogenic SL values are based on a target risk of TR=1E^{-06} and Non-Carcinogenic SL Child values are based on a Target Hazard Index (THI) of 0.1 (mg/kg). The LANL-derived ESLs are also included for review and comparison and in some cases was the only value available for soil concentrations.
- Concentrations for emission products were calculated whether there was a screening level or not. A comparison of the calculated values from model results with the EPA and NMED ambient air quality standards are summarized in Tables 5-1 and 5-2. In cases where there is a NAAQS and NMAAQS for the same pollutant and same averaging period, the more stringent standard is referenced in the tables. Background concentrations for all forms of particulate matter have been added to model results as specified by NMED and the total value is shown in the tables for comparison to standards (NMED, 2019).

The Ambient Air Quality Standard (AAQS) included within Tables 5-1 and 5-2 is the more stringent of the applicable NAAQS or NMAAQS in cases where there is both an EPA NAAQS and a New Mexico NMAAQS. All calculations used in providing results, as well as all NAAQS and NMAAQS, are shown in the spreadsheets included in Attachment C.

This analysis was conducted using the highest maximum model result which occurred at any public receptor. Receptors on LANL property were not used as is the protocol under NMED modeling guidelines when demonstrating compliance with ambient air quality standards for permit purposes (NMED, 2019). In this respect, NMED follows EPA direction in regards to the definition of *ambient air* which defines where the air quality standards are applicable.

As demonstrated in the tables, no AAQS are projected to be exceeded by the model results. All results are conservatively predicted; as presented in Tables 5-1 and 5-2. Tables 5-3a, -3b, -3c , -4a, -4b and -4c compare the calculated values from model results with the acute and chronic air health screening levels and the soil deposition screening and LANL ESL levels. Because OBODM cannot estimate deposition in complex terrain such as present within the LANL site, an alternative approach was needed. Gravitational deposition would be significant only for relatively large particles deposited close the detonation sites. Wet deposition should be insignificant for detonations which occur infrequently and never during precipitation events. Thus, non-gravitational dry deposition should be the major contributor to soil concentrations of contaminants. This type of deposition was conservatively estimated using the calculation provided by the California EPA for air toxics analyses found in the document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (CA OEHHA, 2015).

There are several levels of conservatism present in the deposition estimates using this approach. First, the annual contaminant air concentration used in the calculation is based on running OBODM using the maximum permitted annual waste detonated placed within the hours of the year predicted to yield maximum concentrations from the hourly air concentration model runs. Second, the single maximum annual air concentration is used which is a non-depleted value, e.g. there is no removal of contaminant mass from the detonation cloud as a function of downwind distance. In the calculation, it is assumed there is no degradation of organic compounds in the soil over time which again results in an over prediction of soil concentrations during the 10 year estimate. The deposition rate or Dep-rate used was the CAL EPA recommended value for an uncontrolled source which is 0.05 meters/second.

Using this procedure, soil concentrations were calculated using the maximum annual air concentrations for each contaminant predicted by OBODM. The calculation is shown below:

$C_s = Dep * X / (K_s * SD * BD * T_t)$

Dep = Deposition on the affected soil area per day ($\mu g/m^2/d$)

Dep = GLC * Dep-rate * 86,400

GLC = chemical specific annual ground level concentration from OBODM result and emission factor ($\mu g/m^3$)

Dep-rate = 0.05 m/sec (default value for uncontrolled source)

86,400 = Seconds per day conversion factor

$X = [\{e^{-Ks * Tf} - e^{-Ks * To}\} / K_s] + T_t$

e = 2.718

K_s = Soil elimination constant = 6.93 x 10^{-9} (no degradation of contaminant in soil assumed)

T_f = End of evaluation period (d) = 3650

T_o = Beginning of evaluation period (d) = 0

T_t = Total days of exposure period T_f - T_o (d) = 3650 (ten year period)

SD = Soil mixing depth (m) = 0.01 for soil ingestion or dermal pathway (analysis is on Laboratory property)

BD = Soil bulk density (kg/m^3) = 1,333

Table 5-1
Air Quality Standards Results for TA-36-8[1]

Pollutant	Averaging Time	Maximum Concentration ug/m^3	NAAQS ug/m^3	NMAAQS ug/m^3	Air Quality Standard Exceeded?
Nitrogen Dioxide					
(As NOX)	1-hour	6.19E-01	188.03	none	No
	24-hour	6.35E-02	none	188.03	No
	Annual	2.67E-08	99.66	94.02	No
Carbon Monoxide					
	1-hour	3.87E-01	40069.6	14997.5	No
	8-hour	1.15E-01	10303.6	9960.1	No
Sulfur Dioxide					
	1-hour	2.71E-03			
Background(10)	1-hour	1.32E+01			
Total	1-hour	1.32E+01	196.40	none	
	3-hour	1.50E-03	1309.30	none	No
	24-hour	2.78E-04	none	261.90	No
	Annual	1.17E-10	none	52.40	No
PM_{10}					
	24-hour	2.18E+00			
Background(7)		2.30E+01			
Total		2.52E+01	150	none	No
$PM_{2.5}$					
	24-hour	2.18E+00			
Background(8)		9.45E+00			
Total		1.16E+01	35	none	No
	Annual	9.18E-07			
Background(9)		4.32E+00			
Total		4.32E+00	12	none	No
Lead	Quarterly	1.42E-02	0.15	none	No

[1] Calculations used are included in Attachment C.
[2]The more stringent of the applicable NAAQS or NMAAQS in cases where both standards exist.

Table 5-2

Air Quality Standards Results for TA-39-6[1]

Pollutant	Averaging Time	Maximum Concentration ug/m^3	NAAQS ug/m^3	NMAAQS ug/m^3	Air Quality Standard Exceeded?
Nitrogen Dioxide					
	1-hour	2.63E+00	188.03	none	No
	24-hour	6.47E-02	none	188.03	No
	Annual	3.33E-06	99.66	94.02	No
Carbon Monoxide					
	1-hour	1.65E+00	40069.6	14997.5	No
	8-hour	1.22E-01	10303.6	9960.1	No
Sulfur Dioxide					
	1-hour				
Background(10)	1-hour				
Total	1-hour		196.40	none	
	3-hour	1.24E-03	1309.30	none	No
	24-hour	2.83E-04	none	261.90	No
	Annual	1.46E-08	none	52.40	No
PM_{10}					
	24-hour	2.22E+00			No
Background(7)		2.30E+01			
Total		2.52E+01	150.00	none	
$PM_{2.5}$					
	24-hour	2.22E+00			No
Background(8)		9.45E+00			
Total		1.17E+01	35.00	none	
	Annual	1.15E-04			No
Background(9)		4.32E+00			
Total		4.32E+00	12.00	none	
Lead	Quarterly	1.45E-02	0.15	none	No

1 Calculations used are included in Attachment C.

2 The more stringent of the applicable NAAQS or NMAAQS in cases where both standards exist.

Table 5-3a

Acute Health Screening Level Results for TA-36-8

Contaminant	Maximum 1-Hour Concentration ug/m^3	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded?
Carbon Monoxide (1)	1.19E+01	-	2.30E+04	No
Nitrogen Oxides (as NO_2 only)	1.91E+01	-	4.70E+02	No
Sulfur Dioxide (1)	8.35E-02	-	6.60E+02	No
Benzene (1)	3.58E-02	1.30E+03	2.70E+01	No
TNMHC (1)	2.03E+00	-	-	-
Acetylene (1)	1.07E-01	-	-	-
Ethylene (1)	1.37E-01	-	-	-
Propylene (1)	2.45E-02	-	-	-
Toluene (1)	1.13E-02	3.70E+04	3.70E+04	No
Naphthalene (2)	1.19E-04	7.50E+04	-	No
Methylene Chloride (1)	1.43E-01	1.40E+04	1.40E+04	No
Aluminum Oxide (3)	4.65E+01	-	-	-
Barium(3)	4.65E+01	1.50E+03	-	No
Cobalt Acetoacetonate (3)	4.65E+01	-	-	-
Copper (3)	4.65E+01	-	1.00E+02	No
Lead (3)	4.65E+01	1.50E+02	-	No
Trioctyl phosphate (3)	4.65E+01	-	-	-
Tungsten Trioxide (3)	4.65E+01	-	-	-
Aluminum (4)	8.35E+00	-	-	-
Titanium (4)	8.35E+00	-	-	-
Tungsten (4)	8.35E+00			
Ammonium perchlorate (2)	1.19E-04	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	1.19E-04	-	-	-
Nitrocellulose (2)	1.19E-04	-	-	-
Nitroguanidine (2)	1.19E-04	-	-	-
Nitromethane (2)	1.19E-04	-	-	-
Pentaerythritol tetranitrate (PETN) (2)	1.19E-04	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	1.19E-04	-	-	-
Tetryl (2)	1.19E-04	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	1.19E-04	1.50E+03	-	No
Acrylonitrile (5)	5.96E-07	2.18E+04	-	No
Bis(2-ethylhexyl)adipate (5)	5.96E-07	-	-	-
tris-2-chloroethyl phosphate (5)	5.96E-07	-	-	-
Dibutylphthalate (5)	5.96E-07	1.50E+04	-	No
Dinitrotoluene (2,4-) (note #5)	5.96E-07	6.00E+02	-	No
Dioctyladipate (5)	5.96E-07	-	-	-
Dioctylphthalate (5)	5.96E-07	1.00E+04	-	No
Diphenylamine (5)	5.96E-07	-	-	-

Notes:

See Attachment C for detailed calculations.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

Table 5-3b

Chronic Health Screening Level Results for TA-36-8

Contaminant	Maximum Annual Concentration ug/m^3	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Carbon Monoxide (1)	2.66E-06	-	-	-
Nitrogen Oxides (as NO_2 only)	4.25E-06	-	-	-
Sulfur Dioxide (1)	1.86E-08	-	-	-
Benzene (1)	7.97E-09	3.00E+00	3.1E+01	No
TNMHC (1)	4.52E-07	-	-	-
Acetylene (1)	2.39E-08	-	-	-
Ethylene (1)	3.05E-08	-	-	-
Propylene (1)	5.44E-09	3.00E+03	3.1E+02	No
Toluene (1)	2.52E-09	3.00E+02	5.2E+02	No
Naphthalene (2)	2.66E-11	9.00E+00	3.1E-01	No
Methylene Chloride (1)	3.19E-08	4.00E+02	6.3E+01	No
Aluminum Oxide (3)	9.53E-07	-	5.20E-01	No
Barium (3)	9.53E-07	-	5.20E-02	No
Cobalt Acetoacetonate (3)	9.53E-07	-	6.30E-04	No
Copper (3)	9.53E-07	-	-	-
Lead (3)	9.53E-07	-	1.5E-01	No
Trioctyl phosphate (3)	9.53E-07	-	-	-
Tungsten Trioxide (3)	9.53E-07	-	-	-
Aluminum (4)	1.71E-07	-	5.20E-01	No
Titanium (4)	1.71E-07	-	-	-
Tungsten (4)	1.71E-07	-	-	-
Ammonium perchlorate (2)	2.66E-11	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	2.66E-11	-	-	-
Nitrocellulose (2)	2.66E-11	-	-	-
Nitroguanidine (2)	2.66E-11	-	-	-
Nitromethane (2)	2.66E-11	-	5.20E-01	No
Pentaerythritol tetranitrate (PETN) (2)	2.66E-11	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	2.66E-11	-	-	-
Tetryl (2)	2.66E-11	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	2.66E-11	-	-	-
Acrylonitrile (5)	1.33E-13	5.00E+00	6.30E+00	No
Bis(2-ethylhexyl)adipate (5)	1.33E-13	-	-	-
tris-2-chloroethyl phosphate (5)	1.33E-13	-	-	-
Dibutylphthalate (5)	1.33E-13	-	-	-
Dinitrotoluene (2,4-) (note #5)	1.33E-13	-	-	-
Dioctyladipate (5)	1.33E-13	-	-	-
Dioctylphthalate (5)	1.33E-13	-	-	-
Diphenylamine (5)	1.33E-13	-	-	-

Notes:

See Attachment C for detailed calculations.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

Table 5-3c

Residential Soil Screening Level and LANL ESL Screening Level Results for TA-36-8

Contaminant	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum LANL ESL mg/kg	Receptor	ESL exceeded?
Carbon Monoxide	1.57E-03	-	-	-	-	-	-	-
Nitrogen Oxides (as NO_2 only)	2.51E-03	-	-	-	-	-	-	-
Sulfur Dioxide	1.10E-05	-	-	-	-	-	-	-
Benzene	4.71E-06	1.14E+02	1.78E+01	1.20E+00	No	2.40E+02	Deer mouse	No
TNMHC	2.67E-04	-	-	-	-	-	-	-
Acetylene	1.41E-05	-	-	-	-	-	-	-
Ethylene	1.81E-05	-	-	-	-	-	-	-
Propylene	3.22E-06	-	-	2.20E+02	No	-	-	-
Toluene	1.49E-06	5.23E+03	-	4.90E+02	No	2.30E+01	Montane shrew	No
Naphthalene	1.57E-08	1.62E+02	4.97E+01	1.22E+02	No	1.00E+00	Plant	No
Methylene Chloride	1.88E-05	4.09E+02	7.66E+02	3.50E+01	No	2.60E+00	Deer mouse	No
Aluminum Oxide	5.64E-04	7.80E+04	-	7.70E+03	No	-	-	-
Barium	5.64E-04	1.56E+04	-	1.50E+03	No	1.10E+02	Plant	No
Cobalt Acetoacetonate	5.64E-04	2.34E+01	1.72E+04	2.30E+00	No	1.30E+01	Plant	No
Copper	5.64E-04	3.13E+03	-	3.10E+02	No	1.40E+01	American robin	No
Lead	5.64E-04	4.00E+02	-	4.00E+02	No	1.10E+01	American robin	No
Trioctyl phosphate	5.64E-04	-	-	1.70E+02	No	-	-	-
Tungsten Trioxide	5.64E-04	-	-	6.30E+00	No	-	-	-
Aluminum	1.01E-04	7.80E+04	-	7.70E+03	No	-	-	-
Titanium	1.01E-04	-	-	-	-	7.70E+01	Montane shrew	No
Tungsten	1.01E-04	-	-	6.30E+00	No	-	-	-
Ammonium perchlorate	1.57E-08	-	-	5.50E+00	No	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX)	1.57E-08	3.85E+03	-	3.90E+02	No	1.60E+01	Earthworm	No
Nitrocellulose	1.57E-08	-	-	1.90E+07	No	-	-	-
Nitroguanidine	1.57E-08	-	-	6.30E+02	No	-	-	-
Nitromethane	1.57E-08	-	-	5.40E+00	No	-	-	-
Pentaerythritol tetranitrate (PETN)	1.57E-08	-	-	1.30E+01	No	1.00E+02	Deer mouse	No
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.57E-08	3.01E+02	8.31E+01	8.30E+00	No	2.30E+00	American robin	No
Tetryl	1.57E-08	1.56E+02	-	1.60E+01	No	1.50E+00	Deer mouse	No
2,4,6-trinitrotoluene (TNT)	1.57E-08	3.60E+01	2.11E+02	3.60E+00	No	7.50E+00	American robin	No
Acrylonitrile	7.85E-11	-	-	8.10E+01	No	-	-	-
Bis(2-ethylhexyl)adipate	7.85E-11	-	-	4.50E+02	No	-	-	-
tris-2-chloroethyl phosphate	7.85E-11	-	-	2.70E+01	No	-	-	-

Contaminant	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum LANL ESL mg/kg	Receptor	ESL exceeded?
Dibutylphthalate	7.85E-11	6.16E+03	-	6.30E+02	No	1.10E-02	American robin	No
Dinitrotoluene (2,4-)	7.85E-11	1.23E+02	1.71E+01	1.70E+00	No	6.00E+00	Plant	No
Dioctyladipate	7.85E-11	-	-	4.50E+02	No	-	-	-
Dioctylphthalate	7.85E-11	1.23E+03	3.80E+02	3.90E+01	No	9.10E-01	Montane shrew	No
Diphenylamine	7.85E-11	-	-	6.30E+02	No	1.00E+01	Robin insectivore	No

See Attachment C for detailed calculations.

Table 5-4a

Acute Health Screening Level Results for TA-39-6

Contaminant	Maximum 1-Hour Concentration ug/m^3	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded?
Carbon Monoxide (1)	3.88E+01	-	2.30E+04	No
Nitrogen Oxides (as NO_2 only)	6.21E+01	-	4.70E+02	No
Sulfur Dioxide (1)	2.72E-01	-	6.60E+02	No
Benzene (1)	1.16E-01	1.30E+03	2.70E+01	No
TNMHC (1)	6.60E+00	-	-	-
Acetylene (1)	3.49E-01	-	-	-
Ethylene (1)	4.46E-01	-	-	-
Propylene (1)	7.96E-02	-	-	-
Toluene (1)	3.69E-02	3.70E+04	3.70E+04	No
Naphthalene (2)	3.88E-04	7.50E+04	-	No
Methylene Chloride (1)	4.66E-01	1.40E+04	1.40E+04	No
Aluminum Oxide (1a, 3)	1.39E+01	-	-	-
Barium(1a, 3)	1.39E+01	1.50E+03	-	No
Cobalt Acetoacetonate (1a, 3)	1.39E+01	-	-	-
Copper (1a, 3)	1.39E+01	-	1.00E+02	No
Lead (1a, 3)	1.39E+01	1.50E+02	-	No
Trioctyl phosphate (1a, 3)	1.39E+01	-	-	-
Tungsten Trioxide (1a, 3)	1.39E+01	-		
Aluminum (4)	2.50E+00	-	-	-
Titanium (4)	2.50E+00	-	-	-
Tungsten (4)	2.50E+00			
Ammonium perchlorate (2)	3.88E-04	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	3.88E-04	-	-	-
Nitrocellulose (2)	3.88E-04	-	-	-
Nitroguanidine (2)	3.88E-04	-	-	-
Nitromethane (2)	3.88E-04	-	-	-
Pentaerythritol tetranitrate (PETN) (2)	3.88E-04	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	3.88E-04	-	-	-
Tetryl (2)	3.88E-04	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	3.88E-04	1.50E+03	-	No
Acrylonitrile (5)	1.94E-06	2.18E+04	-	No
Bis(2-ethylhexyl)adipate (5)	1.94E-06	-	-	-
tris-2-chloroethyl phosphate (5)	1.94E-06	-	-	-
Dibutylphthalate (5)	1.94E-06	1.50E+04	-	No
Dinitrotoluene (2,4-) (5)	1.94E-06	6.00E+02	-	No
Dioctyladipate (5)	1.94E-06	-	-	-
Dioctylphthalate (5)	1.94E-06	1.00E+04	-	No
Diphenylamine (5)	1.94E-06	-	-	-

Notes:

See Attachment C for detailed calculations.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic.

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

Table 5-4b

Chronic Health Screening Level Results for TA-39-6

Contaminant	Maximum Annual Concentration ug/m^3	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Carbon Monoxide (1)	7.72E-05	-	-	-
Nitrogen Oxides (as NO_2 only)	1.24E-04	-	-	-
Sulfur Dioxide (1)	5.41E-07	-	-	-
Benzene (1)	2.32E-07	3.00E+00	3.10E+01	No
TNMHC (1)	1.31E-05	-	-	-
Acetylene (1)	6.95E-07	-	-	-
Ethylene (1)	8.88E-07	-	-	-
Propylene (1)	1.58E-07	3.00E+03	3.10E+02	No
Toluene (1)	7.34E-08	3.00E+02	5.20E+02	No
Naphthalene (2)	7.72E-10	9.00E+00	3.10E-01	No
Methylene Chloride (1)	9.27E-07	4.00E+02	6.30E+01	No
Aluminum Oxide (3)	2.77E-05	-	5.20E-01	No
Barium (3)	2.77E-05	-	5.20E-02	No
Cobalt Acetoacetonate (3)	2.77E-05	-	6.30E-04	No
Copper (3)	2.77E-05	-	-	-
Lead (3)	2.77E-05	-	1.50E-01	No
Trioctyl phosphate (3)	2.77E-05	-	-	-
Tungsten Trioxide (3)	2.77E-05	-	-	-
Aluminum (4)	4.97E-06	-	5.20E-01	No
Titanium (4)	4.97E-06	-	-	-
Tungsten (4)	4.97E-06	-	1.52E+00	-
Ammonium perchlorate (2)	7.72E-10	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	7.72E-10	-	-	-
Nitrocellulose (2)	7.72E-10	-	-	-
Nitroguanidine (2)	7.72E-10	-	-	-
Nitromethane (2)	7.72E-10	-	5.20E-01	No
Pentaerythritol tetranitrate (PETN) (2)	7.72E-10	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	7.72E-10	-	-	-
Tetryl (2)	7.72E-10	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	7.72E-10	-	-	-
Acrylonitrile (5)	3.86E-12	5.00E+00	6.30E+00	No
Bis(2-ethylhexyl)adipate (5)	3.86E-12	-	-	-
tris-2-chloroethyl phosphate (5)	3.86E-12	-	-	-
Dibutylphthalate (5)	3.86E-12	-	-	-
Dinitrotoluene (2,4-) (note #5)	3.86E-12	-	-	-
Dioctyladipate (5)	3.86E-12	-	-	-
Dioctylphthalate (5)	3.86E-12	-	-	-
Diphenylamine (5)	3.86E-12	-	-	-

Notes:

See Attachment C for detailed calculations.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

Table 5-4c
Residential Soil Screening Level and LANL ESL Screening Level Results for TA-39-6

Contaminant	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs (4) - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum (No Effect) LANL ESL mg/kg	Receptor	ESL exceeded?
Carbon Monoxide	4.57E-02	-	-	-	-	-	-	-
Nitrogen Oxides (as NO_2 only)	7.31E-02	-	-	-	-	-	-	-
Sulfur Dioxide	3.20E-04	-	-	-	-	-	-	-
Benzene	1.37E-04	1.14E+02	1.78E+01	1.20E+00	No	2.40E+02	Deer mouse	No
TNMHC	7.77E-03	-	-	-	-	-	-	-
Acetylene	4.11E-04	-	-	-	-	-	-	-
Ethylene	5.25E-04	-	-	-	-	-	-	-
Propylene	9.36E-05	-	-	2.20E+02	No	-	-	-
Toluene	4.34E-05	5.23E+03	-	4.90E+02	No	2.30E+01	Montane shrew	No
Naphthalene	4.57E-07	1.62E+02	4.97E+01	1.22E+02	No	1.00E+00	Plant	No
Methylene Chloride	5.48E-04	4.09E+02	7.66E+02	3.50E+01	No	2.60E+00	Deer mouse	No
Aluminum Oxide	1.64E-02	7.80E+04	-	7.70E+03	No	-	-	-
Barium	1.64E-02	1.56E+04	-	1.50E+03	No	1.10E+02	Plant	No
Cobalt Acetoacetonate	1.64E-02	2.34E+01	1.72E+04	2.30E+00	No	1.30E+01	Plant	No
Copper	1.64E-02	3.13E+03	-	3.10E+02	No	1.40E+01	American robin	No
Lead	1.64E-02	4.00E+02	-	4.00E+02	No	1.10E+01	American robin	No
Trioctyl phosphate	1.64E-02	-	-	1.70E+02	No	-	-	-
Tungsten Trioxide	1.64E-02	-	-	6.30E+00	No	-	-	-
Aluminum	2.94E-03	7.80E+04	-	7.70E+03	No	-	-	-
Titanium	2.94E-03	-	-	-	-	7.70E+01	Montane shrew	No
Tungsten	2.94E-03	-	-	6.30E+00	No	-	-	-
Ammonium perchlorate	4.57E-07	-	-	5.50E+00	No	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX)	4.57E-07	3.85E+03	-	3.90E+02	No	1.60E+01	Earthworm	No
Nitrocellulose	4.57E-07	-	-	1.90E+07	No	-	-	-
Nitroguanidine	4.57E-07	-	-	6.30E+02	No	-	-	-
Nitromethane	4.57E-07	-	-	5.40E+00	No	-	-	-
Pentaerythritol tetranitrate (PETN)	4.57E-07	-	-	1.30E+01	No	1.00E+02	Deer mouse	No
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.57E-07	3.01E+02	8.31E+01	8.30E+00	No	2.30E+00	American robin	No
Tetryl	4.57E-07	1.56E+02	-	1.60E+01	No	1.50E+00	Deer mouse	No
2,4,6-trinitrotoluene (TNT)	4.57E-07	3.60E+01	2.11E+02	3.60E+00	No	7.50E+00	American robin	No
Acrylonitrile	2.28E-09	-	-	8.10E+01	No	-	-	-
Bis(2-ethylhexyl)adipate	2.28E-09	-	-	4.50E+02	No	-	-	-
tris-2-chloroethyl phosphate	2.28E-09	-	-	2.70E+01	No	-	-	-
Dibutylphthalate	2.28E-09	6.16E+03	-	6.30E+02	No	1.10E-02	American robin	No
Dinitrotoluene (2,4-)	2.28E-09	1.23E+02	1.71E+01	1.70E+00	No	6.00E+00	Plant	No
Dioctyladipate	2.28E-09	-	-	4.50E+02	No	-	-	-
Dioctylphthalate	2.28E-09	1.23E+03	3.80E+02	3.90E+01	No	9.10E-01	Montane shrew	No
Diphenylamine	2.28E-09	-	-	6.30E+02	No	1.00E+01	Robin insectivore	No

See Attachment C for detailed calculations.

5.1 Discussion of Results

Dispersion modeling was used to predict maximum ground-level concentrations of contaminants that occur downwind from detonation sites. Model input parameters were selected that conservatively reflect the characteristics of waste streams treated through OD at the sites. Receptors were used in the modeling to estimate concentrations close to the detonation sites as well as public receptors nearby. The hourly and annual maximum waste quantities to be treated were also used in the model input. Model results indicated the maximum GLCs for each site occur on LANL property within the receptor grids adjacent to the sites. Predicted concentrations at public receptors were far less than impacts within the LANL property boundary. Thus, the maximum impact used in the health screening analysis was the maximum value on LANL property. Impacts at public areas would be much less.

Model results were applied to emission factors for each predicted contaminant and the results compared to air quality standards and recommended health screening levels where they were identified. All calculations are included in Attachment C and summarized in Tables 5-1 through 5-4. The results show predicted impacts for acute and annual air concentrations to be below all health screening levels. Additionally, predicted soil deposition over a 10-year period shows impacts to soil concentrations to be less than residential screening levels and less than the minimum identified ESLs.

The air screening analysis conducted by LANL and detailed within this report was designed to provide a very conservative air dispersion and deposition impact analysis for OD waste treatment operations at LANL. Input parameters were used as conservatively as deemed reasonable, emission products and related constituents were obtained from a third party based on waste treated at LANL (CCS, 2011), emission factors were based on AP-42, draft Chapter 16 and background document, the quantities of waste assessed were the maximum amounts of waste that could possibly be treated at the OD units, and all potential impacts were found to be below identified screening levels. Additionally, routine OD operations are far less than the quantity assessed through this screening analysis. Proposed current and future operations are described within the LANL permit modification request for these units. Due to the factors outlined here, current and future operations at the OD units do not require a more refined risk-based analysis to assess the potential for adverse effects due to migration of waste constituents in the air. Waste treatment operations at the OD units can be conducted and considered protective of human health and the environment.

5.2 Uncertainties Associated With Results

Models such as OBODM used for predicting downwind concentrations assume dispersion follows a uniform Gaussian distribution within the plume. In reality, atmospheric dispersion is far more complex and dependent on unique source and terrain features than a model is capable of considering. Nevertheless, dispersion models are a long accepted tool to assess source impacts for regulatory purposes.

Considering numerous studies over time, the U.S. EPA states in 40 CFR Part 51, *Appendix W – Guideline on Air Quality Models* that models are reasonably reliable for estimating the magnitude of the highest concentrations occurring within an area. Errors in the highest estimated concentrations of +/- 10 to 40 percent are found to be typical. However, estimates of concentrations that occur at a specific time and location are less reliable. Models are also more reliable in estimating longer time-averaged concentrations, such as annual averages, than for estimating short-term concentrations at specific locations.

Modeled impacts through the use of OBODM in this report assumed the detonation plume travels in a straight line in each given hour. This conservatively calculates the maximum impact at a given receptor by maintaining the target receptor along the plume centerline for the averaging period with the least amount of dispersion. For receptors in complex terrain, this is unlikely to occur with additional dispersion occurring as a practicality. In addition, the modeling approach used did not use any option to reduce downwind concentrations through either deposition or depletion of the detonation plume as it moves from the site to a given receptor. In reality, these mechanisms would lower the projected impacts.

References

AP-42, 2009. Draft Chapter 16 "Emission Factors for Demilitarization Processes: Open Burning and Open Air Detonation."

Background Document for AP-42 Chapter 16 – Emissions Factors for Demilitarization Processes: Open Burning and Open Detonation. Report prepared for the U.S. Army Defense Ammunition Center, McAlester, OK by Chemical Compliance Systems, Inc. February 2009.

Bjorklund, J. R., J. F. Bowers, G. C. Dodd, and J. M. White, 1998a. Open Burn/Open Detonation Model (OBODM) User's Guide, Volume I, User's Instructions, DPG Document No. DPG-TR-96-008a, February 1998.

Bjorklund, J. R., J. F. Bowers, G. C. Dodd, and J. M. White, 1998b. Open Burn/Open Detonation Model (OBODM) User's Guide, Volume II, Technical Description. DPG Document No. DPGTR-96-008b, April 1998.

Boggs, T. Atienza Moore, O. Heimdahl, M. Pepe, J. Hibbs, Jr., K. Wells, M. Martyn, D. Wooldridge, R. Gerber, L. Zellmer and B. Abernathy, 2004. Metals Emissions From The Open Detonation Treatment of Energetic Wastes. NAWCWD TP 8528, October 2004, Naval Air Warfare Center Weapons Division, China Lake, California.

CCS, 2011. Chemical Compliance Systems, Inc. (CCS) 2011. *Chemical Compliance Systems, Hazardous Materials.* May 2011. http://www.chemply.com

CA OEHHA, 2015. Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments, 2015, California Environmental Protection Agency, Air Toxicology and Epidemiology Section, Office of Environmental Health Hazard Assessment, February 2015. https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0

CA OEHHA, 2019. Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

EPA, 2002. Draft Final Open Burning Open/Detonation Permitting Guidelines. U.S. Environmental Protection Agency, Region III, EPA contract No. 68-E-99-020, February 2002.

EPA, 2016. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Final. Office of Solid Waste and Emergency Response, EPA520-R-05-006, February 2016. https://archive.epa.gov/epawaste/hazard/tsd/td/web/html/risk.html#hhrad

EPA, 2019. Regional Screening Levels (RSLs) – Generic Tables. U.S. Environmental Protection Agency. November 2019. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

LANL, 2011. Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6). LA-UR-11-03642. Los Alamos National Laboratory, Los Alamos, New Mexico, July 2011.

LANL, 2019. ECORSK Database, on CD, LA-UR-12-24548, Los Alamos National Laboratory, Los Alamos, New Mexico, 2019.

NMED, 2019. New Mexico Environment Department (NMED), 2019. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation. Volume I Soil Screening Guidance for Human Health Risk Assessments.* February 2019 (Revision 2, 6/19/2019). https://www.env.nm.gov/wp-content/uploads/sites/12/2016/11/Final-NMED-SSG-VOL-I_-Rev.2-6_19_19.pdf

NMED, 2019. Air Dispersion Modeling Guidelines. Revised June 6, 2019. https://www.env.nm.gov/wp-content/uploads/sites/2/2017/01/NM_AirDispersionModelingGuidelines_6June2019.pdf

NAVAIR, 2004. Metals Emissions from the Open Detonation Treatment of Energetic Wastes. NAWCWD TP 8528, Naval Air Warfare Center Weapons Division, China Lake, California, October 2004. http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA433712

NAVAIR, 2005. Emissions from the Energetic Component of Energetic Wastes During Treatment by Open Detonation. NAWCWD TP 8603, Naval Air Warfare Center Weapons Division, China Lake, California, June 2005. https://hero.epa.gov/hero/index.cfm/reference/details/reference_id/2799200

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
Excess HE	34760	D003	No	02/21/06	0.03			95% HMX, 5% carbon black		0.03	-						Shot contained classified plastic shapes for sanitization	(1) det; (1) pellet, 122 lbs. ANFO; (4) PBX-9501 cylinders = 17.2 lbs.
Classified explosives	34760	D003	Yes		<1		CHNO detonators			1.00	-							
HE on cellulosics	28345	D003	No		0.33					0.33	-	PETN on filter cartridge						
Excess Baratol	35762	D001, D003, D005, D030	No	03/08/06	21.90	Baratol, 21.9 lbs.				21.90	NA						Barium Content	(1) det; (7) pellets
Excess HE	35763	D003, D030	Yes		289.40	PBX-9501, 15.6 lbs.	CHNO Dets, <1 lb.			289.40	NA				Octol, 2.18 lbs.		Shot contained classified HE shapes	
						PBX-9502, 33.26 lbs.												
						PBX-9404, 0.66 lbs.												
						PBX-9407, 0.01 lbs.												
						PBX-9205, 11.02 lbs.												
						PBXN-9, 33 lbs.												
						Comp B, 52.8 lbs												
						Detasheet, 12.58 lbs												
						RDX, 5 lbs.												
						TNT, 76.91 lbs.												
						CHNO HE, 41.38 lbs.												
						Black Powder, 5.0 lbs.												

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
Excess HE	35763	D003, D030	Yes	03/09/06	429.97	Comp B, 35.11 lbs.	CHNO Dets, <1 lb.			429.97	NA				RDX, 13.0 lbs.			(1) det; (8) pellets; (11) PBX-9501 cylinders = 46.2 lbs.; 103 lbs. PBX-9501 bulk material
						Nitroguanidine, 49.90 lbs.									MDF (PETN), 5.0 lbs.			
						PBX-9205, 26.03 lbs.												
						PBX-9404, 0.66 lbs.												
						PBX-9407, 0.04 lbs.												
						PBX-9501, 238.08 lbs.												
						PBX-9502, 23.76 lbs.												
						TNT, 1.87lbs.												
						X-0533, 35.9 lbs.												
						Primacord (CHNO), 0.62 lbs.												
Excess Baratol	35762	D001, D003, D005, D030	No	05/03/06	34.21	Baratol, 34.21 lbs.				34.21	NA						Barium content	(1) det; (7) pellets
Excess HE	35763	D003, D030	Yes		650.89					650.89	NA						Shot contained classified HE shapes	
						ANFO, 13.56 lbs.	PETN/HMX, 33.16 lbs.											
						CHNO Classified, 11.18 lbs.												
						Comp. B, 82.94 lbs.												
						Comp. C-4, 4.98 lbs.												
						Cyclotol, 30.00 lbs.												
						Detasheet, 0.26 lbs.												

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
						LX-14, 170.61 lbs.												
						Octol, 1.10 lbs.												
						PBX-9404, 192.29 lbs.												
						PBX-9407, 0.24 lbs.												
						PBX-9501, 95.61 lbs.												
						PBX-9502, 10.01 lbs.												
						XTX-8003, 4.89 lbs.												
						XTX-8004, 0.04 lbs.												
M-100, M-105 Electric Matches	37092	D003, D008	No	05/04/06	11.00		(50) M-105 (Lead azide, RDX) (50) M-100 (Lead azide, lead styphnate, HMX)										Lead based primary HE, RDX, HMX. SENSITIVE	(1) det; (6) pellets; 19 lbs. PBX-9501 bulk material; (1) PBX-9501 cylinder = 4.2 lbs.
HE contaminated debris	28345	D003	No	05/11/06	0.01							PETN on filter cartridge						(1) det; (1) pellet; 21 lbs. PBX-9501 bulk material; (1) PBX-9501 cylinder = 4.2 lbs.
HE contaminated debris w/ ethanol	39254	D001, D003	No		2.00							HE contaminated lab debris with trace ethanol (kimwipes, swabs, weigh boats)						
Classified explosives	34760	D003	YES		<2.0		Classified CHNO dets											

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
HE contaminated debris	30373	D003	No		0.53							CHNO contaminated lab debris (kimwipes, swabs, weigh boats)						
Excess HE	37560	D003, D030	No	05/16/06	39.81	AN, 29.93 lbs.	Black powder dets, 0.002 lbs.	Total lab quantity HE in this section = 9.677 lbs.	PLG/UW (RDX/AP/Al), 0.05 lbs.	39.81	NA	Nitroguanidine, 0.11 lbs + 40 lb Fiberboard drum	Developmental propellant HMX/NC/NG/Al/AP, 0.04 lbs.					(2) dets; (1) pellet; 50 lbs. PBX-9501 bulk material; (1) PBX-9501 cylinder = 4.2 lbs.
								Bullseye Powder, 0.29 lbs.	DNAZ/DNPA/EtGDMA, 0.002 lbs.									
								Comp. B, 0.02 lbs.										
								Cyclotol, 0.01 lbs.										
								DAAF, 0.02 lbs.										
								HMX, 4.602 lbs.										
								IMR Smokeless Powder, 0.084 lbs.										
								PETN, 0.123 lbs.										
								RDX, 0.032 lbs.										
								TATB, 0.12 lbs.										
								Tetryl, 0.02 lbs.										
								Tetrytol, 0.292 lbs.										
								TNT, 0.002 lbs.										
								Semtex 10, 0.070 lbs.										
								Semtex 1A, 0.13 lbs.										
								LX-04, 0.01 lbs.										
								LX-07, 0.007 lbs.										

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
								LX-14, 0.01 lbs.										
								LX-16, 0.001 lbs.										
								PBX-9404, 0.011 lbs.										
								PBX-9407, 0.113 lbs.										
								PBX-9501, 2.25 lbs.										
								PBX-9502, 0.616 lbs.										
								X-0298, 0.066 lbs.										
								X-0319, 0.015 lbs.										
								X-0407, 0.055 lbs.										
								X-0557, 0.075 lbs.										
								X-0564, 0.012 lbs.										
								X-0565, 0.011 lbs.										
								X-0567, 0.002 lbs.										
								X-0569, 0.062										
								XTX-8003, 0.037 lbs.										
								XTX-8004, 0.509 lbs.										
Excess HE	37845	D003	No		0.21			Total lab quantity HE in this section = 0.21 lbs. .		0.21	NA							
								HMX, 0.002 lbs.										
								PBX-9501, 0.137 lbs.										
								PBX-9502, 0.07 lbs.										
Excess HE	37560	D003, D030	No		0.04			Total lab quantity HE in this section = 0.04 lbs. .		0.04	NA							

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
								Explosive D, 0.012 lbs.										
								BP, 0.011 lbs.										
								PETN, 0.002 lbs.										
								TNT, 0.011 lbs.										
PBX-9501 on brass bar	37446	D003	No		0.55					0.55	NA					PBX-9501, PBX-9502 bonded to brass		
HE (PETN) on cellulosics	28345	D003, D030	No	06/14/06	0.10					0.10	NA	PETN on filter cartridge						(1) det; (1) pellet; 25 lbs. ANFO; (1) PBX-9501 cylinder = 4.2#
Classified explosives	34760	D003, D030	Yes		<2.0		CHNO Dets, 1.03 lbs.			2.00	NA							
Type 6S Primaries	34760	D003	No		2.22		HMX Primaries, 2.00 lbs.											
Lead-based Primaries	37092	D003, D008	No		1.00		Lead Primaries, 1.00 lbs.										Lead styphnate, lead azide	
HE Contaminated Debris	30373	D003, D030	No		0.61							CHNO contaminated lab debris (kimwipes, swabs, weigh boats)						
Excess HE	37560	D003, D030	No	06/27/06	175.36	Total quantity HE in this section = 151.61 lbs.		Total lab quantity HE in this section = 19.45 lbs.		175.36	NA		Gun Propellant (NC/NG/NQ/DNT), 0.52 lb.			PBX-9501 HE from Spigot Gun Targets, Modified Stevens Targets, 3.78 lbs.		(1) det; (4) pellets; 50 lbs. PBX-9501 bulk material; 50lbs. ANFO; 10 ft Primacord; (2) PBX-9501
						ANFO, 1.0 lbs.												
						Comp A, 0.77 lb												
						Comp B		Comp B, 0.07 lb.										
						Comp. C-4, 0.73 lb.												
						Cyclotol, 0.33 lb.		Cyclotol, 0.71 lb.										

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
						DINGU, 0.62		DINGU										cylinders = 8.4 lbs.
						EDC-32		EDC-32, 0.11 lb.										
						EDC-35		EDC-35, 0.22 lb.										
						EDC-37		EDC-37, 5.14 lb.										
						Exp. D, 2.0 lb.		Exp D, 0.06 lb.										
						Octol, 0.55 lb.												
						Pentolite, 1.5 lb.		Pentolite, 0.49										
						PYX		PYX, 0.19 lb.										
						TATB, 15.55lb.		TATB										
						Tetryl		Tetryl, 0.30 lbs.										
						TNT, 2.26 lb.		TNT										
						PBX-9010, 0.56 lbs.		08/31/24										
						PBX-9404		PBX-9404, 0.08 lb.										
						PBX-9501, 89.57 lbs.		PBX-9501, 10.81										
						PBX-9502, 14.37 lbs.		PBX-9502										
						LX-10		LX-10, 0.04 lb.										
						LX-14		LX-14, 0.04 lb.										
						LX-17		LX-17, 0.24 lb.										
						X-0211		X-0211, 0.04 lb.										
						X-0233,		X-0233, 0.01 lb.										
						X-0242, 19.6		X-0242, 0.03 lb.										
						X-0523,		X-0523, 0.02 lb.										
						X-0527,		X-0527, 0.77 lb.										
						X-0533		X-0533, 0.04 lb.										
						X-0534		X-0534, 0.03 lb.										
						X-0544, 2.2 lb.												
						XTX-8003		XTX-8003, 0.01 lb.										

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
?? HE	37560	D003, D030	No	08/02/06	172.99	Total HE this section = 142.93 lbs.		Total Lab Quantity this section = 30.06 lbs.		172.99	NA							(1) det; (1) pellet; (1) PBX-9501 cylinder = 2 lbs.; 45 lbs. PBX-9501 bulk material
						PBX-9501, 129.02 lbs.		PBX-9501, 28.58 lbs.										
						PBX-9502, 11.88 lbs.		PBX-9502, 0.91 lbs.										
						TATB, 0.88 lbs.		TATB, 0.29 lbs.										
						X-0562, 0.50 lbs.		PBX-9407, 0.28 lbs.										
						X-0563, 065 lbs.												
PBX 9501 on brass	37446	D003, D030	No	08/10/06	0.01											5 grams PBX-9501 bonded to brass piece		(3) dets; (1) PBX-9407 pellet; 22 lbs. PBX-9501 hemi; 135 lbs. PBX-9501 bulk material
Excess HE in metal cylinders	37560	D003, D030	No		100.00											(10) PBX 9501 charges, each 6" dia. X 10" tall encased in welded steel cylinders. 10 pounds each.		
Classified explosives	34760	D003	YES	08/28/06	<1.0		CHNO Dets, 0.16 lbs.			1.00	NA							(1) det; (4) pellets; (2) PBX-9501 boosters = 10 lbs.; 1 lb. LX17 booster; 1 lb PBX-
HE contaminated debris	28345	D003	No		0.32							PETN on filter cartridge; CHNO contaminated lab debris (kimwipes, swabs, weigh boats)						

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
HE contaminated debris	39522	D003, D030	No		4.50							CHNO contaminated lab debris (kimwipes, swabs, gloves, adhesives, paper, weigh boats)						9404 booster; (2) PBX-9502 cylinders = 16 lbs.;164 lbs. PBX-9501 bulk material; 5 lbs. TNT
HE contaminated debris	39521	D003, D030	No		4.00							CHNO contaminated lab debris (kimwipes, swabs, gloves, adhesives, paper, weigh boats)						
Excess HE in metal cylinders	37560	D003, D030	No		110.00											(11) PBX 9501 charges, each 6" dia. X 10" tall encased in welded steel cylinders. 10 pounds each.		(1) det; (1) pellet; (1) PBX-9501 hemi = 22 lbs.; 140 lbs. PBX-9501 bulk material
Picric acid, partially wetted	37560	D003, D030	No	08/30/06	1.10	Picric Acid, partially wetted, 1.10 lbs.											EXTREME CAUTION --in jar, wetted Handle as 1.1 D	
Box 4220 TA09 Magazine 0208A	37560	D003, D030	No		1.11			Total Lab Quantity this section = 1.11 lbs.		1.11	NA							
								PBX-9404, 0.12 lbs.										
								PBX-9407, 0.09 lbs.										
								PBX-9501, 0.65 lbs.										
								PBX-9502, 0.22 lbs.										
								TNT, 0.03 lbs.										

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
Damaged HE from compression testing, spigot gun tests, and impact samples. L category	37560	D003, D030	No	08/31/06	4.04					4.04	NA					PBX-9502, 2.31 lbs. PBX-9501, 1.73 lbs.		
Excess HE in metal boxes	37560	D003, D030	No		0.28											Black Powder in metal box, 0.22 lbs.; Mixed DINGU/TNT/TATB in metal box, 0.06 lbs.		(1) det; (3) pellets; (1) PBX-9501 hemi = 22 lbs.; (2) PBX-9501 cylinders = 4 lbs.; 148 lbs. PBX-9502 bulk material; 80 lbs. PBX-9501 bulk material; 52 lbs. Comp B; 46 lbs. X-0557 .
Excess HE and mixed propellants	37560	D003, D030	No		230.92	Total HE this section = 213.68 lbs.		Total Lab Quantity HE this section = 17.24 lbs.		230.92	NA						Propellants and smokeless powders appeared to have been mixed with other materials for experiments	
						M1 Propellant, 28.39 lbs.		M1 Propellant, 1.424 lbs.										
						M8 Propellant, 2.0 lbs.		PBX-9501, 6.727 lbs.										
						PBX-9501, 5.11 lbs.	5.11	PBX-9502, 1.285 lbs.										
						PBX-9502, 24.21 lbs.	24.21	Tetritol, 2.0 lbs.										
						TATB, 40.87 lbs.	40.87	Tritonal, 0.17 lbs.										
						Smokeless Powder, 7.97 lbs.		TATB, 0.22 lbs.										
						X-0407, 62.63 lbs.		X-0407, 1.97 lbs.										
						X-0450, 19.50 lbs.		HMX/RDX/PETN Mixed, 1.35 lbs.										

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
						X-0541, 23.00 lbs.		DAAF, 0.006 lbs.										
								PBXN-110, 0.55 lbs.										
								PBXN-9, 0.06 lbs.										
								Comp B, 0.522 lbs.										
								Semtex, 0.008 lbs.										
								ANFO, 0.68 lbs.										
								EDC-29, 0.06										
								LAX-112, 0.01 lbs.										
								PBX-9404, 0.075 lbs.										
								X-0541, 0.06 lbs.										
								EDC-37, 0.06 lbs.										
Excess HE, lab quantity, and mixed HE samples from TA37 Magazines	39555	D003, D030	No	10/04/06	221.98	Total HE this section = 203.30 lbs.		Total Lab Quantity and HE Samples this section = 18.68 lbs.		221.98	NA						Some of this HE originated in TA16-340, TA16-430, and TA16-460 and was transferred to TA37 magazines when facilities were vacated	(1) det, (5) pellets, 20 feet Primacord
						PBX-9501, 16.5 lbs.		HNS Mixed, 0.25 lbs.										
						PBX-9502, 11.5 lbs.		Tripeon, 0.27 lbs.										
						PBX-9205, 3.0 lbs.		NC/TNT Mixed, 0.06 lbs.										
						LX-07, 3.0 lbs.		NC, 0.06 lbs.										

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
						PBX-9501 Mixed, 20 lbs.		TNT, 0.81 lbs.										
						PBX-9502 Mixed, 16 lbs.		TNT Mixed, 0.61 lbs.										
						TNT Mixed, 5.0 lbs.		1,3,5-Trinitrobenzene / HE Samples, 0.03 lbs.										
						DAAF, 0.8 lbs.		2,4,6-Trinitrobenzoic Acid / HE Samples, 0.23 lbs.										
						XTX-8003 Mixed, 3.5 lbs.		1,3 Dichloro-2,4,6-Trinitrobenzene / HE Samples, 0.17 lbs.										
						XTX-8004, 10 lbs.		2,4,6-Trinitroanisole / HE Samples, 0.22 lbs.										
						9007, 1 lbs.		2,4,6-Trinitroresorcinol / HE Samples, 0.06 lbs.										
						NQ, 11.5 lbs.		Nitroguanidine Mixed , 0.25 lbs.										
						AN, 1.25 lbs.		PBX-9501, 13.3 lbs.										
						9001, 1 lbs.		PBX-9502, 0.2 lbs.										
						PBX-9404, 0.5 lbs.		Comp B Mixed, 0.06 lbs.										
						PBX-9407, 1.0 lbs.		Dipicrylamine Mixed, 0.02 lbs.										
						RDX, 0.5 lbs.		DINGU, 0.01 lbs.										
						TATB, 4.5 lbs.		X-0290, 0.75 lbs.										
						X-0182, 2.0 lbs.		LX-07, 0.17 lbs.										

2006 RCRA Waste Explosive Descriptions, EPA Waste Codes, and Waste Amounts for TA-36-8 Plus the Calculation of the Metal to Waste Ratio

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
						X-0224, 8.25 lbs.		Nitro Urea/Urea Nitrate, 0.03 lbs.										
						X-0228, 2.5 lbs.		PBX-9407, 0.06 lbs.										
						X-0233, 3.5 lbs.		2,4,6-Trinitrometaxylene Samples, 0.11 lbs.										
						X-0234, 5 lbs.		DATB, 0.25 lbs.										
						X-0242, 3 lbs.		(6) Vials Mixed HE Samples										
						X-0280, 10 lbs.		RDX, 0.2 lbs.										
						X-0282, 2.5 lbs.												
						X-0283, 6.0 lbs.												
						X-0286, 1.5 lbs.												
						X-0298, 22 lbs.												
						X-0301, 1 lbs.												
						X-0303, 1.5 lbs.												
						X-0306, 4.5 lbs.												
						X-0308, 3.25 lbs.												
						X-0312, 1 lbs.												
						X-0406, 1 lbs.												
						X-0409, 0.5 lbs.												
						X-0410, 0.5 lbs.												
						X-0418, 1 lbs.												
						X-0419, 0.5 lbs.												
						X-0430, 0.5 lbs.												
						X-0438, 0.5 lbs.												
						X-0444, 1.5 lbs.												
						X-0463, 3.0 lbs.												
						X-0464, 0.5 lbs.												
						X-0513, 1.0 lbs.												
						X-0515, 1 lbs.												
						X-0516, 1.25 lbs.												
						X-0517, 1 lbs.												
						X-0521, 1 lbs.												
						RX-03-AT, 0.5 lbs.												

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
Excess HE and HE samples	39555	D003, D030	No	10/20/06	6.50	Total HE this section = 4.5 lbs.		Total Lab quantity HE and HE samples this section = 2.0 lbs.		6.50								(1) det; (1) pellet; 83 lbs. PBX-9501 pieces; 135 lbs. PBX-9501 bulk material; 9 lbs. PBX-9502 pieces; 46.5 lbs. TNT
						X-0233, 0.5 lbs.		(28) Misc HE Samples, 2.0 lbs. HE										
						X-0298, 1.5 lbs.												
						X-0407, 0.5 lbs.												
						PBX-9407, 0.5 lbs.												
						PBX-9502, 1 lbs.												
						EDD, 0.5 lbs.												
Excess Barium-based HE	39554	D001, D003, D005, D030	No		52.70	Total HE this section = 52.7 lbs.												
						X-0256, 0.50 lbs.				0.50								
						X-0262, 7.10 lbs.				7.10								
						X-0264, 7.10 lbs.				7.10								
						Baratol, 38 lbs.												
HE-contaminated shot debris B/C 10055613	30373	D003	YES	11/17/06	1.06							Polyamide film, cellulosics, copper, wood, plastics, 5% CHNO dets						(1) det; (1) pellet; 2 lbs. PBX-9501 piece; 45 lbs. PBX-9501 bulk material
HE and ethanol contaminated lab cleaning debris	39254	D001, D003	No		0.66					0.66		HE contaminated lab debris with trace ethanol (kimwipes, swabs, weigh boats)						

2006 RCRA Waste Explosive Descriptions, EPA Waste Codes, and Waste Amounts for TA-36-8 Plus the Calculation of the Metal to Waste Ratio

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
Classified explosives	34760	D003	YES		<1.0		CHNO dets			1.00	NA							
HE contaminated cellulosics (PETN filter)	28345	D003	No		0.15					0.15	NA	PETN on filter cartridge						
Excess explosives	39693	D003, D030	No	12/06/06	13.53	Total HE this section = 1 lbs.		Total lab quantity HE this section = 0.48 lbs.		0.48	NA					Total HE Assemblies this section = 12.05 lbs.		(1) det; (1) pellet; (1) PBX-9501 disc, 2 lbs.; 172.7 lbs. PBX-9501 bulk material; 102.5 lbs. PBX-9502 bulk material; 10 lbs. Octol; 2.5 lbs. PBX-9407; 24 lbs. TNT; 8 lbs. Comp B; 7 lbs. LX-07
						IMR 4198 Powder (NC / 2,4-DNT), 1.0 lbs.		IMR 4198 Powder (NC/2,4-DNT), 0.33 lbs.		0.33	NA					LX-07/PBX-9502 Assemblies, 12 lbs.		
								TATB, 0.04 lbs.		0.04	NA					DAAF Assemblies, 0.05 lbs.		
								Aluminum powder/HE/oil, 0.06 lbs.										
								Comp C-4, 0.02 lbs.		0.02	NA							
								PBX-9502, 0.03 lbs.		0.03	NA							
HE contaminated debris	39611	D003, D030	No		15.98							Total HE contaminated debris this section = 15.98 lbs.						
												HE contaminated debris with PBX-9501 chips and PBX-9502 pieces, 1.0 lbs.						

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
												HE contaminated debris with PBX-9502 pieces, 0.54 lbs.						
												HE contaminated debris (primarily cellulosics) with chunks of PBX-9501, PBX-9502, TATB, and PETN, 5.42 lbs.						
												HE contaminated debris, PETN and C-4, 0.06 lbs.						
												HE contaminated debris and sweepings TATB, LX-07, PBX-9501, PETN , C-4 8.75 lbs.						
												HE contaminated debris TATB, 0.06 lbs.						
												HE contaminated debris, X-0565, 0.06 lbs.						
Excess barium-based HE	39554	D001, D003, D005	No	12/13/06	116.50	Baratol, 56.5 lbs.	56.50											(1) det; (1) pellet; 67 lbs. PBX-

Description	WPF	EPA Waste Code(s)	Classified?	Date Treated	Waste Wt, lbs.	HE	Detonators, initiators	Lab Quantity HE	Developmental CHNO Explosives	Combined HE / Excess Explosives - lbs	Combined HE / Excess Explosives - Metal Content - lbs	HE Contaminated Debris	Propellants	Munitions	Shaped Charges	Other	Comments	Fuel (1) detonator = 0.625 g CHNO HE (1) pellet = 3 g PBX-9407
		, D030																9502 bulk material; 45 lbs. PBX-9501 bulk material; 8 lbs. X-0242; 12 lbs. PBX-9501 pieces
						LX-10, 60 lbs.	60.00			60.00								
		LBS.			**2602.00**					**2,361.7**								

Potential Metal Waste - lbs **240.25**

Factor for Metal containing waste **0.092** **Lb Metal / Lb Waste**

The following table lists the explosive waste detonated at the TA-36 and TA-39 OD units, based on a review of the operating record for these units. For each explosive material, an emission factor is shown with the appropriate emitted compound indicated in units emitted per unit of explosive waste detonated. For the emission products/constituents that have available screening values, the values have been included. Screening values are as identified in Section 4 of this document.

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)-Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
	Metals - Compounds in Energetics												
Aluminum Oxide 50-nm	Applied elemental data	1344-28-1	7.80E-01	lb/lb Metal	NL*	NL*	NL*	5.20E-01	7.80E+04	NL*	7.70E+03	NC	NL*
B+B113Barium nitrate		10022-31-8	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		
Barium	Applied elemental data	7440-39-3	7.80E-01	lb/lb Metal	1.50E+03	NL*	NL*	5.20E-02	1.56E+04	NL*	1.50E+03	NC	1.10E+02
Bismuth Trioxide		1304-76-3	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Calcium carbonate		471-34-1	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Calcium stearate		1592-23-0	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Cobalt Acetoacetonate	Applied elemental data	21679-46-9	7.80E-01	lb/lb Metal	NL*	NL*	NL*	6.30E-04	2.34E+01	1.72E+04	2.30E+00	NC	1.30E+01
Copper		7440-50-8	7.80E-01	lb/lb Metal	NL*	1.00E+02	NL*	NL*	3.13E+03	NL*	3.10E+02	NC	1.40E+01
KNO3	Potassium Nitrate	7757-79-1	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Lead		7439-92-1	7.80E-01	lb/lb Metal	1.50E+02	NL*	NL*	1.5E-01	4.00E+02	NL*	4.00E+02	G	1.10E+01
ortho-boric acid	Boric acid	10043-35-3	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Talc		14807-96-6	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Trioctyl phosphate	Tris(2-ethylhexyl)phosphate	78-42-2	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	1.70E+02	C	NL*
Tungsten Trioxide	Applied elemental data	1314-35-8	7.80E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	6.30E+00	NC	NL*
	Metals - Elemental in Energetics												
Aluminum, Type IV		7429-90-5	1.40E-01	lb/lb Metal	NL*	NL*	NL*	5.2E-01	7.80E+04	NL*	7.70E+03	NC	NL*
Aluminum, X-81		7429-90-5	1.40E-01	lb/lb Metal	NL*	NL*	NL*	5.2E-01	7.80E+04	NL*	7.70E+03	NC	NL*
Titanium		7440-32-6	1.40E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	NL*		7.70E+01

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)-Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
Tungsten, 112micron		7440-33-7	1.40E-01	lb/lb Metal	NL*	NL*	NL*	NL*	NL*	NL*	6.30E+00	NC	NL*
Energetic													
AN	Ammonium nitrate	6484-52-2	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
AP	Ammonium perchlorate	7790-98-9	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	5.50E+00	NC	NL*
CL20	hexantrohexaazaisowurtzitane	135285-90-4	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DAAF	Diamino-azoxyfurazaz	78644-89-0	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DAAT	3,3’-azobis (6-amino-1,2,4,5-tetrazine)	303749-95-3	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DAATOx	3,3’-azobis (6-amino-1,2,4,5-tetrazine) n-oxide	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
DAAzF	3,3' -diamino-4,4'-azofurazan	78644-90-3	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DATB	Diaminotrinitrobenzene	26616-30-8	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DHT	3,6-dihydrazino-s-tetrazine	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
DINA	Di (nitratoethyl) nitramine	4185-47-1	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DINGU	Dinitroglycouril	55510-04-8	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DiPEHN		not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
DNAN	2,4-Dinitroanisol	119-27-7	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DNAT	Dinitroazotriazole 100%	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
EDNA	Ethylenedinitramine, Halite	505-71-5	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
FOX-7	1,1-diamino-2,2-dinitroethylene	145250-81-3	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)-Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	2691-41-0	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	3.85E+03	NL*	3.90E+02	NC	1.60E+01
HNAB	2,2',4,4',6,6'-Hexanitroazobenzene	19159-68-3	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
HNS	Hexanitrostilbene	20062-22-0	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Hydrogen Peroxide	Pure Compound (above 80%)	7722-84-1	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Isopropylnitrate	IPN	1712-64-7	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
LAX-112	3,6-diamino-s-tetrazine-1,4-dioxide	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
LLM-105	2,6-Diamino-3,5-dinitropyrazine-1-Oxide	194486–77–6	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Methylnitrate	MN	598-58-3	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Nitrocellulose	NC	9004-70-0	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	1.90E+07	NC	NL*
Nitroguanidine (NQ)	Nitroguanidine, picrite	556-88-7	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	6.30E+02	NC	NL*
Nitromethane	NM	75-52-5	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	5.2E-01	NL*	NL*	5.40E+00	C	NL*
NTO	3-nitro-1,2,4-triazol-5-one	932–64–9	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
PETN	Pentaerythritol tetranitrate	78-11-5	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	1.30E+01	NC	1.00E+02
Picric Acid	2,4,6-trinitro-phenol	88-89-1	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
PYX	2,6-Bis(picrylamino)-3,5-dinitropyridine	38082-89-2	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine	121–82–4	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	3.01E+02	8.31E+01	8.30E+00	C	2.30E+00
TAGDNAT	Bis-Triaminoguanidinium 3,3'-Dintroazotriazole	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
TAGN	Triaminoguanidine Nitrate	4000–16–2	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
TAGN4BIM		not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
TAGzT	triaminoguanidium azotetrazolate	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute ($\mu g/m^3$)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute ($\mu g/m^3$)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic ($\mu g/m3$)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 ($\mu g/m3$)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)-Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
TATB	1,3,5-triamino-2,4,6-trinitro-benzene	3058–38–6	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Tetranitromethane	TNM	509-14-8	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Tetryl*	2,4,6-Trinitrophenyl-methyl-nitramine	479–45–8	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	1.56E+02	NL*	1.60E+01	NC	1.50E+00
TMETN	Trimethylolethane trinitrate	3032-55-1	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
TNAZ	1,3,3-Trinitroazetidine	97645–24–4	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
TNT	2,4,6-trinitrotoluene	118-96-7	2.0E-06	lb/lb Energetic	1.50E+03	NL*	NL*	NL*	3.60E+01	2.11E+02	3.60E+00	NC	7.50E+00
TriPEON	Tripentaerythritol octanitrate	29908-97-2	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
TZX	Diaminotetrazine dioxide	not found	2.0E-06	lb/lb Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Urea Nitrate		124-47-0	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
	Fuels												
dodecane		112-40-3	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
sugar		57-50-1	2.0E-06	lb/lb Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
	Binder/Plasticizer/Anti-oxidants												
2-bf		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Acrylonitrile	Acetonitrile	75-05-8	1.00E-08	lb/lb SVOC in Energetic	2.18E+04	NL*	5.00E+00	6.30E+00	NL*	NL*	8.10E+01	NC	NL*
BDNPA	BIS(2,2-DINITROPROPYL) ACETAL	5108-69-0	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
BDNPF	BIS(2,2-DINITROPROPYL) FORMAL	5917-61-3	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Beeswax		8012-89-3	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Bis(2-ethylhexyl) adipate	DEHA or Di(2-ethylhexyl)adipate	103-23-1	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	4.50E+02	C	NL*
Blue Dye		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Butadiene rubber		9003-17-2	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)- Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
Cab-o-sil		112945-52-5	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Carnuba Wax SP-8		8015-86-9	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
CEF	tris-beta-chloroethyl phosphate or tris(2-cloroethyl) phosphate	115-96-8	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	2.70E+01	C	NL*
DBP	Dibutylphthalate	84-74-2	1.00E-08	lb/lb SVOC in Energetic	1.50E+04	NL*	NL*	NL*	6.16E+03	NL*	6.30E+02	NC	1.10E-02
acetylene black	acetylene black	1333-86-4	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
di(2-ethylhexyl) sebacate		122-62-3	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DNEB	Dinitroethylbenzene	26590-17-0	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
DNT	Dinitrotoluene	121-14-2	1.00E-08	lb/lb SVOC in Energetic	6.00E+02	NL*	NL*	NL*	1.23E+02	1.71E+01	1.70E+00	C	6.00E+00
DOA	Dioctyladipate or Di(2-ethylhexyl)adipate	103-23-1	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	4.50E+02	C	NL*
DOP	Dioctylphthalate or Ethylhexyl Phthlate, Bis 2 or Bis(2-ethylhexyl)phthalate (di(2-ethylhexyl)phthalate, DEHP)	117-81-7	1.00E-08	lb/lb SVOC in Energetic	1.00E+04	NL*	NL*	NL*	1.23E+03	3.80E+02	3.90E+01	C	2.00E-02
DPA	Diphenylamine	122-39-4	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	6.30E+02	NC	1.00E+01
Dye		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
elastomeric binder		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Epoxy		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Estane 5703	polymeric elastomer	not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Exon 461	copolymer of chlorotrifluoroethylene/ tetrafluoroethylene/ vinylidene fluoride	24937-97-1	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
FEFO	Bis (2-fluoro-2,2-dinitroethyl) formal	17003-79-1	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
FO	Fuel Oil	not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Fomblin YL-VAC 16/6	1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd.	69991-67-9	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
FPC 461		24937-97-1	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
GAP	Glycidyl Azide *Polymer*	143178–24–9	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)-Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
graphite		7782-42-5	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Heavy oil (C28-H58)		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
HTPB	Hydroxy-terminated butadiene	69102-90-5	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Hytemp	Polyacrylate elastomer	not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Inert Binder		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
IPDI		4098-71-9	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Irganox 1010	Pentaerythritol Tetrakis (3-(3,5-di-tert-butyl-4-hydroxyphenyl) Propionate	6683-19-8	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Isodecyl pelargonate		109-32-0	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
K-10	DNEB/TNEB	mix	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Kel-F	homopolymer of chlorotrifluoroethylene	9002-83-9	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Kel-F 800	Chlorotrifluoroethylene/Vinylidene Fluoride Copolymer	9010-75-7	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Kraton	not specific	not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Lecithin, Liquid		8002-43-5	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Motor Oil		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
NP	not specific	not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
NuSil CF6-3500		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Oil		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
OXY-461		24937-97-1	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
PCP-0260		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
PCP-0301		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
perfluoropolyether diol		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute ($\mu g/m^3$)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute ($\mu g/m^3$)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)- Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
Plastic Tubing		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
plasticizer		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Poly (laurylmethacrylate)		25719-52-2	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
polyisobutylene		9003-27-4	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Polystyrene		9003-53-6	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Polyurethane		9009-54-5	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Resin		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Rubber		9003-31-0	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Silicone rubber		63394-02-5	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Stearic Acid		57-11-4	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Sylgard 182		mix	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Sylgard 24		mix	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Teflon		9002-84-0	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
TNEB	Trinitroethylbenzene	13985-60-9	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Viton A		9011-17-0	1.00E-08	lb/lb SVOC in Energetic	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Wax		not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Zeon polymer	Polyacrylate elastomer	not found	1.00E-08	lb/lb SVOC in Energetic	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
	Emission Products												
PM-10	Particulate Matter	none	1.1E+01	lb/lb NEW	NL*		NL*	NL*	NL*	NL*	NL*		NL*
Carbon Monoxide		630-08-0	2.0E-01	lb/lb C	NL*	2.30E+04	NL*	NL*	NL*	NL*	NL*		NL*
Carbon Dioxide		124-38-9	3.9E+00	lb/lb C	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Nitrogen Oxides (as NO_2 only)		multiple	3.2E-01	lb/lb N	NL*	4.70E+02	NL*	NL*	NL*	NL*	NL*		NL*

Emission Products, Emission Factors and Identified Screening Levels for Explosives Waste Detonated at the TA-36 and TA-39 OD Units

Emission Products/Constituents	Other Names, Composition, or Reference/Notes	CAS RN	Maximum Emission Factor - Surface Open Detonation (as fraction)	Unit of Measure based on AP-42, draft Ch. 16	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil - TR=1E-05 (mg/kg)	EPA RSLs(1)-Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	EPA RSLs - Minimum of C-Cancer or NC-NonCancer Listings	LANL Ecological Minimum Soil - No Effect ESL (mg/kg)
Sulfur Dioxide		7446-09-5	1.4E-03	lb/lb NEW	NL*	6.60E+02	NL*	NL*	NL*	NL*	NL*		NL*
Benzene		71-43-2	6.0E-04	lb/lb C	1.30E+03	2.70E+01	3.00E+00	3.1E+00	1.14E+02	1.78E+01	1.20E+00	C	2.40E+01
TNMHC	Total Non-methane hydrocarbons	na	3.4E-02	lb/lb C	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS	no CAS		no CAS
Acetylene		74-86-2	1.8E-03	lb/lb C	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Ethylene		74-85-1	2.3E-03	lb/lb C	NL*	NL*	NL*	NL*	NL*	NL*	NL*		NL*
Propylene		115-07-1	4.1E-04	lb/lb C	NL*	NL*	3.00E+03	3.1E+02	NL*	NL*	2.20E+02	NC	NL*
Toluene		108-88-3	1.9E-04	lb/lb C	3.70E+04	3.70E+04	3.00E+02	5.2E+02	5.23E+03	NL*	4.90E+02	NC	2.30E+01
Naphthalene		91-20-3	2.0E-06	lb/lb C	7.50E+04	NL*	9.00E+00	3.1E-01	1.62E+02	4.97E+01	3.80E+00	C	1.00E+00
Methylene Chloride		75-09-2	2.4E-03	lb/lb C	1.40E+04	1.40E+04	4.00E+02	6.3E+01	4.09E+02	7.66E+02	3.50E+01	NC	2.60E+00

NMED – New Mexico Environment Department; EPA – Environmental Protection Agency; LANL ESL – Los Alamos National Laboratory Ecological Screening Level; CA-OEHHA - California OEHHA Acute and Chronic RELs

c = cancer n = non-cancer µg/m^3 = micrograms per cubic meter mg/kg = milligram per kilogram

(1) Based on EPA Regional Screening Levels - RSLs - Residential Soil (RSL) table where carcinogenic Target Risk (TR) = 1E-06 and Non-cancer Child Hazard Index (HI) - 0.1

NL* - Not Listed in reference tables or database - No information provided based on CAS Number

G - for Lead and Lead Compounds based on User's Guidance

EXCEL Tables Used for Modeling Results Evaluation

TA-36-8 Screening Analysis Worksheet for Ambient Air Quality Standards

Basis	
2000	lb/hr detonation
0.092	lb metal / lb waste (1)
15000	lb/yr detonation
1	g/sec contaminant emission rate
Model Results (X/Q)	
7.67E-03	1-hour maximum value, ug/m^3 per g/sec contaminant
4.26E-03	3-hour maximum value, ug/m^3 per g/sec contaminant
2.28E-03	8-hour maximum value, ug/m^3 per g/sec contaminant
7.87E-04	24-hour maximum value, ug/m^3 per g/sec contaminant
3.87E-07	Annual maximum value, ug/m^3 per g/sec contaminant

Pollutant	Averaging Time	Emisson Factor lb/lb waste	Emission Rate g/sec	Maximum Concentration ug/m^3	NAAQS ug/m^3	NMAAQS ug/m^3	Air Quality Standard Exceeded?
Nitrogen Dioxide		3.2E-01					
(As NOX)	1-hour		8.06E+01	6.19E-01	188.03	none	No
	24-hour		8.06E+01	6.35E-02	none	188.03	No
	Annual		6.90E-02	2.67E-08	99.66	94.02	No
Carbon Monoxide		2.0E-01					
	1-hour		5.04E+01	3.87E-01	40069.6	14997.5	No
	8-hour		5.04E+01	1.15E-01	10303.6	9960.1	No
Sulfur Dioxide		1.4E-03					
	1-hour		3.53E-01	2.71E-03			
Background(10)	1-hour			1.32E+01			
Total	1-hour			1.32E+01	196.40	none	
	3-hour		3.53E-01	1.50E-03	1309.30	none	No
	24-hour		3.53E-01	2.78E-04	none	261.90	No
	Annual		3.02E-04	1.17E-10	none	52.40	No
PM_{10}		1.1E+01					
	24-hour		2.77E+03	2.18E+00			
Background(7)				2.30E+01			
Total				2.52E+01	150	none	No
$PM_{2.5}$							
	24-hour	1.1E+01	2.77E+03	2.18E+00			
Background(8)				9.45E+00			
Total				1.16E+01	35	none	No
	Annual	1.1E+01	2.37E+00	9.18E-07			
Background(9)				4.32E+00			
Total				4.32E+00	12	none	No
Lead	Quarterly	7.80E-01	1.81E+01	1.42E-02	0.15	none	No

Notes
1. Based on all waste being treated by OD at TA-36-8, the explosive waste with known metal contamination is less than 9.2%. See Attachment A for the calculation.
2. Both federal and state AAQS values are listed in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines dated 2019 JUNE 06.
3. Calculated maximum concentrations for NAAQS and NMAAQS are based on the first high value from OBODM model runs.
4. Calculated lead 3-month arithmetic mean assumes maximum 24-hour concentration occurs every day of the year.
Lead standard is typically specified as a three -month rolling average or quarterly average.
5. Emission factor for PM_{10} used also for $PM_{2.5}$ which over predicts $PM_{2.5}$ concentrations.
6. Particulate matter background concentrations added as specified from NMED Air Dispersion Modeling Guidelines, March 2019.
7. PM10 24-hr background - 2019 JUNE - North Central - Santa Fe - 23.0 ug/m3 max.

EXCEL Tables Used for Modeling Results Evaluation

8. PM2.5 24-hr background - 2019 JUNE - North Central - Santa Fe - 98 percentile - 9.45 ug/m3
9. PM2.5 Annual background - 2019 JUNE - North Central - Santa Fe - 4.32 ug/m3
10. SO2 1hr-background - 2019 JUNE - Albuquerque Region - 1-hr background - 15.8 ug/m3 and 1-hour background 99th percentile - 13.2 ug/m3

EXCEL Tables Used for Modeling Results Evaluation

TA-39-8 Screening Analysis Worksheet for Air Quality Standards

Basis

250	lb/hr detonation
4	detonations/hr
0.092	lb metal / lb waste (1)
15000	lb/yr detonation
1	g/sec contaminant emission rate

Model Results (X/Q)

6.53E-02	1-hour maximum value, ug/m3 per g/sec contaminant
2.61E-01	1-hour maximum value, ug/m3 per g/sec contaminant for 4 detonations/hr
2.81E-02	3-hour maximum value, ug/m3 per g/sec contaminant
1.93E-02	8-hour maximum value, ug/m3 per g/sec contaminant
6.42E-03	24-hour maximum value, ug/m3 per g/sec contaminant
4.83E-05	Annual maximum value, ug/m3 per g/sec contaminant

Pollutant	Averaging Time	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Concentration ug/m^3	NAAQS ug/m^3	NMAAQS ug/m^3	Air Quality Standard Exceeded?
Nitrogen Dioxide		3.2E-01					
	1-hour		1.01E+01	2.63E+00	188.03	none	No
	24-hour		1.01E+01	6.47E-02	none	188.03	No
	Annual		6.90E-02	3.33E-06	99.66	94.02	No
Carbon Monoxide		2.0E-01					
	1-hour		6.30E+00	1.65E+00	40069.6	14997.5	No
	8-hour		6.30E+00	1.22E-01	10303.6	9960.1	No
Sulfur Dioxide		1.4E-03					
	1-hour		4.41E-02				
Background(10)	1-hour		1.32E+01				
Total	1-hour		1.32E+01		196.40	none	
	3-hour		4.41E-02	1.24E-03	1309.30	none	No
	24-hour		4.41E-02	2.83E-04	none	261.90	No
	Annual		3.02E-04	1.46E-08	none	52.40	No
PM_{10}		1.1E+01					
	24-hour		3.47E+02	2.22E+00			No
Background(7)				2.30E+01			
Total				2.52E+01	150.00	none	
$PM_{2.5}$							
	24-hour	1.1E+01	3.47E+02	2.22E+00			No
Background(8)				9.45E+00			
Total				1.17E+01	35.00	none	
	Annual	1.1E+01	2.37E+00	1.15E-04			No
Background(9)				4.32E+00			
Total				4.32E+00	12.00	none	
Lead	Quarterly	7.80E-01	2.26E+00	1.45E-02	0.15	none	No

Notes

1. Based on all waste being treated by OD at TA-36-8, the explosive waste with known metal contamination is less than 9.2%. See Attachment A for the calculation.
2. Both federal and state AAQS values are listed in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines dated 2019 JUNE 06.
3. Calculated maximum concentrations for NAAQS and NMAAQS are based on the first high value from OBODM model runs.

EXCEL Tables Used for Modeling Results Evaluation

Pollutant	Averaging Time	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Concentration ug/m^3	NAAQS ug/m^3	NMAAQS ug/m^3	Air Quality Standard Exceeded?

4. Calculated lead 3-month arithmetic mean assumes maximum 24-hour concentration occurs every day of the year.
   Lead standard is typically specified as a three -month rolling average or quarterly average.
5. Emission factor for PM_{10} used also for $PM_{2.5}$ which over predicts $PM_{2.5}$ concentrations.
6. Particulate matter background concentrations added as specified from NMED Air Dispersion Modeling Guidelines, March 2019.
7. PM10 24-hr background - 2019 JUNE - North Central - Santa Fe - 23.0 ug/m3 max.
8. PM2.5 24-hr background - 2019 JUNE - North Central - Santa Fe - 98 percentile - 9.45 ug/m3
9. PM2.5 Annual background - 2019 JUNE - North Central - Santa Fe - 4.32 ug/m3
10. SO2 1hr-background - 2019 JUNE - Albuquerque Region - 1-hr background - 15.8 ug/m3 and 1-hour background 99th percentile - 13.2 ug/m3

EXCEL Tables Used for Modeling Results Evaluation

TA-36-8 Screening Analysis Worksheet for 1-Hour Air Concentration

Basis

2000 lb/hr detonation

0.092 Metal Waste fraction for metals emissions (see Explosives List explanation) - lb metal/lb waste

1 g/sec contaminant emission rate

Model Result (X/Q)

2.37E-01 1-hour maximum value, ug/m3 per g/sec contaminant

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum 1-Hour Concentration ug/m^3	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded ?
Carbon Monoxide (1)	2.00E-01	5.04E+01	1.19E+01	-	2.30E+04	No
Nitrogen Oxides (as NO_2 only)	3.20E-01	8.06E+01	1.91E+01	-	4.70E+02	No
Sulfur Dioxide (1)	1.40E-03	3.53E-01	8.35E-02	-	6.60E+02	No
Benzene (1)	6.00E-04	1.51E-01	3.58E-02	1.30E+03	2.70E+01	No
TNMHC (1)	3.40E-02	8.57E+00	2.03E+00	-	-	-
Acetylene (1)	1.80E-03	4.54E-01	1.07E-01	-	-	-
Ethylene (1)	2.30E-03	5.80E-01	1.37E-01	-	-	-
Propylene (1)	4.10E-04	1.03E-01	2.45E-02	-	-	-
Toluene (1)	1.90E-04	4.79E-02	1.13E-02	3.70E+04	3.70E+04	No
Naphthalene (2)	2.00E-06	5.04E-04	1.19E-04	7.50E+04	-	No
Methylene Chloride (1)	2.40E-03	6.05E-01	1.43E-01	1.40E+04	1.40E+04	No
Aluminum Oxide (3)	7.80E-01	1.81E+01	4.28E+00	-	-	-
Barium(3)	7.80E-01	1.81E+01	4.28E+00	1.50E+03	-	No
Cobalt Acetoacetonate (3)	7.80E-01	1.81E+01	4.28E+00	-	-	-
Copper (3)	7.80E-01	1.81E+01	4.28E+00	-	1.00E+02	No
Lead (3)	7.80E-01	1.81E+01	4.28E+00	1.50E+02	-	No
Trioctyl phosphate (3)	7.80E-01	1.81E+01	4.28E+00	-	-	-
Tungsten Trioxide (3)	7.80E-01	1.81E+01	4.28E+00	-	-	-
Aluminum (4)	1.40E-01	3.25E+00	7.68E-01	-	-	-
Titanium (4)	1.40E-01	3.25E+00	7.68E-01	-	-	-
Tungsten (4)	1.40E-01	3.25E+00	7.68E-01			
Ammonium perchlorate (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Nitrocellulose (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Nitroguanidine (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Nitromethane (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Pentaerythritol tetranitrate (PETN) (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
Tetryl (2)	2.00E-06	5.04E-04	1.19E-04	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	2.00E-06	5.04E-04	1.19E-04	1.50E+03	-	No
Acrylonitrile (5)	1.00E-08	2.52E-06	5.96E-07	2.18E+04	-	No
Bis(2-ethylhexyl)adipate (5)	1.00E-08	2.52E-06	5.96E-07	-	-	-
tris-2-chloroethyl phosphate (5)	1.00E-08	2.52E-06	5.96E-07	-	-	-

EXCEL Tables Used for Modeling Results Evaluation

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum 1-Hour Concentration ug/m^3	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded ?
Dibutylphthalate (5)	1.00E-08	2.52E-06	5.96E-07	1.50E+04	-	No
Dinitrotoluene (2,4-) (note #5)	1.00E-08	2.52E-06	5.96E-07	6.00E+02	-	No
Dioctyladipate (5)	1.00E-08	2.52E-06	5.96E-07	-	-	-
Dioctylphthalate (5)	1.00E-08	2.52E-06	5.96E-07	1.00E+04	-	No
Diphenylamine (5)	1.00E-08	2.52E-06	5.96E-07	-	-	-

Notes:

(1a) Based on all waste being treated by OD at TA-36-8, the explosive waste with known metal contamination is less than 9.2%. See Attachment A for the calculation.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

EXCEL Tables Used for Modeling Results Evaluation

TA-36-8 Screening Analysis Worksheet for Annual Air Concentration

Basis

15,000	lb/yr detonation
1	g/sec contaminant emission rate
0.092	lb metal / lb waste (1a)

Model Result (X/Q)

6.16E-05	Annual maximum value, ug/m3 per g/sec contaminant

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration ug/m^3	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Carbon Monoxide (1)	2.00E-01	4.32E-02	2.66E-06	-	-	-
Nitrogen Oxides (as NO_2 only)	3.20E-01	6.90E-02	4.25E-06	-	-	-
Sulfur Dioxide (1)	1.40E-03	3.02E-04	1.86E-08	-	-	-
Benzene (1)	6.00E-04	1.29E-04	7.97E-09	3.00E+00	3.1E+01	No
TNMHC (1)	3.40E-02	7.34E-03	4.52E-07	-	-	-
Acetylene (1)	1.80E-03	3.88E-04	2.39E-08	-	-	-
Ethylene (1)	2.30E-03	4.96E-04	3.05E-08	-	-	-
Propylene (1)	4.10E-04	8.85E-05	5.44E-09	3.00E+03	3.1E+02	No
Toluene (1)	1.90E-04	4.10E-05	2.52E-09	3.00E+02	5.2E+02	No
Naphthalene (2)	2.00E-06	4.32E-07	2.66E-11	9.00E+00	3.1E-01	No
Methylene Chloride (1)	2.40E-03	5.18E-04	3.19E-08	4.00E+02	6.3E+01	No
Aluminum Oxide (3)	7.80E-01	1.55E-02	9.53E-07	-	5.20E-01	No
Barium (3)	7.80E-01	1.55E-02	9.53E-07	-	5.20E-02	No
Cobalt Acetoacetonate (3)	7.80E-01	1.55E-02	9.53E-07	-	6.30E-04	No
Copper (3)	7.80E-01	1.55E-02	9.53E-07	-	-	-
Lead (3)	7.80E-01	1.55E-02	9.53E-07	-	1.5E-01	No
Trioctyl phosphate (3)	7.80E-01	1.55E-02	9.53E-07	-	-	-
Tungsten Trioxide (3)	7.80E-01	1.55E-02	9.53E-07	-	-	-
Aluminum (4)	1.40E-01	2.78E-03	1.71E-07	-	5.20E-01	No
Titanium (4)	1.40E-01	2.78E-03	1.71E-07	-	-	-
Tungsten (4)	1.40E-01	2.78E-03	1.71E-07	-	-	-
Ammonium perchlorate (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Nitrocellulose (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Nitroguanidine (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Nitromethane (2)	2.00E-06	4.32E-07	2.66E-11	-	5.20E-01	No
Pentaerythritol tetranitrate (PETN) (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Tetryl (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	2.00E-06	4.32E-07	2.66E-11	-	-	-
Acrylonitrile (5)	1.00E-08	2.16E-09	1.33E-13	5.00E+00	6.30E+00	No
Bis(2-ethylhexyl)adipate (5)	1.00E-08	2.16E-09	1.33E-13	-	-	-
tris-2-chloroethyl phosphate (5)	1.00E-08	2.16E-09	1.33E-13	-	-	-
Dibutylphthalate (5)	1.00E-08	2.16E-09	1.33E-13	-	-	-

EXCEL Tables Used for Modeling Results Evaluation

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration ug/m^3	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Dinitrotoluene (2,4-) (note #5)	1.00E-08	2.16E-09	1.33E-13	-	-	-
Dioctyladipate (5)	1.00E-08	2.16E-09	1.33E-13	-	-	-
Dioctylphthalate (5)	1.00E-08	2.16E-09	1.33E-13	-	-	-
Diphenylamine (5)	1.00E-08	2.16E-09	1.33E-13	-	-	-

Notes:
(1a) Based on all waste being treated by OD at TA-36-8, the explosive waste with known metal contamination is less than 9.2%. See Attachment A for the calculation.
(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.
(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic
(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.
(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.
(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.
(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

TA-36-8 Screening Analysis Worksheet for Soil Deposition

Basis

15,000 lb/yr detonation

1 g/sec contaminant emission rate

Model Result (X/Q)

6.16E-05 Annual maximum value, ug/m3 per g/sec contaminant

Contaminant	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	$t_{1/2}$ days	K_s	X	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum LANL ESL mg/kg	Receptor	ESL exceeded?
Carbon Monoxide	2.66E-06	1.15E-02	1.00E+08	6.93E-09	4.62E-02	1.57E-03	-	-	-	-	-	-	-
Nitrogen Oxides (as NO_2 only)	4.25E-06	1.84E-02	1.00E+08	6.93E-09	4.62E-02	2.51E-03	-	-	-	-	-	-	-
Sulfur Dioxide	1.86E-08	8.03E-05	1.00E+08	6.93E-09	4.62E-02	1.10E-05	-	-	-	-	-	-	-
Benzene	7.97E-09	3.44E-05	1.00E+08	6.93E-09	4.62E-02	4.71E-06	1.14E+02	1.78E+01	1.20E+00	No	2.40E+02	Deer mouse	No
TNMHC	4.52E-07	1.95E-03	1.00E+08	6.93E-09	4.62E-02	2.67E-04	-	-	-	-	-	-	-
Acetylene	2.39E-08	1.03E-04	1.00E+08	6.93E-09	4.62E-02	1.41E-05	-	-	-	-	-	-	-
Ethylene	3.05E-08	1.32E-04	1.00E+08	6.93E-09	4.62E-02	1.81E-05	-	-	-	-	-	-	-
Propylene	5.44E-09	2.35E-05	1.00E+08	6.93E-09	4.62E-02	3.22E-06	-	-	2.20E+02	No	-	-	-
Toluene	2.52E-09	1.09E-05	1.00E+08	6.93E-09	4.62E-02	1.49E-06	5.23E+03	-	4.90E+02	No	2.30E+01	Montane shrew	No
Naphthalene	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	1.62E+02	4.97E+01	1.22E+02	No	1.00E+00	Plant	No
Methylene Chloride	3.19E-08	1.38E-04	1.00E+08	6.93E-09	4.62E-02	1.88E-05	4.09E+02	7.66E+02	3.50E+01	No	2.60E+00	Deer mouse	No
Aluminum Oxide	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	7.80E+04	-	7.70E+03	No	-	-	-
Barium	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	1.56E+04	-	1.50E+03	No	1.10E+02	Plant	No
Cobalt Acetoacetonate	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	2.34E+01	1.72E+04	2.30E+00	No	1.30E+01	Plant	No
Copper	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	3.13E+03	-	3.10E+02	No	1.40E+01	American robin	No
Lead	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	4.00E+02	-	4.00E+02	No	1.10E+01	American robin	No
Trioctyl phosphate	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	-	-	1.70E+02	No	-	-	-
Tungsten Trioxide	9.53E-07	4.12E-03	1.00E+08	6.93E-09	4.62E-02	5.64E-04	-	-	6.30E+00	No	-	-	-
Aluminum	1.71E-07	7.39E-04	1.00E+08	6.93E-09	4.62E-02	1.01E-04	7.80E+04	-	7.70E+03	No	-	-	-
Titanium	1.71E-07	7.39E-04	1.00E+08	6.93E-09	4.62E-02	1.01E-04	-	-	-	-	7.70E+01	Montane shrew	No
Tungsten	1.71E-07	7.39E-04	1.00E+08	6.93E-09	4.62E-02	1.01E-04	-	-	6.30E+00	No	-	-	-
Ammonium perchlorate	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	-	-	5.50E+00	No	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX)	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	3.85E+03	-	3.90E+02	No	1.60E+01	Earthworm	No
Nitrocellulose	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	-	-	1.90E+07	No	-	-	-
Nitroguanidine	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	-	-	6.30E+02	No	-	-	-
Nitromethane	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	-	-	5.40E+00	No	-	-	-
Pentaerythritol tetranitrate (PETN)	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	-	-	1.30E+01	No	1.00E+02	Deer mouse	No
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	3.01E+02	8.31E+01	8.30E+00	No	2.30E+00	American robin	No
Tetryl	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	1.56E+02	-	1.60E+01	No	1.50E+00	Deer mouse	No
2,4,6-trinitrotoluene (TNT)	2.66E-11	1.15E-07	1.00E+08	6.93E-09	4.62E-02	1.57E-08	3.60E+01	2.11E+02	3.60E+00	No	7.50E+00	American robin	No
Acrylonitrile	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	-	-	8.10E+01	No	-	-	-
Bis(2-ethylhexyl)adipate	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	-	-	4.50E+02	No	-	-	-
tris-2-chloroethyl phosphate	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	-	-	2.70E+01	No	-	-	-

EXCEL Tables Used for Modeling Results Evaluation

Contaminant	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	$t_{1/2}$ days	K_s	X	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum LANL ESL mg/kg	Receptor	ESL exceeded?
Dibutylphthalate	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	6.16E+03	-	6.30E+02	No	1.10E-02	American robin	No
Dinitrotoluene (2,4-)	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	1.23E+02	1.71E+01	1.70E+00	No	6.00E+00	Plant	No
Dioctyladipate	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	-	-	4.50E+02	No	-	-	-
Dioctylphthalate	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	1.23E+03	3.80E+02	3.90E+01	No	9.10E-01	Montane shrew	No
Diphenylamine	1.33E-13	5.74E-10	1.00E+08	6.93E-09	4.62E-02	7.85E-11	-	-	6.30E+02	No	1.00E+01	Robin insectivore	No

Notes

1 Soil concentrations calculated from annual model result using procedures from *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, CA OEHHA August 2003.

2 No degradation is assumed using half-live of 1.00E+08 which overpredicts for organic compounds.

3 Calculation used described below.

$C_s = Dep * X / (K_s * SD * BD * T_t)$

Dep = Deposition on the affected soil area per day (ug/m^2/d)

Dep = GLC * Dep-rate * 86,400

GLC = The chemical specific annual ground level concentation from OBODM result and emission factor (ug/m^3)

Dep-rate = 0.05 m/sec (default value for uncontrolled source)

86,400 = Seconds per day conversion factor

$X = [\{e^{-K_s * T_f} - e^{-K_s * T_o}\} / K_s] + T_t$

e = 2.718

K_s = Soil elimination constant

3650 T_f = End of evaluation period (d)

0 T_o = Beginning of evaluation period (d)

3650 T_t = Total days of exposure period $T_f - T_o$ (d)

$K_s = 0.693 / t_{1/2}$

0.693 = Natural log of 2

$t_{1/2}$ = Chemical specific soil half-life (d)

Additional default values

0.01 SD = Soil mixing depth (m) = 0.01 for soil ingestion or dermal pathway (analysis is on Laboratory property)

1,333 BD = Soil bulk density (kg/m^3)

4 As described in the narrative, where there is either a non-cancer or cancer screening level for COPC, the lesser of the two is used for the evaluation. The EPA RSL is only applied when NMED has no value listed for the COPC.

EXCEL Tables Used for Modeling Results Evaluation

TA-39-6 Screening Analysis Worksheet for 1-Hour Air Concentration

Basis

250 lb/hr detonation

4 detonations/hr

0.092 lb metal / lb waste (1a)

1.00E+00 g/sec contaminant emission rate

Model Result (X/Q)

1.54E+00 1-hour maximum value, ug/m3 per g/sec contaminant for 1 detonation

6.16E+00 1-hour maximum value, ug/m3 per g/sec contaminant for 4 detonations/hr

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum 1-Hour Concentration ug/m^3	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded?
Carbon Monoxide (1)	2.00E-01	6.30E+00	3.88E+01	-	2.30E+04	No
Nitrogen Oxides (as NO_2 only)	3.20E-01	1.01E+01	6.21E+01	-	4.70E+02	No
Sulfur Dioxide (1)	1.40E-03	4.41E-02	2.72E-01	-	6.60E+02	No
Benzene (1)	6.00E-04	1.89E-02	1.16E-01	1.30E+03	2.70E+01	No
TNMHC (1)	3.40E-02	1.07E+00	6.60E+00	-	-	-
Acetylene (1)	1.80E-03	5.67E-02	3.49E-01	-	-	-
Ethylene (1)	2.30E-03	7.25E-02	4.46E-01	-	-	-
Propylene (1)	4.10E-04	1.29E-02	7.96E-02	-	-	-
Toluene (1)	1.90E-04	5.99E-03	3.69E-02	3.70E+04	3.70E+04	No
Naphthalene (2)	2.00E-06	6.30E-05	3.88E-04	7.50E+04	-	No
Methylene Chloride (1)	2.40E-03	7.56E-02	4.66E-01	1.40E+04	1.40E+04	No
Aluminum Oxide (1a, 3)	7.80E-01	2.26E+00	1.39E+01	-	-	-
Barium(1a, 3)	7.80E-01	2.26E+00	1.39E+01	1.50E+03	-	No
Cobalt Acetoacetonate (1a, 3)	7.80E-01	2.26E+00	1.39E+01	-	-	-
Copper (1a, 3)	7.80E-01	2.26E+00	1.39E+01	-	1.00E+02	No
Lead (1a, 3)	7.80E-01	2.26E+00	1.39E+01	1.50E+02	-	No
Trioctyl phosphate (1a, 3)	7.80E-01	2.26E+00	1.39E+01	-	-	-
Tungsten Trioxide (1a, 3)	7.80E-01	2.26E+00	1.39E+01	-		
Aluminum (4)	1.40E-01	4.06E-01	2.50E+00	-	-	-
Titanium (4)	1.40E-01	4.06E-01	2.50E+00	-	-	-
Tungsten (4)	1.40E-01	4.06E-01	2.50E+00			
Ammonium perchlorate (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Nitrocellulose (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Nitroguanidine (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Nitromethane (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Pentaerythritol tetranitrate (PETN) (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
Tetryl (2)	2.00E-06	6.30E-05	3.88E-04	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	2.00E-06	6.30E-05	3.88E-04	1.50E+03	-	No
Acrylonitrile (5)	1.00E-08	3.15E-07	1.94E-06	2.18E+04	-	No

EXCEL Tables Used for Modeling Results Evaluation

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum 1-Hour Concentration ug/m^3	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded?
Bis(2-ethylhexyl)adipate (5)	1.00E-08	3.15E-07	1.94E-06	-	-	-
tris-2-chloroethyl phosphate (5)	1.00E-08	3.15E-07	1.94E-06	-	-	-
Dibutylphthalate (5)	1.00E-08	3.15E-07	1.94E-06	1.50E+04	-	No
Dinitrotoluene (2,4-) (5)	1.00E-08	3.15E-07	1.94E-06	6.00E+02	-	No
Dioctyladipate (5)	1.00E-08	3.15E-07	1.94E-06	-	-	-
Dioctylphthalate (5)	1.00E-08	3.15E-07	1.94E-06	1.00E+04	-	No
Diphenylamine (5)	1.00E-08	3.15E-07	1.94E-06	-	-	-

Notes:

(1a) Based on all waste being treated by OD at TA-36-8, the explosive waste with known metal contamination is less than 9.2%. See Attachment A for the calculation.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic.

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

EXCEL Tables Used for Modeling Results Evaluation

TA-39-6 Screening Analysis Worksheet for Annual Air Concentration

Basis

15,000 lb/yr detonation

1 g/sec contaminant emission rate

0.092 lb metal / lb waste (1a)

Model Result (X/Q)

1.79E-03 Annual maximum value, ug/m3 per g/sec contaminant

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration ug/m^3	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Carbon Monoxide (1)	2.00E-01	4.32E-02	7.72E-05	-	-	-
Nitrogen Oxides (as NO_2 only)	3.20E-01	6.90E-02	1.24E-04	-	-	-
Sulfur Dioxide (1)	1.40E-03	3.02E-04	5.41E-07	-	-	-
Benzene (1)	6.00E-04	1.29E-04	2.32E-07	3.00E+00	3.10E+01	No
TNMHC (1)	3.40E-02	7.34E-03	1.31E-05	-	-	-
Acetylene (1)	1.80E-03	3.88E-04	6.95E-07	-	-	-
Ethylene (1)	2.30E-03	4.96E-04	8.88E-07	-	-	-
Propylene (1)	4.10E-04	8.85E-05	1.58E-07	3.00E+03	3.10E+02	No
Toluene (1)	1.90E-04	4.10E-05	7.34E-08	3.00E+02	5.20E+02	No
Naphthalene (2)	2.00E-06	4.32E-07	7.72E-10	9.00E+00	3.10E-01	No
Methylene Chloride (1)	2.40E-03	5.18E-04	9.27E-07	4.00E+02	6.30E+01	No
Aluminum Oxide (3)	7.80E-01	1.55E-02	2.77E-05	-	5.20E-01	No
Barium (3)	7.80E-01	1.55E-02	2.77E-05	-	5.20E-02	No
Cobalt Acetoacetonate (3)	7.80E-01	1.55E-02	2.77E-05	-	6.30E-04	No
Copper (3)	7.80E-01	1.55E-02	2.77E-05	-	-	-
Lead (3)	7.80E-01	1.55E-02	2.77E-05	-	1.50E-01	No
Trioctyl phosphate (3)	7.80E-01	1.55E-02	2.77E-05	-	-	-
Tungsten Trioxide (3)	7.80E-01	1.55E-02	2.77E-05	-	-	-
Aluminum (4)	1.40E-01	2.78E-03	4.97E-06	-	5.20E-01	No
Titanium (4)	1.40E-01	2.78E-03	4.97E-06	-	-	-
Tungsten (4)	1.40E-01	2.78E-03	4.97E-06	-	1.52E+00	-
Ammonium perchlorate (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX) (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
Nitrocellulose (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
Nitroguanidine (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
Nitromethane (2)	2.00E-06	4.32E-07	7.72E-10	-	5.20E-01	No
Pentaerythritol tetranitrate (PETN) (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-

EXCEL Tables Used for Modeling Results Evaluation

Contaminant	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration ug/m^3	CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
Tetryl (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
2,4,6-trinitrotoluene (TNT) (2)	2.00E-06	4.32E-07	7.72E-10	-	-	-
Acrylonitrile (5)	1.00E-08	2.16E-09	3.86E-12	5.00E+00	6.30E+00	No
Bis(2-ethylhexyl)adipate (5)	1.00E-08	2.16E-09	3.86E-12	-	-	-
tris-2-chloroethyl phosphate (5)	1.00E-08	2.16E-09	3.86E-12	-	-	-
Dibutylphthalate (5)	1.00E-08	2.16E-09	3.86E-12	-	-	-
Dinitrotoluene (2,4-) (note #5)	1.00E-08	2.16E-09	3.86E-12	-	-	-
Dioctyladipate (5)	1.00E-08	2.16E-09	3.86E-12	-	-	-
Dioctylphthalate (5)	1.00E-08	2.16E-09	3.86E-12	-	-	-
Diphenylamine (5)	1.00E-08	2.16E-09	3.86E-12	-	-	-

Notes:

(1a) Based on all waste being treated by OD at TA-36-8, the explosive waste with known metal contamination is less than 9.2%. See Attachment A for the calculation.

(1) Based on Maximum Emission Factors (EF) listed in Table 16.2-14 of the draft Chapter 16 of AP-42.

(2) Based on the Maximum Efs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs Not In Energetic

(3) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Compounds in Energetics.

(4) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for Metals - Elemental in Energetics.

(5) Based on the Maximum EFs listed in Table 16.2-14 of the draft Chapter 16 of AP-42 for SVOCs in Energetics. These are under the header of Binder/Plasticizer/Anti-oxidants in Att. A.

(5 continued) Since no data is listed for this EP, the value for BDL was assigned as explained In Section 2.1.4.4 on Page 22 of the Ch. 16 Background Document.

EXCEL Tables Used for Modeling Results Evaluation

TA-39-6 Screening Analysis Worksheet for Soil Concentration from Deposition

Basis

15,000 lb/yr detonation

1 g/sec contaminant emission rate

Model Result (X/Q)

1.79E-03 Annual maximum value, ug/m3 per g/sec contaminant

Contaminant	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	$t_{1/2}$ days	K_s	X	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs (4) - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum (No Effect) LANL ESL mg/kg	Receptor	ESL exceeded?
Carbon Monoxide	7.72E-05	3.34E-01	1.00E+08	6.93E-09	4.62E-02	4.57E-02	-	-	-	-	-	-	-
Nitrogen Oxides (as NO_2 only)	1.24E-04	5.34E-01	1.00E+08	6.93E-09	4.62E-02	7.31E-02	-	-	-	-	-	-	-
Sulfur Dioxide	5.41E-07	2.34E-03	1.00E+08	6.93E-09	4.62E-02	3.20E-04	-	-	-	-	-	-	-
Benzene	2.32E-07	1.00E-03	1.00E+08	6.93E-09	4.62E-02	1.37E-04	1.14E+02	1.78E+01	1.20E+00	No	2.40E+02	Deer mouse	No
TNMHC	1.31E-05	5.67E-02	1.00E+08	6.93E-09	4.62E-02	7.77E-03	-	-	-	-	-	-	-
Acetylene	6.95E-07	3.00E-03	1.00E+08	6.93E-09	4.62E-02	4.11E-04	-	-	-	-	-	-	-
Ethylene	8.88E-07	3.84E-03	1.00E+08	6.93E-09	4.62E-02	5.25E-04	-	-	-	-	-	-	-
Propylene	1.58E-07	6.84E-04	1.00E+08	6.93E-09	4.62E-02	9.36E-05	-	-	2.20E+02	No	-	-	-
Toluene	7.34E-08	3.17E-04	1.00E+08	6.93E-09	4.62E-02	4.34E-05	5.23E+03	-	4.90E+02	No	2.30E+01	Montane shrew	No
Naphthalene	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	1.62E+02	4.97E+01	1.22E+02	No	1.00E+00	Plant	No
Methylene Chloride	9.27E-07	4.00E-03	1.00E+08	6.93E-09	4.62E-02	5.48E-04	4.09E+02	7.66E+02	3.50E+01	No	2.60E+00	Deer mouse	No
Aluminum Oxide	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	7.80E+04	-	7.70E+03	No	-	-	-
Barium	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	1.56E+04	-	1.50E+03	No	1.10E+02	Plant	No
Cobalt Acetoacetonate	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	2.34E+01	1.72E+04	2.30E+00	No	1.30E+01	Plant	No
Copper	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	3.13E+03	-	3.10E+02	No	1.40E+01	American robin	No
Lead	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	4.00E+02	-	4.00E+02	No	1.10E+01	American robin	No
Trioctyl phosphate	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	-	-	1.70E+02	No	-	-	-
Tungsten Trioxide	2.77E-05	1.20E-01	1.00E+08	6.93E-09	4.62E-02	1.64E-02	-	-	6.30E+00	No	-	-	-
Aluminum	4.97E-06	2.15E-02	1.00E+08	6.93E-09	4.62E-02	2.94E-03	7.80E+04	-	7.70E+03	No	-	-	-
Titanium	4.97E-06	2.15E-02	1.00E+08	6.93E-09	4.62E-02	2.94E-03	-	-	-	-	7.70E+01	Montane shrew	No
Tungsten	4.97E-06	2.15E-02	1.00E+08	6.93E-09	4.62E-02	2.94E-03	-	-	6.30E+00	No	-	-	-
Ammonium perchlorate	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	-	-	5.50E+00	No	-	-	-
Octahydro-1,3,5,7-tertanitro-1,3,5,7-tetrazocine (HMX)	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	3.85E+03	-	3.90E+02	No	1.60E+01	Earthworm	No
Nitrocellulose	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	-	-	1.90E+07	No	-	-	-
Nitroguanidine	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	-	-	6.30E+02	No	-	-	-
Nitromethane	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	-	-	5.40E+00	No	-	-	-
Pentaerythritol tetranitrate (PETN)	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	-	-	1.30E+01	No	1.00E+02	Deer mouse	No
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	3.01E+02	8.31E+01	8.30E+00	No	2.30E+00	American robin	No
Tetryl	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	1.56E+02	-	1.60E+01	No	1.50E+00	Deer mouse	No
2,4,6-trinitrotoluene (TNT)	7.72E-10	3.34E-06	1.00E+08	6.93E-09	4.62E-02	4.57E-07	3.60E+01	2.11E+02	3.60E+00	No	7.50E+00	American robin	No
Acrylonitrile	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	-	-	8.10E+01	No	-	-	-
Bis(2-ethylhexyl)adipate	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	-	-	4.50E+02	No	-	-	-
tris-2-chloroethyl phosphate	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	-	-	2.70E+01	No	-	-	-
Dibutylphthalate	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	6.16E+03	-	6.30E+02	No	1.10E-02	American robin	No
Dinitrotoluene (2,4-)	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	1.23E+02	1.71E+01	1.70E+00	No	6.00E+00	Plant	No
Dioctyladipate	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	-	-	4.50E+02	No	-	-	-
Dioctylphthalate	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	1.23E+03	3.80E+02	3.90E+01	No	9.10E-01	Montane shrew	No
Diphenylamine	3.86E-12	1.67E-08	1.00E+08	6.93E-09	4.62E-02	2.28E-09	-	-	6.30E+02	No	1.00E+01	Robin insectivore	No

EXCEL Tables Used for Modeling Results Evaluation

Contaminant	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	$t_{1/2}$ days	K_s	X	10 Year Soil Concentration mg/kg	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	EPA RSLs (4) - Resident Soil based on TR=1E-06 or HI =0.1 (mg/kg)	Screening Level Exceeded?	Minimum (No Effect) LANL ESL mg/kg	Receptor	ESL exceeded?

Notes

1 Soil concentrations calculated from annual model result using procedures from *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments,* CA OEHHA August 2003.

2 No degradation is assumed using conservative half-live which over predicts for organic compounds.

3 Calculation used described below.

C_s = Dep * X / (K_s * SD * BD * T_t)

Dep = Deposition on the affected soil area per day (ug/m^2/d)

Dep = GLC * Dep-rate * 86,400

GLC = The chemical specific annual ground level concentration from OBODM result and emission factor (ug/m^3)

Dep-rate = 0.05 m/sec (default value for uncontrolled source)

86,400 = Seconds per day conversion factor

X = [{$e^{-K_s * T_f}$ - $e^{-K_s * T_o}$} / K_s] + T_t

e = 2.718

K_s = Soil elimination constant

3650 T_f = End of evaluation period (d)

0 T_o = Beginning of evaluation period (d)

3650 T_t = Total days of exposure period T_f - T_o (d)

K_s = 0.693 / $t_{1/2}$

0.693 = Natural log of 2

$t_{1/2}$ = Chemical specific soil half-life (d)

Additional default values

0.01 SD = Soil mixing depth (m) = 0.01 for soil ingestion or dermal pathway (analysis is on Laboratory property)

1,333 BD = Soil bulk density (kg/m^3)

4 As described in the narrative, where there is either a non-cancer or cancer screening level for COPC, the lesser of the two is used for the evaluation. The EPA RSL is only applied when NMED has no value listed for the COPC.

Supplement 4-4

Air Sampling at Open Detonation Units

Open Detonation Air Sampling Summary for Resource Conservation and Recovery Act (RCRA) Permitting at Los Alamos National Laboratory

Andrew Green and Shannon Allen
WES-EDA

During 2010 and 2011 the Environmental Data and Analysis Group (WES-EDA) AIRNET team conducted sampling of suites of dioxins, furans and metals in support of the RCRA permit for Los Alamos National Laboratory (LANL) operated by LANS, LLC.

This document is a brief description of the work that was performed by the AIRNET team. Shannon Allen headed up the field team of Joan Lujan, William Smith and Louis Naranjo. Shannon coordinated the equipment purchase and sample analysis. Andrew Green performed the data analysis with support from Luciana Vigil-Holterman.

Dioxin and Furan Detection Equipment and Methodology

Thirty samples were collected for analysis using the EPA TO-9A method. The samples were collected using appropriate specialized high volume air samplers (Model TE-1000 PUF Poly-Urethane Foam) which were purchased from Tisch Environmental, Inc.

Prior to sample collection the sampling equipment was calibrated as described in the Operations Manual for the TE-1000 PUF. Sample flow volumes were calculated as described in the manual. Average atmospheric pressure and temperature data used in the calculation were obtained from LANL's meteorological tower at TA-54.

Pre-prepared sample media for TO-9A was obtained from Test America. TO-9A filters included a poly-urethane foam filter in a glass cartridge, and an airborne particulate filter. The glass PUF cartridge and the particulate filter were installed in series into the PUF sample module and connected to the sampler.

After collection, samples were returned for analysis to Test America in the original pre-cleaned packaging which consisted of aluminum foil and zip lock bags. Samples were shipped from the LANL Sample Management Office using coolers and ice to preserve samples as required by the TO-9A method.

One field blank was collected for each day of sampling, for a total of 8 blank samples.

Nitrile gloves were used whenever sample media were handled.

Metals Detection Equipment and Methodology

Thirty metals samples were collected using high volume air samplers (Hi-Q Environmental Model HVP-3000 BRL). Polypropylene 8”x10” filters were used, which were pre-cut and sold by Hi-Q Environmental.

Three field blank samples were collected, one for every ten field samples.

Field samples were collected per SOP-5174 Rev. 1, “AIRNET – Using High Volume Samplers”. Samples were shipped by LANL’s Sample Management Office to the analytical laboratory, ALS.

Sampling Location Selection and Methodology

For each shot, two locations were sampled. Each location had one TE-1000 PUF sampler and one high-volume sampler from Hi-Q. Sampler locations were chosen the morning of each shot after observing the predominant wind direction at the site and looking at the wind direction reported on the LANL meteorology site. Samplers were set as closely as possible to the shot location in a down wind direction. Sampling equipment was started approximately 10 to 15 minutes prior to the shot, and run for at least 15 minutes after the shot. All samplers were powered with extension cords; no gas generators were used. Vehicles were not operated in the immediate area (within the shot exclusion zone) during the sampling period. Shots were monitored from inside the bunker, and any observed plume or wind direction during collection was documented in the field notes.

Data Analysis

The field data were coordinated with the data analysis results to derive volume concentrations which were then compared to acute air inhalation exposure concentrations listed in the companion database of the 2005 US Environmental Protection Agency (EPA) *Human Health Hazard Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA530-R-05-006) when available. Other acute inhalation screening levels were identified within the 1999 *Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels for Airborne Toxicants,* drafted by the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency. These comparisons are attached to this document.

Concluding Remarks

Data were collected following the standard protocol for such measurements.

Comparisons with identified screening levels indicate operations that were monitored did not exceed any appropriate state or federal levels specified for the analytes monitored.

====================end of document===================

Attachment

Summary of Analytical Results for Air Samples Collected at TA-36 and TA-39 Open Detonation Treatment Operations

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2834	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2824	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2827	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2844	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4185	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.2	pg/Filter	0.198	27	5.346	2.24E-01						
RE39-11-2842	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4191	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4187	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4196	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.93	pg/Filter	0.198	36.6	7.2468	1.28E-01						
RE39-11-4518	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE39-11-4522	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2824	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Heptachlorodibenzodioxins (Total)	50	pg/Filter			10.18	4.91E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2826	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2827	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2844	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4185	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Heptachlorodibenzodioxins (Total)	2	pg/Filter	0.198	27	5.346	3.74E-01						
RE39-11-2842	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4191	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4187	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4196	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Heptachlorodibenzodioxins (Total)	0.93	pg/Filter	0.198	36.6	7.2468	1.28E-01						
RE39-11-4518	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Heptachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE39-11-4522	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Heptachlorodibenzodioxins (Total)	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2824	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1	pg/Filter			10.18	9.82E-02						
RE36-11-2826	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2827	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2830	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2844	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4185	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.3	pg/Filter	0.198	27	5.346	2.43E-01						
RE39-11-2842	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4191	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4187	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4196	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter			0							
RE39-11-4522	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE36-11-2824	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE36-11-2827	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2844	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE36-11-4185	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE36-11-4191	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE36-11-4187	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE36-11-4196	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter			0							
RE39-11-4522	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-2824	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Heptachlorodibenzofurans (Total)	1	pg/Filter			10.18	9.82E-02						
RE36-11-2826	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-2827	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-2844	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4185	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2836	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Heptachlorodibenzofurans (Total)	1.3	pg/Filter	0.198	27	5.346	2.43E-01						
RE39-11-2842	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4191	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4187	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4196	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Heptachlorodibenzofurans (Total)	50	pg/Filter			0							
RE39-11-4522	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2840	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4193	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4195	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzodioxins (Total)	4	pg/Filter	0.153	39.6	6.0588	6.60E-01						
RE39-11-2845	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzodioxins (Total)	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzodioxins (Total)	1.3	pg/Filter	0.189	44.4	8.3916	1.55E-01						
RE36-11-2833	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzodioxins (Total)	1.5	pg/Filter	0.193	27.6	5.3268	2.82E-01						
RE39-11-2836	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzodioxins (Total)	2.3	pg/Filter	0.189	25.2	4.7628	4.83E-01						
RE39-11-2839	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzodioxins (Total)	2.1	pg/Filter	0.198	27	5.346	3.93E-01						
RE39-11-2842	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzodioxins (Total)	4.4	pg/Filter	0.168	36	6.048	7.28E-01						
RE36-11-4194	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzodioxins (Total)	2.3	pg/Filter	0.198	36.6	7.2468	3.17E-01						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-4518	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzodioxins (Total)	1.3	pg/Filter	0.202	30.6	6.1812	2.10E-01						
RE39-11-4520	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzodioxins (Total)	2.3	pg/Filter	0.211	28.8	6.0768	3.78E-01		0				0
RE39-11-2834	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter			0							

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-4522	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzofuran[1,2,3,4,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzofuran[1,2,3,6,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2824	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzofuran[1,2,3,7,8,9-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2828	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzofuran[2,3,4,6,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-2824	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Hexachlorodibenzofurans (Total)	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-2827	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2832	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-2844	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4185	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4191	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4187	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE36-11-4196	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Hexachlorodibenzofurans (Total)	50	pg/Filter			0							
RE39-11-4522	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	5.9	pg/Filter	0.153	39.6	6.0588	9.74E-01						
RE39-11-2845	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.8	pg/Filter			0							
RE36-11-2824	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4	pg/Filter	0.183	33	6.039	6.62E-01						
RE36-11-2825	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.1	pg/Filter			10.18	2.06E-01						
RE36-11-2826	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.4	pg/Filter			0							
RE36-11-2827	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.7	pg/Filter	0.188	29.4	5.5272	6.69E-01						
RE36-11-2828	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.8	pg/Filter	0.186	37.8	7.0308	5.40E-01						
RE36-11-2829	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.3	pg/Filter	0.19	22.2	4.218	1.02E+00						
RE36-11-2830	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.178	45	8.01	1.25E+01						
RE36-11-2831	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2	pg/Filter	0.167	28.2	4.7094	4.25E-01						
RE36-11-2832	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.189	44.4	8.3916	1.19E+01						
RE36-11-2833	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.3	pg/Filter			0							
RE36-11-2844	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.5	pg/Filter			0							
RE36-11-4185	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.6	pg/Filter	0.178	36	6.408	4.06E-01						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4186	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.7	pg/Filter	0.194	40.8	7.9152	3.41E-01						
RE39-11-2835	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.5	pg/Filter	0.193	27.6	5.3268	6.57E-01						
RE39-11-2836	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3	pg/Filter	0.192	19.2	3.6864	8.14E-01						
RE39-11-2837	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.1	pg/Filter	0.197	31.2	6.1464	5.04E-01						
RE39-11-2838	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.4	pg/Filter	0.189	25.2	4.7628	7.14E-01						
RE39-11-2839	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2	pg/Filter	0.198	30.6	6.0588	3.30E-01						
RE39-11-2840	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.7	pg/Filter	0.191	24	4.584	5.89E-01						
RE39-11-2841	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.4	pg/Filter	0.198	27	5.346	6.36E-01						
RE39-11-2842	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-4191	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.196	33	6.468	1.55E+01						
RE36-11-4193	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.3	pg/Filter	0.168	36	6.048	3.80E-01						
RE36-11-4194	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-4187	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	8.6	pg/Filter	0.198	23.4	4.6332	1.86E+00						
RE36-11-4188	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.189	38.4	7.2576	1.38E+01						
RE36-11-4195	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-4196	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	7.9	pg/Filter	0.197	101.4	19.9758	3.95E-01						
RE36-11-4198	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.169	111	18.759	5.33E+00						
RE39-11-2843	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.7	pg/Filter	0.198	36.6	7.2468	5.11E-01						
RE39-11-4518	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.1	pg/Filter	0.197	34.8	6.8556	5.98E-01						
RE39-11-4519	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.5	pg/Filter	0.202	30.6	6.1812	5.66E-01						
RE39-11-4520	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.2	pg/Filter	0.189	31.8	6.0102	5.32E-01						
RE39-11-4521	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE39-11-4522	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.6	pg/Filter	0.186	25.8	4.7988	3.33E-01						
RE39-11-4523	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.8	pg/Filter	0.211	28.8	6.0768	4.61E-01		0				0
RE39-11-2834	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.153	39.6	6.0588	1.65E+01						
RE39-11-2845	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-2824	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.183	33	6.039	1.66E+01						
RE36-11-2825	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			10.18	9.82E+00						
RE36-11-2826	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-2827	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.188	29.4	5.5272	1.81E+01						
RE36-11-2828	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.186	37.8	7.0308	1.42E+01						
RE36-11-2829	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.19	22.2	4.218	2.37E+01						
RE36-11-2830	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.178	45	8.01	1.25E+01						
RE36-11-2831	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.167	28.2	4.7094	2.12E+01						
RE36-11-2832	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.189	44.4	8.3916	1.19E+01						
RE36-11-2833	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-2844	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.6	pg/Filter			0							
RE36-11-4185	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.178	36	6.408	1.56E+01						
RE36-11-4186	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.194	40.8	7.9152	1.26E+01						
RE39-11-2835	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.6	pg/Filter	0.193	27.6	5.3268	3.00E-01						
RE39-11-2836	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.192	19.2	3.6864	2.71E+01						
RE39-11-2837	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.197	31.2	6.1464	1.63E+01						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2838	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.189	25.2	4.7628	2.10E+01						
RE39-11-2839	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.198	30.6	6.0588	1.65E+01						
RE39-11-2840	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.191	24	4.584	2.18E+01						
RE39-11-2841	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.198	27	5.346	1.87E+01						
RE39-11-2842	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-4191	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.196	33	6.468	1.55E+01						
RE36-11-4193	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.168	36	6.048	1.65E+01						
RE36-11-4194	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-4187	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.198	23.4	4.6332	2.16E+01						
RE36-11-4188	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.189	38.4	7.2576	1.38E+01						
RE36-11-4195	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE36-11-4196	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.197	101.4	19.9758	5.01E+00						
RE36-11-4198	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.169	111	18.759	5.33E+00						
RE39-11-2843	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.198	36.6	7.2468	1.38E+01						
RE39-11-4518	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.197	34.8	6.8556	1.46E+01						
RE39-11-4519	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.202	30.6	6.1812	1.62E+01						
RE39-11-4520	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.189	31.8	6.0102	1.66E+01						
RE39-11-4521	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter			0							
RE39-11-4522	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.186	25.8	4.7988	2.08E+01						
RE39-11-4523	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	100	pg/Filter	0.211	28.8	6.0768	1.65E+01		0				0
RE39-11-2834	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-2824	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-2827	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-2844	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4185	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2842	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4191	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4187	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4196	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter			0							
RE39-11-4522	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Pentachlorodibenzodioxin[1,2,3,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2824	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Pentachlorodibenzodioxins (Total)	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2827	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-2844	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4185	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Pentachlorodibenzodioxins (Total)	1.8	pg/Filter	0.198	27	5.346	3.37E-01						
RE39-11-2842	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4191	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4187	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE36-11-4196	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Pentachlorodibenzodioxins (Total)	1.5	pg/Filter	0.169	111	18.759	8.00E-02						
RE39-11-2843	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Pentachlorodibenzodioxins (Total)	50	pg/Filter			0							
RE39-11-4522	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Pentachlorodibenzodioxins (Total)	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-2824	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-2827	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-2844	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4185	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4191	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4187	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE36-11-4196	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4198	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter			0							
RE39-11-4522	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Pentachlorodibenzofuran[1,2,3,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2824	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2827	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-2844	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4185	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.192	19.2	3.6864	1.36E+01						
RE39-11-2837	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4191	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4187	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE36-11-4196	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-4520	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter			0							
RE39-11-4522	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Pentachlorodibenzofuran[2,3,4,7,8-]	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0
RE39-11-2834	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.153	39.6	6.0588	8.25E+00						
RE39-11-2845	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-2824	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.183	33	6.039	8.28E+00						
RE36-11-2825	Pentachlorodibenzofurans (Totals)	50	pg/Filter			10.18	4.91E+00						
RE36-11-2826	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-2827	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.188	29.4	5.5272	9.05E+00						
RE36-11-2828	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.186	37.8	7.0308	7.11E+00						
RE36-11-2829	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.19	22.2	4.218	1.19E+01						
RE36-11-2830	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.178	45	8.01	6.24E+00						
RE36-11-2831	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.167	28.2	4.7094	1.06E+01						
RE36-11-2832	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.189	44.4	8.3916	5.96E+00						
RE36-11-2833	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-2844	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-4185	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.178	36	6.408	7.80E+00						
RE36-11-4186	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.194	40.8	7.9152	6.32E+00						
RE39-11-2835	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.193	27.6	5.3268	9.39E+00						
RE39-11-2836	Pentachlorodibenzofurans (Totals)	2.6	pg/Filter	0.192	19.2	3.6864	7.05E-01						
RE39-11-2837	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.197	31.2	6.1464	8.13E+00						
RE39-11-2838	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.189	25.2	4.7628	1.05E+01						
RE39-11-2839	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.198	30.6	6.0588	8.25E+00						
RE39-11-2840	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.191	24	4.584	1.09E+01						
RE39-11-2841	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.198	27	5.346	9.35E+00						
RE39-11-2842	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-4191	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.196	33	6.468	7.73E+00						
RE36-11-4193	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.168	36	6.048	8.27E+00						
RE36-11-4194	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-4187	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.198	23.4	4.6332	1.08E+01						
RE36-11-4188	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.189	38.4	7.2576	6.89E+00						
RE36-11-4195	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE36-11-4196	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.197	101.4	19.9758	2.50E+00						
RE36-11-4198	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.169	111	18.759	2.67E+00						
RE39-11-2843	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.198	36.6	7.2468	6.90E+00						
RE39-11-4518	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.197	34.8	6.8556	7.29E+00						
RE39-11-4519	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.202	30.6	6.1812	8.09E+00						
RE39-11-4520	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.189	31.8	6.0102	8.32E+00						
RE39-11-4521	Pentachlorodibenzofurans (Totals)	50	pg/Filter			0							
RE39-11-4522	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.186	25.8	4.7988	1.04E+01						
RE39-11-4523	Pentachlorodibenzofurans (Totals)	50	pg/Filter	0.211	28.8	6.0768	8.23E+00		0				0

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2834	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.153	39.6	6.0588	1.65E+00						
RE39-11-2845	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-2824	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.183	33	6.039	1.66E+00						
RE36-11-2825	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			10.18	9.82E-01						
RE36-11-2826	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-2827	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.188	29.4	5.5272	1.81E+00						
RE36-11-2828	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.186	37.8	7.0308	1.42E+00						
RE36-11-2829	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.19	22.2	4.218	2.37E+00						
RE36-11-2830	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.178	45	8.01	1.25E+00						
RE36-11-2831	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.167	28.2	4.7094	2.12E+00						
RE36-11-2832	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.189	44.4	8.3916	1.19E+00						
RE36-11-2833	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-2844	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4185	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.178	36	6.408	1.56E+00						
RE36-11-4186	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.194	40.8	7.9152	1.26E+00						
RE39-11-2835	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.193	27.6	5.3268	1.88E+00						
RE39-11-2836	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.192	19.2	3.6864	2.71E+00						
RE39-11-2837	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.197	31.2	6.1464	1.63E+00						
RE39-11-2838	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.189	25.2	4.7628	2.10E+00						
RE39-11-2839	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.198	30.6	6.0588	1.65E+00						
RE39-11-2840	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.191	24	4.584	2.18E+00						
RE39-11-2841	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.198	27	5.346	1.87E+00						
RE39-11-2842	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4191	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.196	33	6.468	1.55E+00						
RE36-11-4193	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.168	36	6.048	1.65E+00						
RE36-11-4194	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4187	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.198	23.4	4.6332	2.16E+00						
RE36-11-4188	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.189	38.4	7.2576	1.38E+00						
RE36-11-4195	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4196	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.197	101.4	19.9758	5.01E-01						
RE36-11-4198	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.169	111	18.759	5.33E-01						
RE39-11-2843	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.198	36.6	7.2468	1.38E+00						
RE39-11-4518	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.197	34.8	6.8556	1.46E+00						
RE39-11-4519	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.202	30.6	6.1812	1.62E+00						
RE39-11-4520	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.189	31.8	6.0102	1.66E+00						
RE39-11-4521	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter			0							
RE39-11-4522	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.186	25.8	4.7988	2.08E+00						
RE39-11-4523	Tetrachlorodibenzodioxin[2,3,7,8-]	10	pg/Filter	0.211	28.8	6.0768	1.65E+00		0				0
RE39-11-2834	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.153	39.6	6.0588	1.65E+00						
RE39-11-2845	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-2824	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.183	33	6.039	1.66E+00						
RE36-11-2825	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			10.18	9.82E-01						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2826	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-2827	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.188	29.4	5.5272	1.81E+00						
RE36-11-2828	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.186	37.8	7.0308	1.42E+00						
RE36-11-2829	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.19	22.2	4.218	2.37E+00						
RE36-11-2830	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.178	45	8.01	1.25E+00						
RE36-11-2831	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.167	28.2	4.7094	2.12E+00						
RE36-11-2832	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.189	44.4	8.3916	1.19E+00						
RE36-11-2833	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-2844	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-4185	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.178	36	6.408	1.56E+00						
RE36-11-4186	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.194	40.8	7.9152	1.26E+00						
RE39-11-2835	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.193	27.6	5.3268	1.88E+00						
RE39-11-2836	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.192	19.2	3.6864	2.71E+00						
RE39-11-2837	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.197	31.2	6.1464	1.63E+00						
RE39-11-2838	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.189	25.2	4.7628	2.10E+00						
RE39-11-2839	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.198	30.6	6.0588	1.65E+00						
RE39-11-2840	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.191	24	4.584	2.18E+00						
RE39-11-2841	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.198	27	5.346	1.87E+00						
RE39-11-2842	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-4191	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.196	33	6.468	1.55E+00						
RE36-11-4193	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.168	36	6.048	1.65E+00						
RE36-11-4194	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-4187	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.198	23.4	4.6332	2.16E+00						
RE36-11-4188	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.189	38.4	7.2576	1.38E+00						
RE36-11-4195	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE36-11-4196	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.197	101.4	19.9758	5.01E-01						
RE36-11-4198	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.169	111	18.759	5.33E-01						
RE39-11-2843	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.198	36.6	7.2468	1.38E+00						
RE39-11-4518	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.197	34.8	6.8556	1.46E+00						
RE39-11-4519	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.202	30.6	6.1812	1.62E+00						
RE39-11-4520	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.189	31.8	6.0102	1.66E+00						
RE39-11-4521	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0							
RE39-11-4522	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.186	25.8	4.7988	2.08E+00						
RE39-11-4523	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.211	28.8	6.0768	1.65E+00		0				0
RE39-11-2834	Tetrachlorodibenzofuran[2,3,7,8-]	2.4	pg/Filter	0.153	39.6	6.0588	3.96E-01						
RE39-11-2845	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-2824	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.183	33	6.039	1.66E+00						
RE36-11-2825	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			10.18	9.82E-01						
RE36-11-2826	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-2827	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.188	29.4	5.5272	1.81E+00						
RE36-11-2828	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.186	37.8	7.0308	1.42E+00						
RE36-11-2829	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.19	22.2	4.218	2.37E+00						

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2830	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.178	45	8.01	1.25E+00						
RE36-11-2831	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.167	28.2	4.7094	2.12E+00						
RE36-11-2832	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.189	44.4	8.3916	1.19E+00						
RE36-11-2833	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-2844	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4185	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.178	36	6.408	1.56E+00						
RE36-11-4186	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.194	40.8	7.9152	1.26E+00						
RE39-11-2835	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.193	27.6	5.3268	1.88E+00						
RE39-11-2836	Tetrachlorodibenzofuran[2,3,7,8-]	1.8	pg/Filter	0.192	19.2	3.6864	4.88E-01						
RE39-11-2837	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.197	31.2	6.1464	1.63E+00						
RE39-11-2838	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.189	25.2	4.7628	2.10E+00						
RE39-11-2839	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.198	30.6	6.0588	1.65E+00						
RE39-11-2840	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.191	24	4.584	2.18E+00						
RE39-11-2841	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.198	27	5.346	1.87E+00						
RE39-11-2842	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4191	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.196	33	6.468	1.55E+00						
RE36-11-4193	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.168	36	6.048	1.65E+00						
RE36-11-4194	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4187	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.198	23.4	4.6332	2.16E+00						
RE36-11-4188	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.189	38.4	7.2576	1.38E+00						
RE36-11-4195	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter			0							
RE36-11-4196	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.197	101.4	19.9758	5.01E-01						
RE36-11-4198	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.169	111	18.759	5.33E-01						
RE39-11-2843	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.198	36.6	7.2468	1.38E+00						
RE39-11-4518	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.197	34.8	6.8556	1.46E+00						
RE39-11-4519	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.202	30.6	6.1812	1.62E+00						
RE39-11-4520	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.189	31.8	6.0102	1.66E+00						
RE39-11-4521	Tetrachlorodibenzofuran[2,3,7,8-]	2.1	pg/Filter			0							
RE39-11-4522	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.186	25.8	4.7988	2.08E+00						
RE39-11-4523	Tetrachlorodibenzofuran[2,3,7,8-]	10	pg/Filter	0.211	28.8	6.0768	1.65E+00		0				0
RE39-11-2834	Tetrachlorodibenzofurans (Totals)	2.4	pg/Filter	0.153	39.6	6.0588	3.96E-01						
RE39-11-2845	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							
RE36-11-2824	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.183	33	6.039	1.66E+00						
RE36-11-2825	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			10.18	9.82E-01						
RE36-11-2826	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							
RE36-11-2827	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.188	29.4	5.5272	1.81E+00						
RE36-11-2828	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.186	37.8	7.0308	1.42E+00						
RE36-11-2829	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.19	22.2	4.218	2.37E+00						
RE36-11-2830	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.178	45	8.01	1.25E+00						
RE36-11-2831	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.167	28.2	4.7094	2.12E+00						
RE36-11-2832	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.189	44.4	8.3916	1.19E+00						
RE36-11-2833	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2844	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							
RE36-11-4185	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.178	36	6.408	1.56E+00						
RE36-11-4186	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.194	40.8	7.9152	1.26E+00						
RE39-11-2835	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.193	27.6	5.3268	1.88E+00						
RE39-11-2836	Tetrachlorodibenzofurans (Totals)	49	pg/Filter	0.192	19.2	3.6864	1.33E+01	detect		1.50E-03		1.50E+06	
RE39-11-2837	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.197	31.2	6.1464	1.63E+00						
RE39-11-2838	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.189	25.2	4.7628	2.10E+00						
RE39-11-2839	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.198	30.6	6.0588	1.65E+00						
RE39-11-2840	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.191	24	4.584	2.18E+00						
RE39-11-2841	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.198	27	5.346	1.87E+00						
RE39-11-2842	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							
RE36-11-4191	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.196	33	6.468	1.55E+00						
RE36-11-4193	Tetrachlorodibenzofurans (Totals)	11	pg/Filter	0.168	36	6.048	1.82E+00						
RE36-11-4194	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							
RE36-11-4187	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.198	23.4	4.6332	2.16E+00						
RE36-11-4188	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.189	38.4	7.2576	1.38E+00						
RE36-11-4195	Tetrachlorodibenzofurans (Totals)	10	pg/Filter			0							
RE36-11-4196	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.197	101.4	19.9758	5.01E-01						
RE36-11-4198	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.169	111	18.759	5.33E-01						
RE39-11-2843	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.198	36.6	7.2468	1.38E+00						
RE39-11-4518	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.197	34.8	6.8556	1.46E+00						
RE39-11-4519	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.202	30.6	6.1812	1.62E+00						
RE39-11-4520	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.189	31.8	6.0102	1.66E+00						
RE39-11-4521	Tetrachlorodibenzofurans (Totals)	2.1	pg/Filter			0							
RE39-11-4522	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.186	25.8	4.7988	2.08E+00						
RE39-11-4523	Tetrachlorodibenzofurans (Totals)	10	pg/Filter	0.211	28.8	6.0768	1.65E+00		1				0
RE39-11-2936	Aluminum	230	ug/FILTER	1.11851544	36	40.26656	5.71E+00	detect		none specified			
RE39-11-2945	Aluminum	41	ug/FILTER			0		detect		none specified			
RE36-11-2914	Aluminum	34	ug/FILTER	1.104357017	30	33.13071	1.03E+00	detect		none specified			
RE36-11-2915	Aluminum	41	ug/FILTER	1.132673864	54	61.16439	6.70E-01	detect		none specified			
RE36-11-2916	Aluminum	39	ug/FILTER	1.132673864	30	33.98022	1.15E+00	detect		none specified			
RE36-11-2917	Aluminum	32	ug/FILTER	1.132673864	36	40.77626	7.85E-01	detect		none specified			
RE36-11-2918	Aluminum	65	ug/FILTER	1.104357017	18	19.87843	3.27E+00	detect		none specified			
RE36-11-2919	Aluminum	68	ug/FILTER	1.132673864	42	47.5723	1.43E+00	detect		none specified			
RE36-11-2920	Aluminum	100	ug/FILTER	1.132673864	24	27.18417	3.68E+00	detect		none specified			
RE36-11-2921	Aluminum	89	ug/FILTER	1.132673864	42	47.5723	1.87E+00	detect		none specified			
RE36-11-2922	Aluminum	54	ug/FILTER	1.104357017	36	39.75685	1.36E+00	detect		none specified			
RE36-11-2923	Aluminum	46	ug/FILTER	1.104357017	36	39.75685	1.16E+00	detect		none specified			
RE39-11-2935	Aluminum	47	ug/FILTER	1.132673864	30	33.98022	1.38E+00	detect		none specified			
RE39-11-2937	Aluminum	38	ug/FILTER	1.132673864	18	20.38813	1.86E+00	detect		none specified			
RE39-11-2938	Aluminum	190	ug/FILTER	1.132673864	30	33.98022	5.59E+00	detect		none specified			
RE39-11-2939	Aluminum	110	ug/FILTER	1.104357017	24	26.50457	4.15E+00	detect		none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2940	Aluminum	300	ug/FILTER	1.104357017	30	33.13071	9.06E+00	detect		none specified			
RE39-11-2941	Aluminum	62	ug/FILTER	1.132673864	24	27.18417	2.28E+00	detect		none specified			
RE39-11-2942	Aluminum	250	ug/FILTER	1.132673864	24	27.18417	9.20E+00	detect		none specified			
RE36-11-4184	Aluminum	42	ug/FILTER	1.132673864	30	33.98022	1.24E+00	detect		none specified			
RE36-11-4189	Aluminum	49	ug/FILTER	1.132673864	30	33.98022	1.44E+00	detect		none specified			
RE36-11-4190	Aluminum	81	ug/FILTER			0		detect		none specified			
RE36-11-2934	Aluminum	32	ug/FILTER	1.132673864	42	47.5723	6.73E-01	detect		none specified			
RE36-11-4192	Aluminum	36	ug/FILTER	1.132673864	96	108.7367	3.31E-01	detect		none specified			
RE36-11-4197	Aluminum	74	ug/FILTER	1.061881747	108	114.6832	6.45E-01	detect		none specified			
RE36-11-4503	Aluminum	57	ug/FILTER	1.132673864	30	33.98022	1.68E+00	detect		none specified			
RE39-11-2943	Aluminum	45	ug/FILTER	1.132673864	30	33.98022	1.32E+00	detect		none specified			
RE39-11-2944	Aluminum	200	ug/FILTER	1.132673864	36	40.77626	4.90E+00	detect		none specified			
RE39-11-4524	Aluminum	46	ug/FILTER	1.104357017	30	33.13071	1.39E+00	detect		none specified			
RE39-11-4525	Aluminum	28	ug/FILTER	1.104357017	30	33.13071	8.45E-01	detect		none specified			
RE39-11-4526	Aluminum	5.5	ug/FILTER			0				none specified			
RE39-11-4527	Aluminum	9.7	ug/FILTER	1.132673864	24	27.18417	3.57E-01			none specified			
RE39-11-4528	Aluminum	38	ug/FILTER	1.132673864	24	27.18417	1.40E+00	detect	31	none specified			0
RE39-11-2936	Antimony	0.16	ug/FILTER	1.11851544	36	40.26656	3.97E-03	detect		1.5		1.50E+03	
RE39-11-2945	Antimony	0.024	ug/FILTER			0				1.5		1.50E+03	
RE36-11-2914	Antimony	0.08	ug/FILTER	1.104357017	30	33.13071	2.41E-03	detect		1.5		1.50E+03	
RE36-11-2915	Antimony	0.076	ug/FILTER	1.132673864	54	61.16439	1.24E-03	detect		1.5		1.50E+03	
RE36-11-2916	Antimony	0.044	ug/FILTER	1.132673864	30	33.98022	1.29E-03			1.5		1.50E+03	
RE36-11-2917	Antimony	0.042	ug/FILTER	1.132673864	36	40.77626	1.03E-03			1.5		1.50E+03	
RE36-11-2918	Antimony	0.038	ug/FILTER	1.104357017	18	19.87843	1.91E-03			1.5		1.50E+03	
RE36-11-2919	Antimony	0.028	ug/FILTER	1.132673864	42	47.5723	5.89E-04			1.5		1.50E+03	
RE36-11-2920	Antimony	0.044	ug/FILTER	1.132673864	24	27.18417	1.62E-03			1.5		1.50E+03	
RE36-11-2921	Antimony	0.046	ug/FILTER	1.132673864	42	47.5723	9.67E-04			1.5		1.50E+03	
RE36-11-2922	Antimony	0.06	ug/FILTER	1.104357017	36	39.75685	1.51E-03			1.5		1.50E+03	
RE36-11-2923	Antimony	0.06	ug/FILTER	1.104357017	36	39.75685	1.51E-03			1.5		1.50E+03	
RE39-11-2935	Antimony	0.034	ug/FILTER	1.132673864	30	33.98022	1.00E-03			1.5		1.50E+03	
RE39-11-2937	Antimony	0.05	ug/FILTER	1.132673864	18	20.38813	2.45E-03			1.5		1.50E+03	
RE39-11-2938	Antimony	0.14	ug/FILTER	1.132673864	30	33.98022	4.12E-03	detect		1.5		1.50E+03	
RE39-11-2939	Antimony	0.046	ug/FILTER	1.104357017	24	26.50457	1.74E-03			1.5		1.50E+03	
RE39-11-2940	Antimony	0.32	ug/FILTER	1.104357017	30	33.13071	9.66E-03	detect		1.5		1.50E+03	
RE39-11-2941	Antimony	0.06	ug/FILTER	1.132673864	24	27.18417	2.21E-03			1.5		1.50E+03	
RE39-11-2942	Antimony	0.16	ug/FILTER	1.132673864	24	27.18417	5.89E-03	detect		1.5		1.50E+03	
RE36-11-4184	Antimony	0.026	ug/FILTER	1.132673864	30	33.98022	7.65E-04			1.5		1.50E+03	
RE36-11-4189	Antimony	0.038	ug/FILTER	1.132673864	30	33.98022	1.12E-03			1.5		1.50E+03	
RE36-11-4190	Antimony	0.044	ug/FILTER			0				1.5		1.50E+03	
RE36-11-2934	Antimony	0.06	ug/FILTER	1.132673864	42	47.5723	1.26E-03			1.5		1.50E+03	
RE36-11-4192	Antimony	0.06	ug/FILTER	1.132673864	96	108.7367	5.52E-04			1.5		1.50E+03	
RE36-11-4197	Antimony	0.036	ug/FILTER	1.061881747	108	114.6832	3.14E-04			1.5		1.50E+03	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4503	Antimony	0.06	ug/FILTER	1.132673864	30	33.98022	1.77E-03			1.5		1.50E+03	
RE39-11-2943	Antimony	0.048	ug/FILTER	1.132673864	30	33.98022	1.41E-03			1.5		1.50E+03	
RE39-11-2944	Antimony	0.07	ug/FILTER	1.132673864	36	40.77626	1.72E-03	detect		1.5		1.50E+03	
RE39-11-4524	Antimony	0.036	ug/FILTER	1.104357017	30	33.13071	1.09E-03			1.5		1.50E+03	
RE39-11-4525	Antimony	0.06	ug/FILTER	1.104357017	30	33.13071	1.81E-03			1.5		1.50E+03	
RE39-11-4526	Antimony	0.06	ug/FILTER			0				1.5		1.50E+03	
RE39-11-4527	Antimony	0.06	ug/FILTER	1.132673864	24	27.18417	2.21E-03			1.5		1.50E+03	
RE39-11-4528	Antimony	0.032	ug/FILTER	1.132673864	24	27.18417	1.18E-03		7	1.5		1.50E+03	0
RE39-11-2936	Arsenic	0.052	ug/FILTER	1.11851544	36	40.26656	1.29E-03			1.90E-04		1.90E-01	
RE39-11-2945	Arsenic	0.4	ug/FILTER			0				1.90E-04		1.90E-01	
RE36-11-2914	Arsenic	0.052	ug/FILTER	1.104357017	30	33.13071	1.57E-03			1.90E-04		1.90E-01	
RE36-11-2915	Arsenic	0.034	ug/FILTER	1.132673864	54	61.16439	5.56E-04			1.90E-04		1.90E-01	
RE36-11-2916	Arsenic	0.042	ug/FILTER	1.132673864	30	33.98022	1.24E-03			1.90E-04		1.90E-01	
RE36-11-2917	Arsenic	0.4	ug/FILTER	1.132673864	36	40.77626	9.81E-03			1.90E-04		1.90E-01	
RE36-11-2918	Arsenic	0.044	ug/FILTER	1.104357017	18	19.87843	2.21E-03			1.90E-04		1.90E-01	
RE36-11-2919	Arsenic	0.4	ug/FILTER	1.132673864	42	47.5723	8.41E-03			1.90E-04		1.90E-01	
RE36-11-2920	Arsenic	0.4	ug/FILTER	1.132673864	24	27.18417	1.47E-02			1.90E-04		1.90E-01	
RE36-11-2921	Arsenic	0.4	ug/FILTER	1.132673864	42	47.5723	8.41E-03			1.90E-04		1.90E-01	
RE36-11-2922	Arsenic	0.4	ug/FILTER	1.104357017	36	39.75685	1.01E-02			1.90E-04		1.90E-01	
RE36-11-2923	Arsenic	0.4	ug/FILTER	1.104357017	36	39.75685	1.01E-02			1.90E-04		1.90E-01	
RE39-11-2935	Arsenic	0.4	ug/FILTER	1.132673864	30	33.98022	1.18E-02			1.90E-04		1.90E-01	
RE39-11-2937	Arsenic	0.4	ug/FILTER	1.132673864	18	20.38813	1.96E-02			1.90E-04		1.90E-01	
RE39-11-2938	Arsenic	0.068	ug/FILTER	1.132673864	30	33.98022	2.00E-03			1.90E-04		1.90E-01	
RE39-11-2939	Arsenic	0.048	ug/FILTER	1.104357017	24	26.50457	1.81E-03			1.90E-04		1.90E-01	
RE39-11-2940	Arsenic	0.11	ug/FILTER	1.104357017	30	33.13071	3.32E-03			1.90E-04		1.90E-01	
RE39-11-2941	Arsenic	0.4	ug/FILTER	1.132673864	24	27.18417	1.47E-02			1.90E-04		1.90E-01	
RE39-11-2942	Arsenic	0.14	ug/FILTER	1.132673864	24	27.18417	5.15E-03			1.90E-04		1.90E-01	
RE36-11-4184	Arsenic	0.4	ug/FILTER	1.132673864	30	33.98022	1.18E-02			1.90E-04		1.90E-01	
RE36-11-4189	Arsenic	0.4	ug/FILTER	1.132673864	30	33.98022	1.18E-02			1.90E-04		1.90E-01	
RE36-11-4190	Arsenic	0.4	ug/FILTER			0				1.90E-04		1.90E-01	
RE36-11-2934	Arsenic	0.4	ug/FILTER	1.132673864	42	47.5723	8.41E-03			1.90E-04		1.90E-01	
RE36-11-4192	Arsenic	0.4	ug/FILTER	1.132673864	96	108.7367	3.68E-03			1.90E-04		1.90E-01	
RE36-11-4197	Arsenic	0.4	ug/FILTER	1.061881747	108	114.6832	3.49E-03			1.90E-04		1.90E-01	
RE36-11-4503	Arsenic	0.4	ug/FILTER	1.132673864	30	33.98022	1.18E-02			1.90E-04		1.90E-01	
RE39-11-2943	Arsenic	0.4	ug/FILTER	1.132673864	30	33.98022	1.18E-02			1.90E-04		1.90E-01	
RE39-11-2944	Arsenic	0.068	ug/FILTER	1.132673864	36	40.77626	1.67E-03			1.90E-04		1.90E-01	
RE39-11-4524	Arsenic	0.4	ug/FILTER	1.104357017	30	33.13071	1.21E-02			1.90E-04		1.90E-01	
RE39-11-4525	Arsenic	0.4	ug/FILTER	1.104357017	30	33.13071	1.21E-02			1.90E-04		1.90E-01	
RE39-11-4526	Arsenic	0.4	ug/FILTER			0				1.90E-04		1.90E-01	
RE39-11-4527	Arsenic	0.4	ug/FILTER	1.132673864	24	27.18417	1.47E-02			1.90E-04		1.90E-01	
RE39-11-4528	Arsenic	0.4	ug/FILTER	1.132673864	24	27.18417	1.47E-02		0	1.90E-04		1.90E-01	0
RE39-11-2936	Barium	3.8	ug/FILTER	1.11851544	36	40.26656	9.44E-02	detect		1.50E+00		1.50E+03	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2945	Barium	1.8	ug/FILTER			0		detect		1.50E+00		1.50E+03	
RE36-11-2914	Barium	0.97	ug/FILTER	1.104357017	30	33.13071	2.93E-02	detect		1.50E+00		1.50E+03	
RE36-11-2915	Barium	0.79	ug/FILTER	1.132673864	54	61.16439	1.29E-02	detect		1.50E+00		1.50E+03	
RE36-11-2916	Barium	0.95	ug/FILTER	1.132673864	30	33.98022	2.80E-02	detect		1.50E+00		1.50E+03	
RE36-11-2917	Barium	0.54	ug/FILTER	1.132673864	36	40.77626	1.32E-02	detect		1.50E+00		1.50E+03	
RE36-11-2918	Barium	1.1	ug/FILTER	1.104357017	18	19.87843	5.53E-02	detect		1.50E+00		1.50E+03	
RE36-11-2919	Barium	0.74	ug/FILTER	1.132673864	42	47.5723	1.56E-02	detect		1.50E+00		1.50E+03	
RE36-11-2920	Barium	0.69	ug/FILTER	1.132673864	24	27.18417	2.54E-02	detect		1.50E+00		1.50E+03	
RE36-11-2921	Barium	0.79	ug/FILTER	1.132673864	42	47.5723	1.66E-02	detect		1.50E+00		1.50E+03	
RE36-11-2922	Barium	0.47	ug/FILTER	1.104357017	36	39.75685	1.18E-02	detect		1.50E+00		1.50E+03	
RE36-11-2923	Barium	1.2	ug/FILTER	1.104357017	36	39.75685	3.02E-02	detect		1.50E+00		1.50E+03	
RE39-11-2935	Barium	1.8	ug/FILTER	1.132673864	30	33.98022	5.30E-02	detect		1.50E+00		1.50E+03	
RE39-11-2937	Barium	0.88	ug/FILTER	1.132673864	18	20.38813	4.32E-02	detect		1.50E+00		1.50E+03	
RE39-11-2938	Barium	3.8	ug/FILTER	1.132673864	30	33.98022	1.12E-01	detect		1.50E+00		1.50E+03	
RE39-11-2939	Barium	1.1	ug/FILTER	1.104357017	24	26.50457	4.15E-02	detect		1.50E+00		1.50E+03	
RE39-11-2940	Barium	7	ug/FILTER	1.104357017	30	33.13071	2.11E-01	detect		1.50E+00		1.50E+03	
RE39-11-2941	Barium	0.74	ug/FILTER	1.132673864	24	27.18417	2.72E-02	detect		1.50E+00		1.50E+03	
RE39-11-2942	Barium	5.6	ug/FILTER	1.132673864	24	27.18417	2.06E-01	detect		1.50E+00		1.50E+03	
RE36-11-4184	Barium	0.48	ug/FILTER	1.132673864	30	33.98022	1.41E-02	detect		1.50E+00		1.50E+03	
RE36-11-4189	Barium	0.98	ug/FILTER	1.132673864	30	33.98022	2.88E-02	detect		1.50E+00		1.50E+03	
RE36-11-4190	Barium	0.45	ug/FILTER			0		detect		1.50E+00		1.50E+03	
RE36-11-2934	Barium	0.89	ug/FILTER	1.132673864	42	47.5723	1.87E-02	detect		1.50E+00		1.50E+03	
RE36-11-4192	Barium	0.49	ug/FILTER	1.132673864	96	108.7367	4.51E-03	detect		1.50E+00		1.50E+03	
RE36-11-4197	Barium	0.74	ug/FILTER	1.061881747	108	114.6832	6.45E-03	detect		1.50E+00		1.50E+03	
RE36-11-4503	Barium	0.56	ug/FILTER	1.132673864	30	33.98022	1.65E-02	detect		1.50E+00		1.50E+03	
RE39-11-2943	Barium	1	ug/FILTER	1.132673864	30	33.98022	2.94E-02	detect		1.50E+00		1.50E+03	
RE39-11-2944	Barium	2.9	ug/FILTER	1.132673864	36	40.77626	7.11E-02	detect		1.50E+00		1.50E+03	
RE39-11-4524	Barium	0.64	ug/FILTER	1.104357017	30	33.13071	1.93E-02	detect		1.50E+00		1.50E+03	
RE39-11-4525	Barium	0.28	ug/FILTER	1.104357017	30	33.13071	8.45E-03	detect		1.50E+00		1.50E+03	
RE39-11-4526	Barium	0.094	ug/FILTER			0				1.50E+00		1.50E+03	
RE39-11-4527	Barium	0.28	ug/FILTER	1.132673864	24	27.18417	1.03E-02	detect		1.50E+00		1.50E+03	
RE39-11-4528	Barium	0.65	ug/FILTER	1.132673864	24	27.18417	2.39E-02	detect	32	1.50E+00		1.50E+03	0
RE39-11-2936	Beryllium	0.1	ug/FILTER	1.11851544	36	40.26656	2.48E-03			5.00E-03		5.00E+00	
RE39-11-2945	Beryllium	0.1	ug/FILTER			0				5.00E-03		5.00E+00	
RE36-11-2914	Beryllium	0.1	ug/FILTER	1.104357017	30	33.13071	3.02E-03			5.00E-03		5.00E+00	
RE36-11-2915	Beryllium	0.1	ug/FILTER	1.132673864	54	61.16439	1.63E-03			5.00E-03		5.00E+00	
RE36-11-2916	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE36-11-2917	Beryllium	0.1	ug/FILTER	1.132673864	36	40.77626	2.45E-03			5.00E-03		5.00E+00	
RE36-11-2918	Beryllium	0.1	ug/FILTER	1.104357017	18	19.87843	5.03E-03			5.00E-03		5.00E+00	
RE36-11-2919	Beryllium	0.1	ug/FILTER	1.132673864	42	47.5723	2.10E-03			5.00E-03		5.00E+00	
RE36-11-2920	Beryllium	0.1	ug/FILTER	1.132673864	24	27.18417	3.68E-03			5.00E-03		5.00E+00	
RE36-11-2921	Beryllium	0.1	ug/FILTER	1.132673864	42	47.5723	2.10E-03			5.00E-03		5.00E+00	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2922	Beryllium	0.1	ug/FILTER	1.104357017	36	39.75685	2.52E-03			5.00E-03		5.00E+00	
RE36-11-2923	Beryllium	0.1	ug/FILTER	1.104357017	36	39.75685	2.52E-03			5.00E-03		5.00E+00	
RE39-11-2935	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE39-11-2937	Beryllium	0.1	ug/FILTER	1.132673864	18	20.38813	4.90E-03			5.00E-03		5.00E+00	
RE39-11-2938	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE39-11-2939	Beryllium	0.1	ug/FILTER	1.104357017	24	26.50457	3.77E-03			5.00E-03		5.00E+00	
RE39-11-2940	Beryllium	0.1	ug/FILTER	1.104357017	30	33.13071	3.02E-03			5.00E-03		5.00E+00	
RE39-11-2941	Beryllium	0.1	ug/FILTER	1.132673864	24	27.18417	3.68E-03			5.00E-03		5.00E+00	
RE39-11-2942	Beryllium	0.1	ug/FILTER	1.132673864	24	27.18417	3.68E-03			5.00E-03		5.00E+00	
RE36-11-4184	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE36-11-4189	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE36-11-4190	Beryllium	0.1	ug/FILTER			0				5.00E-03		5.00E+00	
RE36-11-2934	Beryllium	0.1	ug/FILTER	1.132673864	42	47.5723	2.10E-03			5.00E-03		5.00E+00	
RE36-11-4192	Beryllium	0.1	ug/FILTER	1.132673864	96	108.7367	9.20E-04			5.00E-03		5.00E+00	
RE36-11-4197	Beryllium	0.1	ug/FILTER	1.061881747	108	114.6832	8.72E-04			5.00E-03		5.00E+00	
RE36-11-4503	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE39-11-2943	Beryllium	0.1	ug/FILTER	1.132673864	30	33.98022	2.94E-03			5.00E-03		5.00E+00	
RE39-11-2944	Beryllium	0.1	ug/FILTER	1.132673864	36	40.77626	2.45E-03			5.00E-03		5.00E+00	
RE39-11-4524	Beryllium	0.1	ug/FILTER	1.104357017	30	33.13071	3.02E-03			5.00E-03		5.00E+00	
RE39-11-4525	Beryllium	0.1	ug/FILTER	1.104357017	30	33.13071	3.02E-03			5.00E-03		5.00E+00	
RE39-11-4526	Beryllium	0.1	ug/FILTER			0				5.00E-03		5.00E+00	
RE39-11-4527	Beryllium	0.1	ug/FILTER	1.132673864	24	27.18417	3.68E-03			5.00E-03		5.00E+00	
RE39-11-4528	Beryllium	0.1	ug/FILTER	1.132673864	24	27.18417	3.68E-03		0	5.00E-03		5.00E+00	0
RE39-11-2936	Cadmium	0.37	ug/FILTER	1.11851544	36	40.26656	9.19E-03	detect		3.00E-02		3.00E+01	
RE39-11-2945	Cadmium	1.2	ug/FILTER			0		detect		3.00E-02		3.00E+01	
RE36-11-2914	Cadmium	0.15	ug/FILTER	1.104357017	30	33.13071	4.53E-03	detect		3.00E-02		3.00E+01	
RE36-11-2915	Cadmium	0.26	ug/FILTER	1.132673864	54	61.16439	4.25E-03	detect		3.00E-02		3.00E+01	
RE36-11-2916	Cadmium	1.3	ug/FILTER	1.132673864	30	33.98022	3.83E-02	detect		3.00E-02		3.00E+01	
RE36-11-2917	Cadmium	0.12	ug/FILTER	1.132673864	36	40.77626	2.94E-03	detect		3.00E-02		3.00E+01	
RE36-11-2918	Cadmium	0.64	ug/FILTER	1.104357017	18	19.87843	3.22E-02	detect		3.00E-02		3.00E+01	
RE36-11-2919	Cadmium	17	ug/FILTER	1.132673864	42	47.5723	3.57E-01	detect		3.00E-02		3.00E+01	
RE36-11-2920	Cadmium	2.3	ug/FILTER	1.132673864	24	27.18417	8.46E-02	detect		3.00E-02		3.00E+01	
RE36-11-2921	Cadmium	0.49	ug/FILTER	1.132673864	42	47.5723	1.03E-02	detect		3.00E-02		3.00E+01	
RE36-11-2922	Cadmium	0.46	ug/FILTER	1.104357017	36	39.75685	1.16E-02	detect		3.00E-02		3.00E+01	
RE36-11-2923	Cadmium	1.1	ug/FILTER	1.104357017	36	39.75685	2.77E-02	detect		3.00E-02		3.00E+01	
RE39-11-2935	Cadmium	1.1	ug/FILTER	1.132673864	30	33.98022	3.24E-02	detect		3.00E-02		3.00E+01	
RE39-11-2937	Cadmium	0.72	ug/FILTER	1.132673864	18	20.38813	3.53E-02	detect		3.00E-02		3.00E+01	
RE39-11-2938	Cadmium	2.3	ug/FILTER	1.132673864	30	33.98022	6.77E-02	detect		3.00E-02		3.00E+01	
RE39-11-2939	Cadmium	0.72	ug/FILTER	1.104357017	24	26.50457	2.72E-02	detect		3.00E-02		3.00E+01	
RE39-11-2940	Cadmium	4.1	ug/FILTER	1.104357017	30	33.13071	1.24E-01	detect		3.00E-02		3.00E+01	
RE39-11-2941	Cadmium	0.97	ug/FILTER	1.132673864	24	27.18417	3.57E-02	detect		3.00E-02		3.00E+01	
RE39-11-2942	Cadmium	7.1	ug/FILTER	1.132673864	24	27.18417	2.61E-01	detect		3.00E-02		3.00E+01	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4184	Cadmium	0.66	ug/FILTER	1.132673864	30	33.98022	1.94E-02	detect		3.00E-02		3.00E+01	
RE36-11-4189	Cadmium	3	ug/FILTER	1.132673864	30	33.98022	8.83E-02	detect		3.00E-02		3.00E+01	
RE36-11-4190	Cadmium	0.98	ug/FILTER			0		detect		3.00E-02		3.00E+01	
RE36-11-2934	Cadmium	2.2	ug/FILTER	1.132673864	42	47.5723	4.62E-02	detect		3.00E-02		3.00E+01	
RE36-11-4192	Cadmium	8.9	ug/FILTER	1.132673864	96	108.7367	8.18E-02	detect		3.00E-02		3.00E+01	
RE36-11-4197	Cadmium	2.5	ug/FILTER	1.061881747	108	114.6832	2.18E-02	detect		3.00E-02		3.00E+01	
RE36-11-4503	Cadmium	1	ug/FILTER	1.132673864	30	33.98022	2.94E-02	detect		3.00E-02		3.00E+01	
RE39-11-2943	Cadmium	3.3	ug/FILTER	1.132673864	30	33.98022	9.71E-02	detect		3.00E-02		3.00E+01	
RE39-11-2944	Cadmium	0.19	ug/FILTER	1.132673864	36	40.77626	4.66E-03	detect		3.00E-02		3.00E+01	
RE39-11-4524	Cadmium	1.4	ug/FILTER	1.104357017	30	33.13071	4.23E-02	detect		3.00E-02		3.00E+01	
RE39-11-4525	Cadmium	0.46	ug/FILTER	1.104357017	30	33.13071	1.39E-02	detect		3.00E-02		3.00E+01	
RE39-11-4526	Cadmium	2	ug/FILTER			0		detect		3.00E-02		3.00E+01	
RE39-11-4527	Cadmium	0.36	ug/FILTER	1.132673864	24	27.18417	1.32E-02	detect		3.00E-02		3.00E+01	
RE39-11-4528	Cadmium	0.12	ug/FILTER	1.132673864	24	27.18417	4.41E-03	detect	33	3.00E-02		3.00E+01	0
RE39-11-2936	Calcium	230	ug/FILTER	1.11851544	36	40.26656	5.71E+00	detect		none specified			
RE39-11-2945	Calcium	110	ug/FILTER			0				none specified			
RE36-11-2914	Calcium	110	ug/FILTER	1.104357017	30	33.13071	3.32E+00			none specified			
RE36-11-2915	Calcium	94	ug/FILTER	1.132673864	54	61.16439	1.54E+00			none specified			
RE36-11-2916	Calcium	98	ug/FILTER	1.132673864	30	33.98022	2.88E+00			none specified			
RE36-11-2917	Calcium	71	ug/FILTER	1.132673864	36	40.77626	1.74E+00			none specified			
RE36-11-2918	Calcium	160	ug/FILTER	1.104357017	18	19.87843	8.05E+00			none specified			
RE36-11-2919	Calcium	84	ug/FILTER	1.132673864	42	47.5723	1.77E+00			none specified			
RE36-11-2920	Calcium	65	ug/FILTER	1.132673864	24	27.18417	2.39E+00			none specified			
RE36-11-2921	Calcium	60	ug/FILTER	1.132673864	42	47.5723	1.26E+00			none specified			
RE36-11-2922	Calcium	130	ug/FILTER	1.104357017	36	39.75685	3.27E+00			none specified			
RE36-11-2923	Calcium	140	ug/FILTER	1.104357017	36	39.75685	3.52E+00			none specified			
RE39-11-2935	Calcium	70	ug/FILTER	1.132673864	30	33.98022	2.06E+00			none specified			
RE39-11-2937	Calcium	140	ug/FILTER	1.132673864	18	20.38813	6.87E+00			none specified			
RE39-11-2938	Calcium	230	ug/FILTER	1.132673864	30	33.98022	6.77E+00	detect		none specified			
RE39-11-2939	Calcium	120	ug/FILTER	1.104357017	24	26.50457	4.53E+00			none specified			
RE39-11-2940	Calcium	450	ug/FILTER	1.104357017	30	33.13071	1.36E+01	detect		none specified			
RE39-11-2941	Calcium	86	ug/FILTER	1.132673864	24	27.18417	3.16E+00			none specified			
RE39-11-2942	Calcium	340	ug/FILTER	1.132673864	24	27.18417	1.25E+01	detect		none specified			
RE36-11-4184	Calcium	84	ug/FILTER	1.132673864	30	33.98022	2.47E+00			none specified			
RE36-11-4189	Calcium	100	ug/FILTER	1.132673864	30	33.98022	2.94E+00			none specified			
RE36-11-4190	Calcium	91	ug/FILTER			0				none specified			
RE36-11-2934	Calcium	71	ug/FILTER	1.132673864	42	47.5723	1.49E+00			none specified			
RE36-11-4192	Calcium	60	ug/FILTER	1.132673864	96	108.7367	5.52E-01			none specified			
RE36-11-4197	Calcium	71	ug/FILTER	1.061881747	108	114.6832	6.19E-01			none specified			
RE36-11-4503	Calcium	84	ug/FILTER	1.132673864	30	33.98022	2.47E+00			none specified			
RE39-11-2943	Calcium	110	ug/FILTER	1.132673864	30	33.98022	3.24E+00			none specified			
RE39-11-2944	Calcium	280	ug/FILTER	1.132673864	36	40.77626	6.87E+00	detect		none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-4524	Calcium	130	ug/FILTER	1.104357017	30	33.13071	3.92E+00			none specified			
RE39-11-4525	Calcium	41	ug/FILTER	1.104357017	30	33.13071	1.24E+00			none specified			
RE39-11-4526	Calcium	47	ug/FILTER			0				none specified			
RE39-11-4527	Calcium	53	ug/FILTER	1.132673864	24	27.18417	1.95E+00			none specified			
RE39-11-4528	Calcium	200	ug/FILTER	1.132673864	24	27.18417	7.36E+00		5	none specified			0
RE39-11-2936	Chromium	4.2	ug/FILTER	1.11851544	36	40.26656	1.04E-01	detect		1.5		1500	
RE39-11-2945	Chromium	2.1	ug/FILTER			0		detect		1.5		1500	
RE36-11-2914	Chromium	2.8	ug/FILTER	1.104357017	30	33.13071	8.45E-02	detect		1.5		1500	
RE36-11-2915	Chromium	0.81	ug/FILTER	1.132673864	54	61.16439	1.32E-02			1.5		1500	
RE36-11-2916	Chromium	0.78	ug/FILTER	1.132673864	30	33.98022	2.30E-02			1.5		1500	
RE36-11-2917	Chromium	0.5	ug/FILTER	1.132673864	36	40.77626	1.23E-02			1.5		1500	
RE36-11-2918	Chromium	2.1	ug/FILTER	1.104357017	18	19.87843	1.06E-01	detect		1.5		1500	
RE36-11-2919	Chromium	0.83	ug/FILTER	1.132673864	42	47.5723	1.74E-02			1.5		1500	
RE36-11-2920	Chromium	5	ug/FILTER	1.132673864	24	27.18417	1.84E-01	detect		1.5		1500	
RE36-11-2921	Chromium	7.9	ug/FILTER	1.132673864	42	47.5723	1.66E-01	detect		1.5		1500	
RE36-11-2922	Chromium	2.5	ug/FILTER	1.104357017	36	39.75685	6.29E-02	detect		1.5		1500	
RE36-11-2923	Chromium	1	ug/FILTER	1.104357017	36	39.75685	2.52E-02			1.5		1500	
RE39-11-2935	Chromium	0.67	ug/FILTER	1.132673864	30	33.98022	1.97E-02			1.5		1500	
RE39-11-2937	Chromium	1.1	ug/FILTER	1.132673864	18	20.38813	5.40E-02			1.5		1500	
RE39-11-2938	Chromium	2.4	ug/FILTER	1.132673864	30	33.98022	7.06E-02	detect		1.5		1500	
RE39-11-2939	Chromium	1.2	ug/FILTER	1.104357017	24	26.50457	4.53E-02			1.5		1500	
RE39-11-2940	Chromium	2.4	ug/FILTER	1.104357017	30	33.13071	7.24E-02	detect		1.5		1500	
RE39-11-2941	Chromium	0.67	ug/FILTER	1.132673864	24	27.18417	2.46E-02			1.5		1500	
RE39-11-2942	Chromium	2.3	ug/FILTER	1.132673864	24	27.18417	8.46E-02	detect		1.5		1500	
RE36-11-4184	Chromium	1.3	ug/FILTER	1.132673864	30	33.98022	3.83E-02			1.5		1500	
RE36-11-4189	Chromium	1	ug/FILTER	1.132673864	30	33.98022	2.94E-02			1.5		1500	
RE36-11-4190	Chromium	2.8	ug/FILTER			0		detect		1.5		1500	
RE36-11-2934	Chromium	1.2	ug/FILTER	1.132673864	42	47.5723	2.52E-02			1.5		1500	
RE36-11-4192	Chromium	1	ug/FILTER	1.132673864	96	108.7367	9.20E-03			1.5		1500	
RE36-11-4197	Chromium	0.96	ug/FILTER	1.061881747	108	114.6832	8.37E-03			1.5		1500	
RE36-11-4503	Chromium	1.1	ug/FILTER	1.132673864	30	33.98022	3.24E-02			1.5		1500	
RE39-11-2943	Chromium	1.1	ug/FILTER	1.132673864	30	33.98022	3.24E-02			1.5		1500	
RE39-11-2944	Chromium	1.1	ug/FILTER	1.132673864	36	40.77626	2.70E-02			1.5		1500	
RE39-11-4524	Chromium	0.74	ug/FILTER	1.104357017	30	33.13071	2.23E-02			1.5		1500	
RE39-11-4525	Chromium	0.46	ug/FILTER	1.104357017	30	33.13071	1.39E-02			1.5		1500	
RE39-11-4526	Chromium	0.23	ug/FILTER			0				1.5		1500	
RE39-11-4527	Chromium	0.25	ug/FILTER	1.132673864	24	27.18417	9.20E-03			1.5		1500	
RE39-11-4528	Chromium	0.83	ug/FILTER	1.132673864	24	27.18417	3.05E-02		11	1.5		1500	0
RE39-11-2936	Cobalt	0.15	ug/FILTER	1.11851544	36	40.26656	3.73E-03			none specified			
RE39-11-2945	Cobalt	0.058	ug/FILTER			0				none specified			
RE36-11-2914	Cobalt	0.034	ug/FILTER	1.104357017	30	33.13071	1.03E-03			none specified			
RE36-11-2915	Cobalt	0.2	ug/FILTER	1.132673864	54	61.16439	3.27E-03			none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2916	Cobalt	0.04	ug/FILTER	1.132673864	30	33.98022	1.18E-03			none specified			
RE36-11-2917	Cobalt	0.032	ug/FILTER	1.132673864	36	40.77626	7.85E-04			none specified			
RE36-11-2918	Cobalt	0.066	ug/FILTER	1.104357017	18	19.87843	3.32E-03			none specified			
RE36-11-2919	Cobalt	0.026	ug/FILTER	1.132673864	42	47.5723	5.47E-04			none specified			
RE36-11-2920	Cobalt	0.15	ug/FILTER	1.132673864	24	27.18417	5.52E-03			none specified			
RE36-11-2921	Cobalt	0.17	ug/FILTER	1.132673864	42	47.5723	3.57E-03			none specified			
RE36-11-2922	Cobalt	0.072	ug/FILTER	1.104357017	36	39.75685	1.81E-03			none specified			
RE36-11-2923	Cobalt	0.038	ug/FILTER	1.104357017	36	39.75685	9.56E-04			none specified			
RE39-11-2935	Cobalt	0.036	ug/FILTER	1.132673864	30	33.98022	1.06E-03			none specified			
RE39-11-2937	Cobalt	0.028	ug/FILTER	1.132673864	18	20.38813	1.37E-03			none specified			
RE39-11-2938	Cobalt	0.12	ug/FILTER	1.132673864	30	33.98022	3.53E-03			none specified			
RE39-11-2939	Cobalt	0.054	ug/FILTER	1.104357017	24	26.50457	2.04E-03			none specified			
RE39-11-2940	Cobalt	0.16	ug/FILTER	1.104357017	30	33.13071	4.83E-03			none specified			
RE39-11-2941	Cobalt	0.054	ug/FILTER	1.132673864	24	27.18417	1.99E-03			none specified			
RE39-11-2942	Cobalt	0.28	ug/FILTER	1.132673864	24	27.18417	1.03E-02	detect		none specified			
RE36-11-4184	Cobalt	0.024	ug/FILTER	1.132673864	30	33.98022	7.06E-04			none specified			
RE36-11-4189	Cobalt	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			none specified			
RE36-11-4190	Cobalt	0.07	ug/FILTER			0				none specified			
RE36-11-2934	Cobalt	0.03	ug/FILTER	1.132673864	42	47.5723	6.31E-04			none specified			
RE36-11-4192	Cobalt	0.028	ug/FILTER	1.132673864	96	108.7367	2.58E-04			none specified			
RE36-11-4197	Cobalt	0.02	ug/FILTER	1.061881747	108	114.6832	1.74E-04			none specified			
RE36-11-4503	Cobalt	0.078	ug/FILTER	1.132673864	30	33.98022	2.30E-03			none specified			
RE39-11-2943	Cobalt	0.03	ug/FILTER	1.132673864	30	33.98022	8.83E-04			none specified			
RE39-11-2944	Cobalt	0.096	ug/FILTER	1.132673864	36	40.77626	2.35E-03			none specified			
RE39-11-4524	Cobalt	0.022	ug/FILTER	1.104357017	30	33.13071	6.64E-04			none specified			
RE39-11-4525	Cobalt	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			none specified			
RE39-11-4526	Cobalt	0.2	ug/FILTER			0				none specified			
RE39-11-4527	Cobalt	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03			none specified			
RE39-11-4528	Cobalt	0.026	ug/FILTER	1.132673864	24	27.18417	9.56E-04		1	none specified			0
RE39-11-2936	Copper	22	ug/FILTER	1.11851544	36	40.26656	5.46E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2945	Copper	4.3	ug/FILTER			0		detect		none specified	1.00E+02	1.00E+02	
RE36-11-2914	Copper	8.5	ug/FILTER	1.104357017	30	33.13071	2.57E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2915	Copper	8.8	ug/FILTER	1.132673864	54	61.16439	1.44E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2916	Copper	9.4	ug/FILTER	1.132673864	30	33.98022	2.77E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2917	Copper	10	ug/FILTER	1.132673864	36	40.77626	2.45E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2918	Copper	7.7	ug/FILTER	1.104357017	18	19.87843	3.87E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2919	Copper	6.2	ug/FILTER	1.132673864	42	47.5723	1.30E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2920	Copper	3.6	ug/FILTER	1.132673864	24	27.18417	1.32E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2921	Copper	6.4	ug/FILTER	1.132673864	42	47.5723	1.35E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2922	Copper	3.6	ug/FILTER	1.104357017	36	39.75685	9.06E-02	detect		none specified	1.00E+02	1.00E+02	
RE36-11-2923	Copper	3.5	ug/FILTER	1.104357017	36	39.75685	8.80E-02	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2935	Copper	6.2	ug/FILTER	1.132673864	30	33.98022	1.82E-01	detect		none specified	1.00E+02	1.00E+02	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2937	Copper	9.4	ug/FILTER	1.132673864	18	20.38813	4.61E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2938	Copper	24	ug/FILTER	1.132673864	30	33.98022	7.06E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2939	Copper	18	ug/FILTER	1.104357017	24	26.50457	6.79E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2940	Copper	46	ug/FILTER	1.104357017	30	33.13071	1.39E+00	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2941	Copper	7.7	ug/FILTER	1.132673864	24	27.18417	2.83E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2942	Copper	28	ug/FILTER	1.132673864	24	27.18417	1.03E+00	detect		none specified	1.00E+02	1.00E+02	
RE36-11-4184	Copper	6.1	ug/FILTER	1.132673864	30	33.98022	1.80E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-4189	Copper	3.9	ug/FILTER	1.132673864	30	33.98022	1.15E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-4190	Copper	2.5	ug/FILTER			0		detect		none specified	1.00E+02	1.00E+02	
RE36-11-2934	Copper	6	ug/FILTER	1.132673864	42	47.5723	1.26E-01	detect		none specified	1.00E+02	1.00E+02	
RE36-11-4192	Copper	4	ug/FILTER	1.132673864	96	108.7367	3.68E-02	detect		none specified	1.00E+02	1.00E+02	
RE36-11-4197	Copper	5.3	ug/FILTER	1.061881747	108	114.6832	4.62E-02	detect		none specified	1.00E+02	1.00E+02	
RE36-11-4503	Copper	10	ug/FILTER	1.132673864	30	33.98022	2.94E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2943	Copper	12	ug/FILTER	1.132673864	30	33.98022	3.53E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-2944	Copper	40	ug/FILTER	1.132673864	36	40.77626	9.81E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-4524	Copper	8.9	ug/FILTER	1.104357017	30	33.13071	2.69E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-4525	Copper	3.4	ug/FILTER	1.104357017	30	33.13071	1.03E-01	detect		none specified	1.00E+02	1.00E+02	
RE39-11-4526	Copper	0.39	ug/FILTER			0				none specified	1.00E+02	1.00E+02	
RE39-11-4527	Copper	2.3	ug/FILTER	1.132673864	24	27.18417	8.46E-02	detect		none specified	1.00E+02	1.00E+02	
RE39-11-4528	Copper	12	ug/FILTER	1.132673864	24	27.18417	4.41E-01	detect	32	none specified	1.00E+02	1.00E+02	0
RE39-11-2936	Iron	270	ug/FILTER	1.11851544	36	40.26656	6.71E+00	detect		none specified			
RE39-11-2945	Iron	44	ug/FILTER			0		detect		none specified			
RE36-11-2914	Iron	99	ug/FILTER	1.104357017	30	33.13071	2.99E+00	detect		none specified			
RE36-11-2915	Iron	89	ug/FILTER	1.132673864	54	61.16439	1.46E+00	detect		none specified			
RE36-11-2916	Iron	67	ug/FILTER	1.132673864	30	33.98022	1.97E+00	detect		none specified			
RE36-11-2917	Iron	74	ug/FILTER	1.132673864	36	40.77626	1.81E+00	detect		none specified			
RE36-11-2918	Iron	74	ug/FILTER	1.104357017	18	19.87843	3.72E+00	detect		none specified			
RE36-11-2919	Iron	57	ug/FILTER	1.132673864	42	47.5723	1.20E+00	detect		none specified			
RE36-11-2920	Iron	77	ug/FILTER	1.132673864	24	27.18417	2.83E+00	detect		none specified			
RE36-11-2921	Iron	110	ug/FILTER	1.132673864	42	47.5723	2.31E+00	detect		none specified			
RE36-11-2922	Iron	36	ug/FILTER	1.104357017	36	39.75685	9.06E-01	detect		none specified			
RE36-11-2923	Iron	50	ug/FILTER	1.104357017	36	39.75685	1.26E+00	detect		none specified			
RE39-11-2935	Iron	56	ug/FILTER	1.132673864	30	33.98022	1.65E+00	detect		none specified			
RE39-11-2937	Iron	51	ug/FILTER	1.132673864	18	20.38813	2.50E+00	detect		none specified			
RE39-11-2938	Iron	190	ug/FILTER	1.132673864	30	33.98022	5.59E+00	detect		none specified			
RE39-11-2939	Iron	90	ug/FILTER	1.104357017	24	26.50457	3.40E+00	detect		none specified			
RE39-11-2940	Iron	390	ug/FILTER	1.104357017	30	33.13071	1.18E+01	detect		none specified			
RE39-11-2941	Iron	73	ug/FILTER	1.132673864	24	27.18417	2.69E+00	detect		none specified			
RE39-11-2942	Iron	340	ug/FILTER	1.132673864	24	27.18417	1.25E+01	detect		none specified			
RE36-11-4184	Iron	41	ug/FILTER	1.132673864	30	33.98022	1.21E+00	detect		none specified			
RE36-11-4189	Iron	43	ug/FILTER	1.132673864	30	33.98022	1.27E+00	detect		none specified			
RE36-11-4190	Iron	75	ug/FILTER			0		detect		none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2934	Iron	43	ug/FILTER	1.132673864	42	47.5723	9.04E-01	detect		none specified			
RE36-11-4192	Iron	30	ug/FILTER	1.132673864	96	108.7367	2.76E-01	detect		none specified			
RE36-11-4197	Iron	48	ug/FILTER	1.061881747	108	114.6832	4.19E-01	detect		none specified			
RE36-11-4503	Iron	61	ug/FILTER	1.132673864	30	33.98022	1.80E+00	detect		none specified			
RE39-11-2943	Iron	61	ug/FILTER	1.132673864	30	33.98022	1.80E+00	detect		none specified			
RE39-11-2944	Iron	180	ug/FILTER	1.132673864	36	40.77626	4.41E+00	detect		none specified			
RE39-11-4524	Iron	55	ug/FILTER	1.104357017	30	33.13071	1.66E+00	detect		none specified			
RE39-11-4525	Iron	19	ug/FILTER	1.104357017	30	33.13071	5.73E-01			none specified			
RE39-11-4526	Iron	5.9	ug/FILTER			0				none specified			
RE39-11-4527	Iron	14	ug/FILTER	1.132673864	24	27.18417	5.15E-01			none specified			
RE39-11-4528	Iron	55	ug/FILTER	1.132673864	24	27.18417	2.02E+00	detect	30	none specified			0
RE39-11-2936	Lead	3.9	ug/FILTER	1.11851544	36	40.26656	9.69E-02	detect		0.15		150	
RE39-11-2945	Lead	0.49	ug/FILTER			0		detect		0.15		150	
RE36-11-2914	Lead	1.4	ug/FILTER	1.104357017	30	33.13071	4.23E-02	detect		0.15		150	
RE36-11-2915	Lead	3.5	ug/FILTER	1.132673864	54	61.16439	5.72E-02	detect		0.15		150	
RE36-11-2916	Lead	12	ug/FILTER	1.132673864	30	33.98022	3.53E-01	detect		0.15		150	
RE36-11-2917	Lead	2.3	ug/FILTER	1.132673864	36	40.77626	5.64E-02	detect		0.15		150	
RE36-11-2918	Lead	6.3	ug/FILTER	1.104357017	18	19.87843	3.17E-01	detect		0.15		150	
RE36-11-2919	Lead	26	ug/FILTER	1.132673864	42	47.5723	5.47E-01	detect		0.15		150	
RE36-11-2920	Lead	18	ug/FILTER	1.132673864	24	27.18417	6.62E-01	detect		0.15		150	
RE36-11-2921	Lead	1.9	ug/FILTER	1.132673864	42	47.5723	3.99E-02	detect		0.15		150	
RE36-11-2922	Lead	8.2	ug/FILTER	1.104357017	36	39.75685	2.06E-01	detect		0.15		150	
RE36-11-2923	Lead	5.9	ug/FILTER	1.104357017	36	39.75685	1.48E-01	detect		0.15		150	
RE39-11-2935	Lead	14	ug/FILTER	1.132673864	30	33.98022	4.12E-01	detect		0.15		150	
RE39-11-2937	Lead	1.8	ug/FILTER	1.132673864	18	20.38813	8.83E-02	detect		0.15		150	
RE39-11-2938	Lead	15	ug/FILTER	1.132673864	30	33.98022	4.41E-01	detect		0.15		150	
RE39-11-2939	Lead	6.9	ug/FILTER	1.104357017	24	26.50457	2.60E-01	detect		0.15		150	
RE39-11-2940	Lead	22	ug/FILTER	1.104357017	30	33.13071	6.64E-01	detect		0.15		150	
RE39-11-2941	Lead	22	ug/FILTER	1.132673864	24	27.18417	8.09E-01	detect		0.15		150	
RE39-11-2942	Lead	63	ug/FILTER	1.132673864	24	27.18417	2.32E+00	detect		0.15		150	
RE36-11-4184	Lead	13	ug/FILTER	1.132673864	30	33.98022	3.83E-01	detect		0.15		150	
RE36-11-4189	Lead	13	ug/FILTER	1.132673864	30	33.98022	3.83E-01	detect		0.15		150	
RE36-11-4190	Lead	8.3	ug/FILTER			0		detect		0.15		150	
RE36-11-2934	Lead	17	ug/FILTER	1.132673864	42	47.5723	3.57E-01	detect		0.15		150	
RE36-11-4192	Lead	120	ug/FILTER	1.132673864	96	108.7367	1.10E+00	detect		0.15		150	
RE36-11-4197	Lead	41	ug/FILTER	1.061881747	108	114.6832	3.58E-01	detect		0.15		150	
RE36-11-4503	Lead	2.1	ug/FILTER	1.132673864	30	33.98022	6.18E-02	detect		0.15		150	
RE39-11-2943	Lead	19	ug/FILTER	1.132673864	30	33.98022	5.59E-01	detect		0.15		150	
RE39-11-2944	Lead	4.5	ug/FILTER	1.132673864	36	40.77626	1.10E-01	detect		0.15		150	
RE39-11-4524	Lead	28	ug/FILTER	1.104357017	30	33.13071	8.45E-01	detect		0.15		150	
RE39-11-4525	Lead	3.7	ug/FILTER	1.104357017	30	33.13071	1.12E-01	detect		0.15		150	
RE39-11-4526	Lead	32	ug/FILTER			0		detect		0.15		150	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-4527	Lead	2	ug/FILTER	1.132673864	24	27.18417	7.36E-02	detect		0.15		150	
RE39-11-4528	Lead	1.5	ug/FILTER	1.132673864	24	27.18417	5.52E-02	detect	33	0.15		150	0
RE39-11-2936	Magnesium	36	ug/FILTER	1.11851544	36	40.26656	8.94E-01	detect		none specified			
RE39-11-2945	Magnesium	6.8	ug/FILTER			0				none specified			
RE36-11-2914	Magnesium	12	ug/FILTER	1.104357017	30	33.13071	3.62E-01			none specified			
RE36-11-2915	Magnesium	6.7	ug/FILTER	1.132673864	54	61.16439	1.10E-01			none specified			
RE36-11-2916	Magnesium	9.8	ug/FILTER	1.132673864	30	33.98022	2.88E-01			none specified			
RE36-11-2917	Magnesium	10	ug/FILTER	1.132673864	36	40.77626	2.45E-01			none specified			
RE36-11-2918	Magnesium	15	ug/FILTER	1.104357017	18	19.87843	7.55E-01			none specified			
RE36-11-2919	Magnesium	8.2	ug/FILTER	1.132673864	42	47.5723	1.72E-01			none specified			
RE36-11-2920	Magnesium	6.5	ug/FILTER	1.132673864	24	27.18417	2.39E-01			none specified			
RE36-11-2921	Magnesium	11	ug/FILTER	1.132673864	42	47.5723	2.31E-01			none specified			
RE36-11-2922	Magnesium	6.1	ug/FILTER	1.104357017	36	39.75685	1.53E-01			none specified			
RE36-11-2923	Magnesium	7.2	ug/FILTER	1.104357017	36	39.75685	1.81E-01			none specified			
RE39-11-2935	Magnesium	12	ug/FILTER	1.132673864	30	33.98022	3.53E-01			none specified			
RE39-11-2937	Magnesium	5.8	ug/FILTER	1.132673864	18	20.38813	2.84E-01			none specified			
RE39-11-2938	Magnesium	36	ug/FILTER	1.132673864	30	33.98022	1.06E+00	detect		none specified			
RE39-11-2939	Magnesium	21	ug/FILTER	1.104357017	24	26.50457	7.92E-01	detect		none specified			
RE39-11-2940	Magnesium	53	ug/FILTER	1.104357017	30	33.13071	1.60E+00	detect		none specified			
RE39-11-2941	Magnesium	11	ug/FILTER	1.132673864	24	27.18417	4.05E-01			none specified			
RE39-11-2942	Magnesium	46	ug/FILTER	1.132673864	24	27.18417	1.69E+00	detect		none specified			
RE36-11-4184	Magnesium	8.9	ug/FILTER	1.132673864	30	33.98022	2.62E-01			none specified			
RE36-11-4189	Magnesium	6.7	ug/FILTER	1.132673864	30	33.98022	1.97E-01			none specified			
RE36-11-4190	Magnesium	4.6	ug/FILTER			0				none specified			
RE36-11-2934	Magnesium	7.4	ug/FILTER	1.132673864	42	47.5723	1.56E-01			none specified			
RE36-11-4192	Magnesium	20	ug/FILTER	1.132673864	96	108.7367	1.84E-01			none specified			
RE36-11-4197	Magnesium	7.6	ug/FILTER	1.061881747	108	114.6832	6.63E-02			none specified			
RE36-11-4503	Magnesium	13	ug/FILTER	1.132673864	30	33.98022	3.83E-01			none specified			
RE39-11-2943	Magnesium	8	ug/FILTER	1.132673864	30	33.98022	2.35E-01			none specified			
RE39-11-2944	Magnesium	30	ug/FILTER	1.132673864	36	40.77626	7.36E-01	detect		none specified			
RE39-11-4524	Magnesium	8.1	ug/FILTER	1.104357017	30	33.13071	2.44E-01			none specified			
RE39-11-4525	Magnesium	20	ug/FILTER	1.104357017	30	33.13071	6.04E-01			none specified			
RE39-11-4526	Magnesium	20	ug/FILTER			0				none specified			
RE39-11-4527	Magnesium	20	ug/FILTER	1.132673864	24	27.18417	7.36E-01			none specified			
RE39-11-4528	Magnesium	11	ug/FILTER	1.132673864	24	27.18417	4.05E-01		6	none specified			0
RE39-11-2936	Manganese	5.5	ug/FILTER	1.11851544	36	40.26656	1.37E-01	detect		none specified			
RE39-11-2945	Manganese	0.95	ug/FILTER			0		detect		none specified			
RE36-11-2914	Manganese	1.3	ug/FILTER	1.104357017	30	33.13071	3.92E-02	detect		none specified			
RE36-11-2915	Manganese	1.1	ug/FILTER	1.132673864	54	61.16439	1.80E-02	detect		none specified			
RE36-11-2916	Manganese	1.3	ug/FILTER	1.132673864	30	33.98022	3.83E-02	detect		none specified			
RE36-11-2917	Manganese	1	ug/FILTER	1.132673864	36	40.77626	2.45E-02	detect		none specified			
RE36-11-2918	Manganese	1.9	ug/FILTER	1.104357017	18	19.87843	9.56E-02	detect		none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2919	Manganese	0.73	ug/FILTER	1.132673864	42	47.5723	1.53E-02	detect		none specified			
RE36-11-2920	Manganese	1	ug/FILTER	1.132673864	24	27.18417	3.68E-02	detect		none specified			
RE36-11-2921	Manganese	1.6	ug/FILTER	1.132673864	42	47.5723	3.36E-02	detect		none specified			
RE36-11-2922	Manganese	0.77	ug/FILTER	1.104357017	36	39.75685	1.94E-02	detect		none specified			
RE36-11-2923	Manganese	1.2	ug/FILTER	1.104357017	36	39.75685	3.02E-02	detect		none specified			
RE39-11-2935	Manganese	1.1	ug/FILTER	1.132673864	30	33.98022	3.24E-02	detect		none specified			
RE39-11-2937	Manganese	0.9	ug/FILTER	1.132673864	18	20.38813	4.41E-02	detect		none specified			
RE39-11-2938	Manganese	4.7	ug/FILTER	1.132673864	30	33.98022	1.38E-01	detect		none specified			
RE39-11-2939	Manganese	2.6	ug/FILTER	1.104357017	24	26.50457	9.81E-02	detect		none specified			
RE39-11-2940	Manganese	11	ug/FILTER	1.104357017	30	33.13071	3.32E-01	detect		none specified			
RE39-11-2941	Manganese	1.6	ug/FILTER	1.132673864	24	27.18417	5.89E-02	detect		none specified			
RE39-11-2942	Manganese	6.7	ug/FILTER	1.132673864	24	27.18417	2.46E-01	detect		none specified			
RE36-11-4184	Manganese	1.5	ug/FILTER	1.132673864	30	33.98022	4.41E-02	detect		none specified			
RE36-11-4189	Manganese	1.6	ug/FILTER	1.132673864	30	33.98022	4.71E-02	detect		none specified			
RE36-11-4190	Manganese	1	ug/FILTER			0		detect		none specified			
RE36-11-2934	Manganese	0.81	ug/FILTER	1.132673864	42	47.5723	1.70E-02	detect		none specified			
RE36-11-4192	Manganese	0.51	ug/FILTER	1.132673864	96	108.7367	4.69E-03	detect		none specified			
RE36-11-4197	Manganese	0.93	ug/FILTER	1.061881747	108	114.6832	8.11E-03	detect		none specified			
RE36-11-4503	Manganese	1.1	ug/FILTER	1.132673864	30	33.98022	3.24E-02	detect		none specified			
RE39-11-2943	Manganese	1	ug/FILTER	1.132673864	30	33.98022	2.94E-02	detect		none specified			
RE39-11-2944	Manganese	3.8	ug/FILTER	1.132673864	36	40.77626	9.32E-02	detect		none specified			
RE39-11-4524	Manganese	1.2	ug/FILTER	1.104357017	30	33.13071	3.62E-02	detect		none specified			
RE39-11-4525	Manganese	0.3	ug/FILTER	1.104357017	30	33.13071	9.06E-03			none specified			
RE39-11-4526	Manganese	0.084	ug/FILTER			0				none specified			
RE39-11-4527	Manganese	0.21	ug/FILTER	1.132673864	24	27.18417	7.73E-03			none specified			
RE39-11-4528	Manganese	1.1	ug/FILTER	1.132673864	24	27.18417	4.05E-02	detect	30	none specified			0
RE39-11-2936	Nickel	8.6	ug/FILTER	1.11851544	36	40.26656	2.14E-01	detect		6.00E-03		6.00E+00	
RE39-11-2945	Nickel	1.3	ug/FILTER			0		detect		6.00E-03		6.00E+00	
RE36-11-2914	Nickel	4.9	ug/FILTER	1.104357017	30	33.13071	1.48E-01	detect		6.00E-03		6.00E+00	
RE36-11-2915	Nickel	0.16	ug/FILTER	1.132673864	54	61.16439	2.62E-03			6.00E-03		6.00E+00	
RE36-11-2916	Nickel	1.9	ug/FILTER	1.132673864	30	33.98022	5.59E-02	detect		6.00E-03		6.00E+00	
RE36-11-2917	Nickel	2	ug/FILTER	1.132673864	36	40.77626	4.90E-02	detect		6.00E-03		6.00E+00	
RE36-11-2918	Nickel	1.7	ug/FILTER	1.104357017	18	19.87843	8.55E-02	detect		6.00E-03		6.00E+00	
RE36-11-2919	Nickel	3.6	ug/FILTER	1.132673864	42	47.5723	7.57E-02	detect		6.00E-03		6.00E+00	
RE36-11-2920	Nickel	8.5	ug/FILTER	1.132673864	24	27.18417	3.13E-01	detect		6.00E-03		6.00E+00	
RE36-11-2921	Nickel	7	ug/FILTER	1.132673864	42	47.5723	1.47E-01	detect		6.00E-03		6.00E+00	
RE36-11-2922	Nickel	1	ug/FILTER	1.104357017	36	39.75685	2.52E-02			6.00E-03		6.00E+00	
RE36-11-2923	Nickel	0.58	ug/FILTER	1.104357017	36	39.75685	1.46E-02			6.00E-03		6.00E+00	
RE39-11-2935	Nickel	0.33	ug/FILTER	1.132673864	30	33.98022	9.71E-03			6.00E-03		6.00E+00	
RE39-11-2937	Nickel	0.8	ug/FILTER	1.132673864	18	20.38813	3.92E-02			6.00E-03		6.00E+00	
RE39-11-2938	Nickel	6	ug/FILTER	1.132673864	30	33.98022	1.77E-01	detect		6.00E-03		6.00E+00	
RE39-11-2939	Nickel	0.83	ug/FILTER	1.104357017	24	26.50457	3.13E-02			6.00E-03		6.00E+00	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2940	Nickel	9.3	ug/FILTER	1.104357017	30	33.13071	2.81E-01	detect		6.00E-03		6.00E+00	
RE39-11-2941	Nickel	0.86	ug/FILTER	1.132673864	24	27.18417	3.16E-02			6.00E-03		6.00E+00	
RE39-11-2942	Nickel	13	ug/FILTER	1.132673864	24	27.18417	4.78E-01	detect		6.00E-03		6.00E+00	
RE36-11-4184	Nickel	1.1	ug/FILTER	1.132673864	30	33.98022	3.24E-02	detect		6.00E-03		6.00E+00	
RE36-11-4189	Nickel	0.71	ug/FILTER	1.132673864	30	33.98022	2.09E-02			6.00E-03		6.00E+00	
RE36-11-4190	Nickel	1.9	ug/FILTER			0		detect		6.00E-03		6.00E+00	
RE36-11-2934	Nickel	0.82	ug/FILTER	1.132673864	42	47.5723	1.72E-02			6.00E-03		6.00E+00	
RE36-11-4192	Nickel	0.39	ug/FILTER	1.132673864	96	108.7367	3.59E-03			6.00E-03		6.00E+00	
RE36-11-4197	Nickel	0.91	ug/FILTER	1.061881747	108	114.6832	7.93E-03			6.00E-03		6.00E+00	
RE36-11-4503	Nickel	0.46	ug/FILTER	1.132673864	30	33.98022	1.35E-02			6.00E-03		6.00E+00	
RE39-11-2943	Nickel	4.7	ug/FILTER	1.132673864	30	33.98022	1.38E-01	detect		6.00E-03		6.00E+00	
RE39-11-2944	Nickel	8.6	ug/FILTER	1.132673864	36	40.77626	2.11E-01	detect		6.00E-03		6.00E+00	
RE39-11-4524	Nickel	1.4	ug/FILTER	1.104357017	30	33.13071	4.23E-02	detect		6.00E-03		6.00E+00	
RE39-11-4525	Nickel	1.2	ug/FILTER	1.104357017	30	33.13071	3.62E-02	detect		6.00E-03		6.00E+00	
RE39-11-4526	Nickel	1	ug/FILTER			0				6.00E-03		6.00E+00	
RE39-11-4527	Nickel	0.5	ug/FILTER	1.132673864	24	27.18417	1.84E-02			6.00E-03		6.00E+00	
RE39-11-4528	Nickel	2.4	ug/FILTER	1.132673864	24	27.18417	8.83E-02	detect	19	6.00E-03		6.00E+00	0
RE39-11-2936	Potassium	42	ug/FILTER	1.11851544	36	40.26656	1.04E+00			none specified			
RE39-11-2945	Potassium	200	ug/FILTER			0				none specified			
RE36-11-2914	Potassium	47	ug/FILTER	1.104357017	30	33.13071	1.42E+00			none specified			
RE36-11-2915	Potassium	81	ug/FILTER	1.132673864	54	61.16439	1.32E+00			none specified			
RE36-11-2916	Potassium	76	ug/FILTER	1.132673864	30	33.98022	2.24E+00			none specified			
RE36-11-2917	Potassium	24	ug/FILTER	1.132673864	36	40.77626	5.89E-01			none specified			
RE36-11-2918	Potassium	200	ug/FILTER	1.104357017	18	19.87843	1.01E+01			none specified			
RE36-11-2919	Potassium	200	ug/FILTER	1.132673864	42	47.5723	4.20E+00			none specified			
RE36-11-2920	Potassium	24	ug/FILTER	1.132673864	24	27.18417	8.83E-01			none specified			
RE36-11-2921	Potassium	200	ug/FILTER	1.132673864	42	47.5723	4.20E+00			none specified			
RE36-11-2922	Potassium	200	ug/FILTER	1.104357017	36	39.75685	5.03E+00			none specified			
RE36-11-2923	Potassium	200	ug/FILTER	1.104357017	36	39.75685	5.03E+00			none specified			
RE39-11-2935	Potassium	200	ug/FILTER	1.132673864	30	33.98022	5.89E+00			none specified			
RE39-11-2937	Potassium	35	ug/FILTER	1.132673864	18	20.38813	1.72E+00			none specified			
RE39-11-2938	Potassium	81	ug/FILTER	1.132673864	30	33.98022	2.38E+00			none specified			
RE39-11-2939	Potassium	24	ug/FILTER	1.104357017	24	26.50457	9.06E-01			none specified			
RE39-11-2940	Potassium	130	ug/FILTER	1.104357017	30	33.13071	3.92E+00			none specified			
RE39-11-2941	Potassium	32	ug/FILTER	1.132673864	24	27.18417	1.18E+00			none specified			
RE39-11-2942	Potassium	93	ug/FILTER	1.132673864	24	27.18417	3.42E+00			none specified			
RE36-11-4184	Potassium	200	ug/FILTER	1.132673864	30	33.98022	5.89E+00			none specified			
RE36-11-4189	Potassium	200	ug/FILTER	1.132673864	30	33.98022	5.89E+00			none specified			
RE36-11-4190	Potassium	200	ug/FILTER			0				none specified			
RE36-11-2934	Potassium	200	ug/FILTER	1.132673864	42	47.5723	4.20E+00			none specified			
RE36-11-4192	Potassium	200	ug/FILTER	1.132673864	96	108.7367	1.84E+00			none specified			
RE36-11-4197	Potassium	200	ug/FILTER	1.061881747	108	114.6832	1.74E+00			none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4503	Potassium	23	ug/FILTER	1.132673864	30	33.98022	6.77E-01			none specified			
RE39-11-2943	Potassium	17	ug/FILTER	1.132673864	30	33.98022	5.00E-01			none specified			
RE39-11-2944	Potassium	62	ug/FILTER	1.132673864	36	40.77626	1.52E+00			none specified			
RE39-11-4524	Potassium	21	ug/FILTER	1.104357017	30	33.13071	6.34E-01			none specified			
RE39-11-4525	Potassium	16	ug/FILTER	1.104357017	30	33.13071	4.83E-01			none specified			
RE39-11-4526	Potassium	16	ug/FILTER			0				none specified			
RE39-11-4527	Potassium	17	ug/FILTER	1.132673864	24	27.18417	6.25E-01			none specified			
RE39-11-4528	Potassium	19	ug/FILTER	1.132673864	24	27.18417	6.99E-01		0	none specified			0
RE39-11-2936	Selenium	0.2	ug/FILTER	1.11851544	36	40.26656	4.97E-03			1.47E+00		1.47E+03	
RE39-11-2945	Selenium	0.2	ug/FILTER			0				1.47E+00		1.47E+03	
RE36-11-2914	Selenium	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			1.47E+00		1.47E+03	
RE36-11-2915	Selenium	0.2	ug/FILTER	1.132673864	54	61.16439	3.27E-03			1.47E+00		1.47E+03	
RE36-11-2916	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE36-11-2917	Selenium	0.2	ug/FILTER	1.132673864	36	40.77626	4.90E-03			1.47E+00		1.47E+03	
RE36-11-2918	Selenium	0.2	ug/FILTER	1.104357017	18	19.87843	1.01E-02			1.47E+00		1.47E+03	
RE36-11-2919	Selenium	0.2	ug/FILTER	1.132673864	42	47.5723	4.20E-03			1.47E+00		1.47E+03	
RE36-11-2920	Selenium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03			1.47E+00		1.47E+03	
RE36-11-2921	Selenium	0.2	ug/FILTER	1.132673864	42	47.5723	4.20E-03			1.47E+00		1.47E+03	
RE36-11-2922	Selenium	0.072	ug/FILTER	1.104357017	36	39.75685	1.81E-03			1.47E+00		1.47E+03	
RE36-11-2923	Selenium	0.2	ug/FILTER	1.104357017	36	39.75685	5.03E-03			1.47E+00		1.47E+03	
RE39-11-2935	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE39-11-2937	Selenium	0.2	ug/FILTER	1.132673864	18	20.38813	9.81E-03			1.47E+00		1.47E+03	
RE39-11-2938	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE39-11-2939	Selenium	0.2	ug/FILTER	1.104357017	24	26.50457	7.55E-03			1.47E+00		1.47E+03	
RE39-11-2940	Selenium	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			1.47E+00		1.47E+03	
RE39-11-2941	Selenium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03			1.47E+00		1.47E+03	
RE39-11-2942	Selenium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03			1.47E+00		1.47E+03	
RE36-11-4184	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE36-11-4189	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE36-11-4190	Selenium	0.2	ug/FILTER			0				1.47E+00		1.47E+03	
RE36-11-2934	Selenium	0.2	ug/FILTER	1.132673864	42	47.5723	4.20E-03			1.47E+00		1.47E+03	
RE36-11-4192	Selenium	0.2	ug/FILTER	1.132673864	96	108.7367	1.84E-03			1.47E+00		1.47E+03	
RE36-11-4197	Selenium	0.2	ug/FILTER	1.061881747	108	114.6832	1.74E-03			1.47E+00		1.47E+03	
RE36-11-4503	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE39-11-2943	Selenium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			1.47E+00		1.47E+03	
RE39-11-2944	Selenium	0.2	ug/FILTER	1.132673864	36	40.77626	4.90E-03			1.47E+00		1.47E+03	
RE39-11-4524	Selenium	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			1.47E+00		1.47E+03	
RE39-11-4525	Selenium	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			1.47E+00		1.47E+03	
RE39-11-4526	Selenium	0.2	ug/FILTER			0				1.47E+00		1.47E+03	
RE39-11-4527	Selenium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03			1.47E+00		1.47E+03	
RE39-11-4528	Selenium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03		0	1.47E+00		1.47E+03	0
RE39-11-2936	Silver	0.19	ug/FILTER	1.11851544	36	40.26656	4.72E-03	detect		0.3		300	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-2945	Silver	0.15	ug/FILTER			0		detect		0.3		300	
RE36-11-2914	Silver	0.038	ug/FILTER	1.104357017	30	33.13071	1.15E-03	detect		0.3		300	
RE36-11-2915	Silver	0.03	ug/FILTER	1.132673864	54	61.16439	4.90E-04	detect		0.3		300	
RE36-11-2916	Silver	0.05	ug/FILTER	1.132673864	30	33.98022	1.47E-03	detect		0.3		300	
RE36-11-2917	Silver	0.016	ug/FILTER	1.132673864	36	40.77626	3.92E-04			0.3		300	
RE36-11-2918	Silver	0.088	ug/FILTER	1.104357017	18	19.87843	4.43E-03	detect		0.3		300	
RE36-11-2919	Silver	0.06	ug/FILTER	1.132673864	42	47.5723	1.26E-03	detect		0.3		300	
RE36-11-2920	Silver	0.22	ug/FILTER	1.132673864	24	27.18417	8.09E-03	detect		0.3		300	
RE36-11-2921	Silver	0.34	ug/FILTER	1.132673864	42	47.5723	7.15E-03	detect		0.3		300	
RE36-11-2922	Silver	0.064	ug/FILTER	1.104357017	36	39.75685	1.61E-03	detect		0.3		300	
RE36-11-2923	Silver	0.032	ug/FILTER	1.104357017	36	39.75685	8.05E-04	detect		0.3		300	
RE39-11-2935	Silver	0.038	ug/FILTER	1.132673864	30	33.98022	1.12E-03	detect		0.3		300	
RE39-11-2937	Silver	0.026	ug/FILTER	1.132673864	18	20.38813	1.28E-03	detect		0.3		300	
RE39-11-2938	Silver	0.092	ug/FILTER	1.132673864	30	33.98022	2.71E-03	detect		0.3		300	
RE39-11-2939	Silver	0.076	ug/FILTER	1.104357017	24	26.50457	2.87E-03	detect		0.3		300	
RE39-11-2940	Silver	0.13	ug/FILTER	1.104357017	30	33.13071	3.92E-03	detect		0.3		300	
RE39-11-2941	Silver	0.094	ug/FILTER	1.132673864	24	27.18417	3.46E-03	detect		0.3		300	
RE39-11-2942	Silver	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03	detect		0.3		300	
RE36-11-4184	Silver	0.048	ug/FILTER	1.132673864	30	33.98022	1.41E-03	detect		0.3		300	
RE36-11-4189	Silver	0.074	ug/FILTER	1.132673864	30	33.98022	2.18E-03	detect		0.3		300	
RE36-11-4190	Silver	0.15	ug/FILTER			0		detect		0.3		300	
RE36-11-2934	Silver	0.026	ug/FILTER	1.132673864	42	47.5723	5.47E-04	detect		0.3		300	
RE36-11-4192	Silver	0.072	ug/FILTER	1.132673864	96	108.7367	6.62E-04	detect		0.3		300	
RE36-11-4197	Silver	0.068	ug/FILTER	1.061881747	108	114.6832	5.93E-04	detect		0.3		300	
RE36-11-4503	Silver	0.074	ug/FILTER	1.132673864	30	33.98022	2.18E-03	detect		0.3		300	
RE39-11-2943	Silver	0.05	ug/FILTER	1.132673864	30	33.98022	1.47E-03	detect		0.3		300	
RE39-11-2944	Silver	0.04	ug/FILTER	1.132673864	36	40.77626	9.81E-04	detect		0.3		300	
RE39-11-4524	Silver	0.028	ug/FILTER	1.104357017	30	33.13071	8.45E-04	detect		0.3		300	
RE39-11-4525	Silver	0.01	ug/FILTER	1.104357017	30	33.13071	3.02E-04			0.3		300	
RE39-11-4526	Silver	0.01	ug/FILTER			0				0.3		300	
RE39-11-4527	Silver	0.02	ug/FILTER	1.132673864	24	27.18417	7.36E-04			0.3		300	
RE39-11-4528	Silver	0.014	ug/FILTER	1.132673864	24	27.18417	5.15E-04		28	0.3		300	0
RE39-11-2936	Sodium	62	ug/FILTER	1.11851544	36	40.26656	1.54E+00			none specified			
RE39-11-2945	Sodium	47	ug/FILTER			0				none specified			
RE36-11-2914	Sodium	70	ug/FILTER	1.104357017	30	33.13071	2.11E+00			none specified			
RE36-11-2915	Sodium	280	ug/FILTER	1.132673864	54	61.16439	4.58E+00	detect		none specified			
RE36-11-2916	Sodium	120	ug/FILTER	1.132673864	30	33.98022	3.53E+00			none specified			
RE36-11-2917	Sodium	48	ug/FILTER	1.132673864	36	40.77626	1.18E+00			none specified			
RE36-11-2918	Sodium	32	ug/FILTER	1.104357017	18	19.87843	1.61E+00			none specified			
RE36-11-2919	Sodium	51	ug/FILTER	1.132673864	42	47.5723	1.07E+00			none specified			
RE36-11-2920	Sodium	92	ug/FILTER	1.132673864	24	27.18417	3.38E+00			none specified			
RE36-11-2921	Sodium	31	ug/FILTER	1.132673864	42	47.5723	6.52E-01			none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-2922	Sodium	22	ug/FILTER	1.104357017	36	39.75685	5.53E-01			none specified			
RE36-11-2923	Sodium	20	ug/FILTER	1.104357017	36	39.75685	5.03E-01			none specified			
RE39-11-2935	Sodium	34	ug/FILTER	1.132673864	30	33.98022	1.00E+00			none specified			
RE39-11-2937	Sodium	22	ug/FILTER	1.132673864	18	20.38813	1.08E+00			none specified			
RE39-11-2938	Sodium	70	ug/FILTER	1.132673864	30	33.98022	2.06E+00			none specified			
RE39-11-2939	Sodium	37	ug/FILTER	1.104357017	24	26.50457	1.40E+00			none specified			
RE39-11-2940	Sodium	170	ug/FILTER	1.104357017	30	33.13071	5.13E+00			none specified			
RE39-11-2941	Sodium	32	ug/FILTER	1.132673864	24	27.18417	1.18E+00			none specified			
RE39-11-2942	Sodium	110	ug/FILTER	1.132673864	24	27.18417	4.05E+00			none specified			
RE36-11-4184	Sodium	51	ug/FILTER	1.132673864	30	33.98022	1.50E+00			none specified			
RE36-11-4189	Sodium	38	ug/FILTER	1.132673864	30	33.98022	1.12E+00			none specified			
RE36-11-4190	Sodium	33	ug/FILTER			0				none specified			
RE36-11-2934	Sodium	200	ug/FILTER	1.132673864	42	47.5723	4.20E+00			none specified			
RE36-11-4192	Sodium	43	ug/FILTER	1.132673864	96	108.7367	3.95E-01			none specified			
RE36-11-4197	Sodium	30	ug/FILTER	1.061881747	108	114.6832	2.62E-01			none specified			
RE36-11-4503	Sodium	30	ug/FILTER	1.132673864	30	33.98022	8.83E-01			none specified			
RE39-11-2943	Sodium	200	ug/FILTER	1.132673864	30	33.98022	5.89E+00			none specified			
RE39-11-2944	Sodium	230	ug/FILTER	1.132673864	36	40.77626	5.64E+00	detect		none specified			
RE39-11-4524	Sodium	200	ug/FILTER	1.104357017	30	33.13071	6.04E+00			none specified			
RE39-11-4525	Sodium	200	ug/FILTER	1.104357017	30	33.13071	6.04E+00			none specified			
RE39-11-4526	Sodium	200	ug/FILTER			0				none specified			
RE39-11-4527	Sodium	200	ug/FILTER	1.132673864	24	27.18417	7.36E+00			none specified			
RE39-11-4528	Sodium	200	ug/FILTER	1.132673864	24	27.18417	7.36E+00		2	none specified			0
RE39-11-2936	Thallium	0.02	ug/FILTER	1.11851544	36	40.26656	4.97E-04			0.3		300	
RE39-11-2945	Thallium	0.006	ug/FILTER			0				0.3		300	
RE36-11-2914	Thallium	0.01	ug/FILTER	1.104357017	30	33.13071	3.02E-04			0.3		300	
RE36-11-2915	Thallium	0.04	ug/FILTER	1.132673864	54	61.16439	6.54E-04			0.3		300	
RE36-11-2916	Thallium	0.006	ug/FILTER	1.132673864	30	33.98022	1.77E-04			0.3		300	
RE36-11-2917	Thallium	0.04	ug/FILTER	1.132673864	36	40.77626	9.81E-04			0.3		300	
RE36-11-2918	Thallium	0.006	ug/FILTER	1.104357017	18	19.87843	3.02E-04			0.3		300	
RE36-11-2919	Thallium	0.01	ug/FILTER	1.132673864	42	47.5723	2.10E-04			0.3		300	
RE36-11-2920	Thallium	0.04	ug/FILTER	1.132673864	24	27.18417	1.47E-03			0.3		300	
RE36-11-2921	Thallium	0.04	ug/FILTER	1.132673864	42	47.5723	8.41E-04			0.3		300	
RE36-11-2922	Thallium	0.008	ug/FILTER	1.104357017	36	39.75685	2.01E-04			0.3		300	
RE36-11-2923	Thallium	0.008	ug/FILTER	1.104357017	36	39.75685	2.01E-04			0.3		300	
RE39-11-2935	Thallium	0.004	ug/FILTER	1.132673864	30	33.98022	1.18E-04			0.3		300	
RE39-11-2937	Thallium	0.016	ug/FILTER	1.132673864	18	20.38813	7.85E-04			0.3		300	
RE39-11-2938	Thallium	0.008	ug/FILTER	1.132673864	30	33.98022	2.35E-04			0.3		300	
RE39-11-2939	Thallium	0.006	ug/FILTER	1.104357017	24	26.50457	2.26E-04			0.3		300	
RE39-11-2940	Thallium	0.008	ug/FILTER	1.104357017	30	33.13071	2.41E-04			0.3		300	
RE39-11-2941	Thallium	0.056	ug/FILTER	1.132673864	24	27.18417	2.06E-03	detect		0.3		300	
RE39-11-2942	Thallium	0.012	ug/FILTER	1.132673864	24	27.18417	4.41E-04			0.3		300	

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE36-11-4184	Thallium	0.046	ug/FILTER	1.132673864	30	33.98022	1.35E-03	detect		0.3		300	
RE36-11-4189	Thallium	0.01	ug/FILTER	1.132673864	30	33.98022	2.94E-04			0.3		300	
RE36-11-4190	Thallium	0.04	ug/FILTER			0				0.3		300	
RE36-11-2934	Thallium	0.026	ug/FILTER	1.132673864	42	47.5723	5.47E-04			0.3		300	
RE36-11-4192	Thallium	0.01	ug/FILTER	1.132673864	96	108.7367	9.20E-05			0.3		300	
RE36-11-4197	Thallium	0.006	ug/FILTER	1.061881747	108	114.6832	5.23E-05			0.3		300	
RE36-11-4503	Thallium	0.04	ug/FILTER	1.132673864	30	33.98022	1.18E-03			0.3		300	
RE39-11-2943	Thallium	0.04	ug/FILTER	1.132673864	30	33.98022	1.18E-03			0.3		300	
RE39-11-2944	Thallium	0.04	ug/FILTER	1.132673864	36	40.77626	9.81E-04			0.3		300	
RE39-11-4524	Thallium	0.01	ug/FILTER	1.104357017	30	33.13071	3.02E-04			0.3		300	
RE39-11-4525	Thallium	0.04	ug/FILTER	1.104357017	30	33.13071	1.21E-03			0.3		300	
RE39-11-4526	Thallium	0.008	ug/FILTER			0				0.3		300	
RE39-11-4527	Thallium	0.04	ug/FILTER	1.132673864	24	27.18417	1.47E-03			0.3		300	
RE39-11-4528	Thallium	0.014	ug/FILTER	1.132673864	24	27.18417	5.15E-04		2	0.3		300	0
RE39-11-2936	Vanadium	0.15	ug/FILTER	1.11851544	36	40.26656	3.73E-03			none specified			
RE39-11-2945	Vanadium	0.2	ug/FILTER			0				none specified			
RE36-11-2914	Vanadium	0.082	ug/FILTER	1.104357017	30	33.13071	2.48E-03			none specified			
RE36-11-2915	Vanadium	0.092	ug/FILTER	1.132673864	54	61.16439	1.50E-03			none specified			
RE36-11-2916	Vanadium	0.06	ug/FILTER	1.132673864	30	33.98022	1.77E-03			none specified			
RE36-11-2917	Vanadium	0.058	ug/FILTER	1.132673864	36	40.77626	1.42E-03			none specified			
RE36-11-2918	Vanadium	0.14	ug/FILTER	1.104357017	18	19.87843	7.04E-03			none specified			
RE36-11-2919	Vanadium	0.052	ug/FILTER	1.132673864	42	47.5723	1.09E-03			none specified			
RE36-11-2920	Vanadium	0.17	ug/FILTER	1.132673864	24	27.18417	6.25E-03			none specified			
RE36-11-2921	Vanadium	0.15	ug/FILTER	1.132673864	42	47.5723	3.15E-03			none specified			
RE36-11-2922	Vanadium	0.11	ug/FILTER	1.104357017	36	39.75685	2.77E-03			none specified			
RE36-11-2923	Vanadium	0.12	ug/FILTER	1.104357017	36	39.75685	3.02E-03			none specified			
RE39-11-2935	Vanadium	0.22	ug/FILTER	1.132673864	30	33.98022	6.47E-03	detect		none specified			
RE39-11-2937	Vanadium	0.2	ug/FILTER	1.132673864	18	20.38813	9.81E-03			none specified			
RE39-11-2938	Vanadium	0.38	ug/FILTER	1.132673864	30	33.98022	1.12E-02	detect		none specified			
RE39-11-2939	Vanadium	0.27	ug/FILTER	1.104357017	24	26.50457	1.02E-02	detect		none specified			
RE39-11-2940	Vanadium	0.58	ug/FILTER	1.104357017	30	33.13071	1.75E-02	detect		none specified			
RE39-11-2941	Vanadium	0.26	ug/FILTER	1.132673864	24	27.18417	9.56E-03	detect		none specified			
RE39-11-2942	Vanadium	0.5	ug/FILTER	1.132673864	24	27.18417	1.84E-02	detect		none specified			
RE36-11-4184	Vanadium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			none specified			
RE36-11-4189	Vanadium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			none specified			
RE36-11-4190	Vanadium	0.2	ug/FILTER			0				none specified			
RE36-11-2934	Vanadium	0.084	ug/FILTER	1.132673864	42	47.5723	1.77E-03			none specified			
RE36-11-4192	Vanadium	0.11	ug/FILTER	1.132673864	96	108.7367	1.01E-03			none specified			
RE36-11-4197	Vanadium	0.12	ug/FILTER	1.061881747	108	114.6832	1.05E-03			none specified			
RE36-11-4503	Vanadium	0.13	ug/FILTER	1.132673864	30	33.98022	3.83E-03			none specified			
RE39-11-2943	Vanadium	0.2	ug/FILTER	1.132673864	30	33.98022	5.89E-03			none specified			
RE39-11-2944	Vanadium	0.076	ug/FILTER	1.132673864	36	40.77626	1.86E-03			none specified			

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug $/m^3$)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte
RE39-11-4524	Vanadium	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			none specified			
RE39-11-4525	Vanadium	0.2	ug/FILTER	1.104357017	30	33.13071	6.04E-03			none specified			
RE39-11-4526	Vanadium	0.2	ug/FILTER			0				none specified			
RE39-11-4527	Vanadium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03			none specified			
RE39-11-4528	Vanadium	0.2	ug/FILTER	1.132673864	24	27.18417	7.36E-03		6	none specified			0
RE39-11-2936	Zinc	33	ug/FILTER	1.11851544	36	40.26656	8.20E-01	detect		3.00E+01		3.00E+04	
RE39-11-2945	Zinc	11	ug/FILTER			0		detect		3.00E+01		3.00E+04	
RE36-11-2914	Zinc	20	ug/FILTER	1.104357017	30	33.13071	6.04E-01	detect		3.00E+01		3.00E+04	
RE36-11-2915	Zinc	21	ug/FILTER	1.132673864	54	61.16439	3.43E-01	detect		3.00E+01		3.00E+04	
RE36-11-2916	Zinc	14	ug/FILTER	1.132673864	30	33.98022	4.12E-01	detect		3.00E+01		3.00E+04	
RE36-11-2917	Zinc	15	ug/FILTER	1.132673864	36	40.77626	3.68E-01	detect		3.00E+01		3.00E+04	
RE36-11-2918	Zinc	12	ug/FILTER	1.104357017	18	19.87843	6.04E-01	detect		3.00E+01		3.00E+04	
RE36-11-2919	Zinc	18	ug/FILTER	1.132673864	42	47.5723	3.78E-01	detect		3.00E+01		3.00E+04	
RE36-11-2920	Zinc	10	ug/FILTER	1.132673864	24	27.18417	3.68E-01	detect		3.00E+01		3.00E+04	
RE36-11-2921	Zinc	15	ug/FILTER	1.132673864	42	47.5723	3.15E-01	detect		3.00E+01		3.00E+04	
RE36-11-2922	Zinc	11	ug/FILTER	1.104357017	36	39.75685	2.77E-01	detect		3.00E+01		3.00E+04	
RE36-11-2923	Zinc	11	ug/FILTER	1.104357017	36	39.75685	2.77E-01	detect		3.00E+01		3.00E+04	
RE39-11-2935	Zinc	15	ug/FILTER	1.132673864	30	33.98022	4.41E-01	detect		3.00E+01		3.00E+04	
RE39-11-2937	Zinc	20	ug/FILTER	1.132673864	18	20.38813	9.81E-01	detect		3.00E+01		3.00E+04	
RE39-11-2938	Zinc	40	ug/FILTER	1.132673864	30	33.98022	1.18E+00	detect		3.00E+01		3.00E+04	
RE39-11-2939	Zinc	16	ug/FILTER	1.104357017	24	26.50457	6.04E-01	detect		3.00E+01		3.00E+04	
RE39-11-2940	Zinc	46	ug/FILTER	1.104357017	30	33.13071	1.39E+00	detect		3.00E+01		3.00E+04	
RE39-11-2941	Zinc	14	ug/FILTER	1.132673864	24	27.18417	5.15E-01	detect		3.00E+01		3.00E+04	
RE39-11-2942	Zinc	35	ug/FILTER	1.132673864	24	27.18417	1.29E+00	detect		3.00E+01		3.00E+04	
RE36-11-4184	Zinc	19	ug/FILTER	1.132673864	30	33.98022	5.59E-01	detect		3.00E+01		3.00E+04	
RE36-11-4189	Zinc	11	ug/FILTER	1.132673864	30	33.98022	3.24E-01	detect		3.00E+01		3.00E+04	
RE36-11-4190	Zinc	12	ug/FILTER			0		detect		3.00E+01		3.00E+04	
RE36-11-2934	Zinc	9.8	ug/FILTER	1.132673864	42	47.5723	2.06E-01	detect		3.00E+01		3.00E+04	
RE36-11-4192	Zinc	12	ug/FILTER	1.132673864	96	108.7367	1.10E-01	detect		3.00E+01		3.00E+04	
RE36-11-4197	Zinc	15	ug/FILTER	1.061881747	108	114.6832	1.31E-01	detect		3.00E+01		3.00E+04	
RE36-11-4503	Zinc	22	ug/FILTER	1.132673864	30	33.98022	6.47E-01	detect		3.00E+01		3.00E+04	
RE39-11-2943	Zinc	18	ug/FILTER	1.132673864	30	33.98022	5.30E-01	detect		3.00E+01		3.00E+04	
RE39-11-2944	Zinc	42	ug/FILTER	1.132673864	36	40.77626	1.03E+00	detect		3.00E+01		3.00E+04	
RE39-11-4524	Zinc	17	ug/FILTER	1.104357017	30	33.13071	5.13E-01	detect		3.00E+01		3.00E+04	
RE39-11-4525	Zinc	6.4	ug/FILTER	1.104357017	30	33.13071	1.93E-01	detect		3.00E+01		3.00E+04	
RE39-11-4526	Zinc	2.1	ug/FILTER			0				3.00E+01		3.00E+04	
RE39-11-4527	Zinc	3.6	ug/FILTER	1.132673864	24	27.18417	1.32E-01			3.00E+01		3.00E+04	
RE39-11-4528	Zinc	17	ug/FILTER	1.132673864	24	27.18417	6.25E-01	detect	31	3.00E+01		3.00E+04	0

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol (m^3)	Conc. In Air (pg or ug /m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure Conc. (mg/m^3)	CA Acute RELs (mg/m^3)	Conversion of screening level to ug/m^3	# of Exceeds per Analyte

ug = micrograms
m^3/min = cubic meters per minute
min = minute
pg or ug /m^3 = picograms or micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ug/m^3 = microgams per cubic meter
CA Acute RELs = California Acute Reference Exposure Levels
Note: Blank samples have a flow volume of 0 m^3
Screening levels taken from:
EPA, 2005. "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities," Office of Solid Waste and Emergency Response, EPA530-R-05-006, September 2005. EPA, 2010, "Environmental Protection Agency Region 6 Regional Screening Levels," November November 2010.
and
Office of Environmental Health Hazard Assessment (OEHHA), 1999. Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels for Airborne Toxicants. California Environmental Protection Agency, Air Toxicology and Epidemiology Section, Office of Environmental Health Hazard Assessment. March 1999.

Supplement 4-5

Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 36-8

TA-36-8 Open Detonation Unit

This summary report includes discussion of the analytical results associated with soil sampling conducted at the Technical Area 36, Building 8 (TA-36-8) open detonation unit on September 19, 2018. Fifteen soil samples were collected from pre-selected locations (Figure 1) based on a defined area where deposition of particulates from air to soil, including predominant downwind locations, and areas of potential storm water runoff, is most likely to occur. Soil samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total metals, dioxins/furans, perchlorates, and high explosives, gross alpha and beta and isotopic plutonium. Soil samples were collected as grab samples from a depth of 0 to 2 inches below the ground surface.

In 2010 and early 2011, soil data were previously collected to determine the baseline soil constituent of concern concentrations at the unit after more than 50 years of use. A summary of the soil analytical results for the sample collection events is included in Attachment D of the *Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6), Revision 0* (Los Alamos National Laboratory [LANL], 2011). Soil samples were analyzed for high explosives, metals, dioxins/furans, SVOCs, VOCs, polychlorinated biphenyls (PCBs), perchlorates, and radiological constituents (gross alpha, gross beta, and isotopic uranium). Those analytical results indicate that the average soil constituent concentrations in and around the TA-36-8 open detonation unit were less than the New Mexico Environment Department (NMED) Residential Soil Screening Levels (RSSLs) (NMED, 2019).

The results of the 2018 soil sampling event, discussed in detail below, indicate that current active operations at the unit also do not pose an unnecessary risk to human health based on the soil sample analytical results. Any potential contamination at the site is believed to be primarily limited to the surface (i.e., the first few inches in depth) of the site.

Laboratory Analysis and Reporting

The soil samples collected in 2018 were analyzed at a qualified offsite laboratory. The LANL Sample Management Office qualifies contract laboratories and ensures these laboratories adhere to U.S. Environmental Protection Agency (EPA) quality assurance and quality control (QA/QC) requirements. All sampling and analyses were conducted in accordance with QA/QC procedures defined by the latest revision of SW-846 (EPA 1986) or other NMED-approved procedures. Field sampling procedures and laboratory analyses are evaluated through the use of QA/QC samples to assess the overall quality of the data produced. The field QC samples included trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Field QC samples were given a unique sample identification number and submitted to the analytical laboratory as blind samples. Laboratory QC samples include calibrations, blanks, duplicates, and spike samples. QC sample results are included in the analytical results received from the laboratory so the results can be applied to the associated samples.

Samples were analyzed for the following constituents using the methods indicated in the parentheses:

- High explosives (SW-846-8330B)

- Metals (SW-846-6020, SW-846-6010C, and SW-846-7471A)
- Dioxins/Furans (SW-846-8290A)
- SVOCs (SW-846-8270D)
- VOCs (SW-846-8260B)
- Perchlorates (SW-846-6850)
- Gross alpha and beta (EPA Method 900)
- Isotopic plutonium (HASL-300:ISOPU)

Complete analytical results for this sampling are included in Table 1, *TA-36-8 Analytical Data Summary*. Data are reported with qualifiers that denote the following analytical situations:

- For Dioxins/Furans
    - U – Compound analyzed for, but not detected, reported quantity equals the contract required quantitation limit (CRQL)
    - J - Estimated value; the analyte is present, but at a concentration below the CRQL
    - B – Analyte detected in associated blank
    - K – Estimated Maximum Possible Concentration
    - NQ – No qualification
- For Metals and Isotopic Plutonium
    - U – reading was less than the method detection limit (MDL); reported value equals the CRQL
    - J – The reported value was obtained from a reading less than the CRQL but greater than or equal to the MDL
        - J+ – percent recovery is over the qualification standard
        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
    - NQ – No qualification
- For VOCs and SVOCs
    - U – Compound analyzed for, but not detected; reported value equals the CRQL
    - J – Estimated value; the analyte is present, but at a concentration below the CRQL
        - J+ – percent recovery is over the qualification standard
        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
- For Explosives
    - U – Compound analyzed for, but not detected; reported value equals the CRQL
    - J – Estimated value; the analyte is present, but at a concentration below the CRQL
        - J+ – percent recovery is over the qualification standard
        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
    - NQ – No qualification

Soil samples collected in 2018 were intended to be analyzed for isotopic uranium, but were analyzed for isotopic plutonium instead, which is not a constituent that should be present at the site. A miscommunication on the chain of custody forms for the sample suites led to analysis for isotopic plutonium and as expected, there was no plutonium detected at the site. However, previously collected data regarding isotopic uranium (the applicable constituent) concentration information, were included in the earlier 2011 sampling report (LANL 2011). The isotopic uranium data were also evaluated within the 2013 revised risk assessment included as Permit Application Supplement 4-9, *Revision of 2011 Open Detonation Risk Assessment*.

Summary of Results

Compiled data were compared to NMED RSSLs. It is important to note that very few constituents, when compared to the constituents that the soil was tested for, were detected. The compounds detected within the soil are presented below as well as other information about the analytical data that provide a more in depth discussion regarding the results.

Organic constituents detected within the soils at the TA-36-8 open detonation unit include:

- 2 of the 62 VOCs analyzed;
- 17 of the 69 SVOCs analyzed;
- 3 of the 20 explosives compounds analyzed; and
- 16 of the 25 dioxin or furan compounds analyzed.

All of the VOCs and SVOCs that were detected at the unit were detected below applicable NMED RSSLs. However, when a constituent concentration is reported as a CRQL which is greater than the screening level, it appears that the constituent is detected above the NMED RSSL. This is the case for n-nitrosodimethylamine within this dataset. It is not detected in any of the samples analyzed and is included within the ‘U’ qualifier. However, because the reported results are the same as the CRQL, and the CRQL is greater than the NMED RSSL, n- nitrosodimethylamine appears to be detected at a concentration higher than the NMED RSSLs. The method utilized by the analytical laboratory for the SVOC analysis can detect the presence of nitrosamines; however, it is not the most sensitive method and therefore, the detection limit is higher than the soil screening level.

The presence of n-nitrosodimethylamine due to operations at the TA-36-8 open detonation is not likely and a more focused analytical validation was deemed not necessary. N-nitrosodimethylamine is produced by industry only in small amounts for research. It was used to make rocket fuel, but this use was stopped after unusually high levels of the chemical were found in air, water, and soil samples collected near a rocket fuel manufacturing plant. It is currently used in some cosmetic and toiletry products and in cleansers. N-nitrosodimethylamine is unintentionally formed during various manufacturing processes and in air, water, and soil from reactions involving alkylamines. It is also found in some foods and may be formed in the body. When released to the air, it is broken down by sunlight in a matter of minutes. When released to soil, it may evaporate into air or could sink down into deeper soil. It is unlikely that n-nitrosodimethylamine was deposited by past or current activities at the TA-36-8 open detonation unit as rocket fuel was never manufactured at LANL.

The three explosives compounds (HMX, RDX, and TATB) detected within the soil at the TA-36-8 open detonation unit were all found at concentrations below NMED RSSLs.

EPA has established 50 parts per trillion (ppt) Toxic Equivalency Quantity (TEQ) as being an acceptable limit for residential contamination for dioxins and furans. The TEQ system was developed for the purpose of comparing the relative risk of exposure in areas of contamination that vary widely in the composition and level of most toxic dioxins and furans. Each of the 17 highly toxic dioxins/furans are assigned a Toxic Equivalency Factor (TEF) based on a particular chemical's toxicity relative to 2,3,7,8-tetrachlorodibenzodioxin (TCDD), with the toxicity of TCDD being equal to 1.0. The concentration of each dioxin/furan is multiplied by its respective TEF and the results are summed. The summed results give the TEQ of the sample and it is this value that is compared to the 50 ppt screening level. This analysis is conducted as part of the health and ecological risk assessment included with this application and is included within Permit Application Supplement 4-7, *Technical Area 36 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 36-8 Open Detonation Unit Human Health and Ecological Risk- Screening Assessments*.

Perchlorate was detected at 11 of the 15 soil sample locations. All detections were below NMED RSSLs.

Twenty-two (22) of the 23 analyzed metals were detected in the sampled soil at the TA-36-8 open detonation unit. Most of the detected metal concentrations are below the established background levels for Los Alamos National Laboratory. Eight of the metals detected are present at concentrations above background values.

- Cadmium (1 location)
- Chromium (1 location)
- Copper (13 locations)
- Lead (1 location)
- Mercury (1 location)
- Silver (2 locations)
- Thallium (1 location)
- Zinc (1 location)

The single detection of thallium is also above the NMED RSSL at that location. Human health and ecological risks associated with these detections are included in Permit Application Supplement 4-7, *Technical Area 36 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 36-8 Open Detonation Unit Human Health and Ecological Risk- Screening Assessments*.

Conclusion

Soil sampling and analysis results indicate that the average soil constituent concentration in and around the TA-36-8 open detonation unit are generally less than the NMED RSSLs. Metal constituent concentrations greater than the screening levels (see Table 1) are indicated for a single soil sample when compared directly to the NMED RSSLs. The analytical results for high explosives, perchlorates, VOCs, SVOCs and dioxins/furans did not indicate the presence of any constituents greater than the selected screening levels. Detected metals at 13 soil sample locations were measured above established background values.

References

EPA, 1986 (and all approved updates). *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846, U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response, U.S Government Printing Office, Washington D.C.

LANL, 2011. *Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6), Revision 0*. Los Alamos National Laboratory. July 2011. (http://permalink.lanl.gov/object/tr?what=info:lanl-repo/lareport/LA-UR-11-04739)

NMED, 2010. *Los Alamos National Laboratory Hazardous Waste Facility Permit,* EPA ID# NM0890010515, New Mexico Environment Department, Santa Fe, New Mexico.

NMED, 2019. *New Mexico Environment Department Risk Assessment guidance for Site Investigations and Remediation*, February 2019 (Revision 2, 6/19/19).

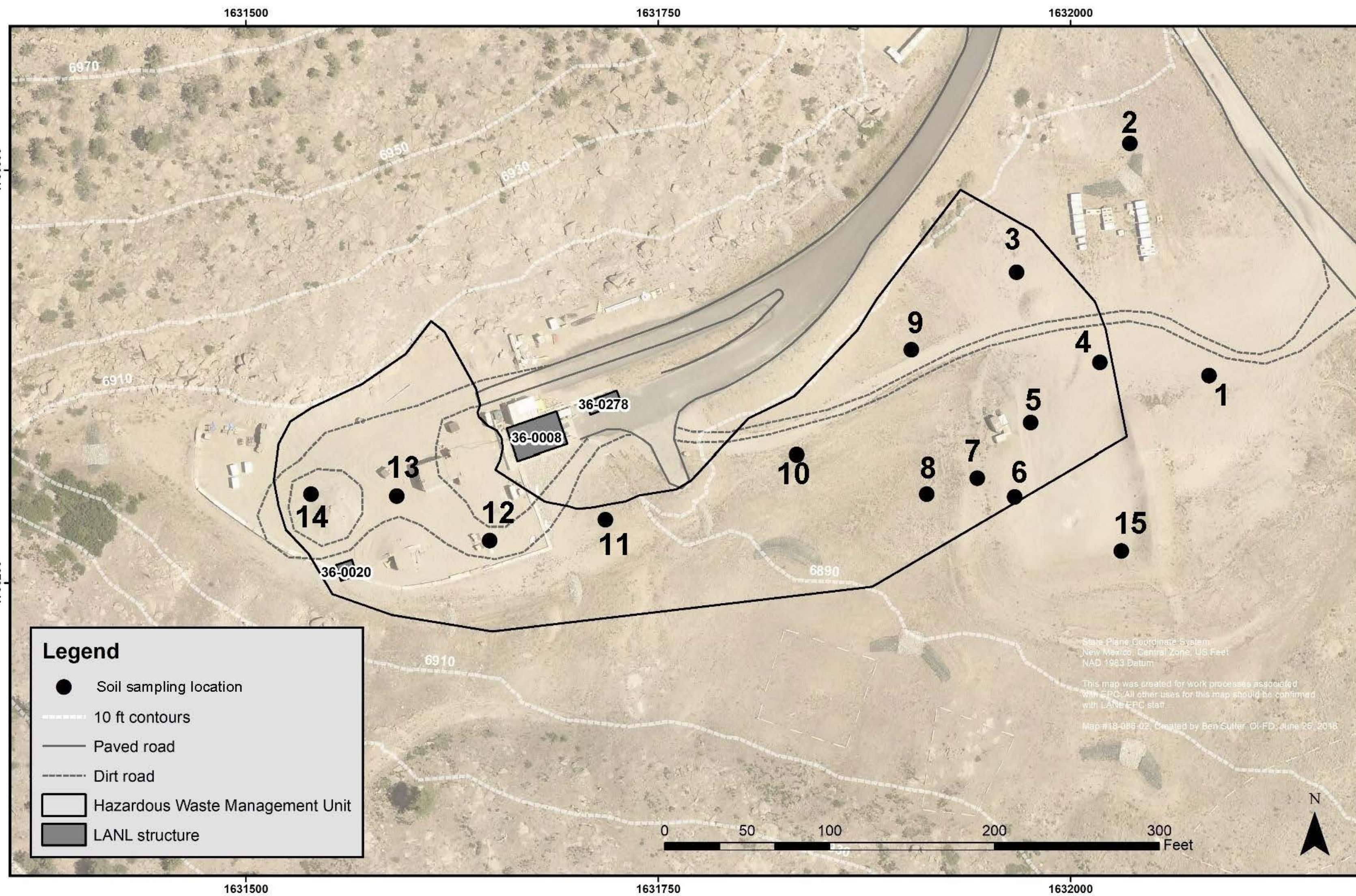


Figure 1. TA-36-8 Soil Sample Locations

Table 1. TA-36-8 2018 Analytical Data Summary

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**8.40E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Heptachlorodibenzodioxins (Total)**	**1.22E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**5.61E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofuran[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofuran[2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachlorodibenzodioxin[2,3,7,8-]	9.99E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
1	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.10E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	**Tetrachlorodibenzofurans (Totals)**	**1.10E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Aluminum**	**2.35E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
1	Antimony	3.14E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
1	**Arsenic**	**8.44E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
1	**Barium**	**2.64E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
1	**Beryllium**	**2.09E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
1	Cadmium	9.52E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
1	**Calcium**	**4.49E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
1	**Chromium**	**7.38E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
1	**Cobalt**	**3.32E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
1	**Copper**	**1.22E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
1	**Iron**	**9.51E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
1	**Lead**	**4.17E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
1	**Magnesium**	**2.58E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
1	**Manganese**	**1.43E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
1	Mercury	3.64E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
1	**Nickel**	**5.29E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
1	**Potassium**	**4.03E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
1	**Selenium**	**4.78E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
1	**Silver**	**2.95E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
1	**Sodium**	**4.14E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
1	Thallium	1.35E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
1	**Vanadium**	**2.13E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
1	**Zinc**	**2.01E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
1	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/Ap	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
1	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
1	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
1	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
1	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
1	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**RDX**	**2.27E-01**	mg/kg	**Y**	J	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
1	**TATB**	**1.27E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
1	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Perchlorate	4.98E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
1	**Gross alpha**	**1.24E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Gross beta**	**2.14E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Plutonium-238	1.36E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
1	Plutonium-239/240	-1.09E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
1	Acenaphthene	1.00E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
1	Acenaphthylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Aniline	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Anthracene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
1	Azobenzene	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(a)anthracene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(a)pyrene	1.00E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
1	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Benzoic Acid	1.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzyl Alcohol	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-ethylhexyl)phthalate	1.00E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
1	Chlorophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
1	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chrysene	1.00E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
1	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
1	Dibenzofuran	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
1	Diethylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
1	Dimethyl Phthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
1	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Di-n-butylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
1	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
1	Di-n-octylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Diphenylamine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Fluoranthene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1	Fluorene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1	Hexachlorobenzene	1.00E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
1	Hexachlorobutadiene	1.00E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
1	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
1	Hexachloroethane	1.00E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
1	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Isophorone	1.00E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
1	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
1	Methylphenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Naphthalene	1.00E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
1	Nitroaniline[2-]	1.10E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitroaniline[3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Nitroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrobenzene	1.00E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1	Nitrophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrophenol[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
1	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorophenol	1.00E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
1	Phenanthrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1	Phenol	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
1	Pyrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1	Pyridine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
1	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
1	Acetone	1.55E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
1	Benzene	3.10E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
1	Bromobenzene	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bromochloromethane	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bromodichloromethane	3.10E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Bromoform	3.10E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Bromomethane	3.10E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
1	Butanone[2-]	1.55E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
1	Butylbenzene[n-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzene[sec-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzene[tert-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Carbon Disulfide	1.55E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
1	Carbon Tetrachloride	3.10E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
1	Chlorobenzene	3.10E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
1	Chlorodibromomethane	3.10E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Chloroethane	3.10E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
1	Chloroform	3.10E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
1	Chloromethane	3.10E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
1	Chlorotoluene[2-]	3.10E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Chlorotoluene[4-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dibromo-3-Chloropropane[1,2-]	4.66E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
1	Dibromoethane[1,2-]	3.10E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
1	Dibromomethane	3.10E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
1	Dichlorobenzene[1,2-]	3.10E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,3-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,4-]	3.10E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1	Dichlorodifluoromethane	3.10E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
1	Dichloroethane[1,1-]	3.10E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
1	Dichloroethane[1,2-]	3.10E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
1	Dichloroethene[1,1-]	3.10E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
1	Dichloroethene[cis-1,2-]	3.10E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1	Dichloroethene[trans-1,2-]	3.10E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
1	Dichloropropane[1,2-]	3.10E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
1	Dichloropropane[1,3-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropane[2,2-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[1,1-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[cis-1,3-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Dichloropropene[trans-1,3-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Ethylbenzene	3.10E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
1	Hexanone[2-]	1.55E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Iodomethane	1.55E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Isopropylbenzene	3.10E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
1	Isopropyltoluene[4-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Methyl-2-pentanone[4-]	1.55E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
1	Methylene Chloride	1.55E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
1	Propylbenzene[1-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Styrene	3.10E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
1	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachloroethane[1,1,1,2-]	3.10E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
1	Tetrachloroethane[1,1,2,2-]	3.10E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Tetrachloroethene	3.10E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
1	Toluene	3.10E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.55E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
1	Trichloroethane[1,1,1-]	3.10E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
1	Trichloroethane[1,1,2-]	3.10E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
1	Trichloroethene	3.10E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
1	Trichlorofluoromethane	3.10E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Trichloropropane[1,2,3-]	3.10E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
1	Trimethylbenzene[1,2,4-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trimethylbenzene[1,3,5-]	3.10E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Vinyl Chloride	3.10E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
1	Xylene[1,2-]	3.10E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Xylene[1,3-]+Xylene[1,4-]	6.21E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
2	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**3.68E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Heptachlorodibenzodioxins (Total)**	**1.11E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**8.20E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Heptachlorodibenzofurans (Total)**	**8.20E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Hexachlorodibenzodioxins (Total)**	**5.77E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**3.41E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**2.54E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachlorodibenzodioxin[2,3,7,8-]	9.95E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
2	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.31E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	**Aluminum**	**3.75E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
2	Antimony	3.24E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
2	**Arsenic**	**1.43E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
2	**Barium**	**7.34E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
2	**Beryllium**	**4.55E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
2	Cadmium	9.81E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
2	**Calcium**	**2.76E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
2	**Chromium**	**5.37E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
2	**Cobalt**	**3.06E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
2	**Copper**	**1.48E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
2	**Iron**	**1.09E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
2	**Lead**	**1.26E+01**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
2	**Magnesium**	**1.09E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
2	**Manganese**	**2.99E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
2	**Mercury**	**5.52E-03**	mg/kg	**Y**	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
2	**Nickel**	**4.17E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
2	**Potassium**	**7.96E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
2	**Selenium**	**8.41E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
2	**Silver**	**1.25E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
2	**Sodium**	**5.06E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
2	Thallium	1.36E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
2	**Vanadium**	**1.37E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
2	**Zinc**	**4.22E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
2	2,4-Diamino-6-nitrotoluene	4.95E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	2,6-Diamino-4-nitrotoluene	6.53E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	3,5-Dinitroaniline	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
2	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
2	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
2	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
2	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
2	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
2	PETN	2.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
2	**TATB**	**1.40E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
2	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
2	Tris (o-cresyl) phosphate	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Perchlorate	5.04E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
2	**Gross alpha**	**1.69E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Gross beta**	**3.27E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Plutonium-238	1.16E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
2	Plutonium-239/240	7.22E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
2	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
2	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Benzo(a)anthracene**	**1.58E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	**Benzo(a)pyrene**	**1.34E-02**	mg/kg	**Y**	J	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
2	**Benzo(b)fluoranthene**	**1.61E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
2	**Benzoic Acid**	**4.58E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
2	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
2	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Chrysene**	**1.38E-02**	mg/kg	**Y**	J	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
2	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
2	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
2	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
2	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
2	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
2	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
2	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
2	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Fluoranthene**	**2.58E-02**	mg/kg	**Y**	J	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
2	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
2	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
2	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
2	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
2	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
2	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
2	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
2	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
2	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
2	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
2	**Phenanthrene**	**1.54E-02**	mg/kg	**Y**	J	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
2	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
2	**Pyrene**	**2.58E-02**	mg/kg	**Y**	J	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
2	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
2	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
2	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
2	Acetone	1.62E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
2	Benzene	3.23E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
2	Bromobenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bromochloromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bromodichloromethane	3.23E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Bromoform	3.23E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Bromomethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
2	Butanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
2	Butylbenzene[n-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzene[sec-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzene[tert-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Carbon Disulfide	1.62E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
2	Carbon Tetrachloride	3.23E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Chlorobenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
2	Chlorodibromomethane	3.23E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Chloroethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
2	Chloroform	3.23E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
2	Chloromethane	3.23E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
2	Chlorotoluene[2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Chlorotoluene[4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dibromo-3-Chloropropane[1,2-]	4.85E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
2	Dibromoethane[1,2-]	3.23E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
2	Dibromomethane	3.23E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
2	Dichlorobenzene[1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,4-]	3.23E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
2	Dichlorodifluoromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
2	Dichloroethane[1,1-]	3.23E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
2	Dichloroethane[1,2-]	3.23E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
2	Dichloroethene[1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
2	Dichloroethene[cis-1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
2	Dichloroethene[trans-1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
2	Dichloropropane[1,2-]	3.23E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
2	Dichloropropane[1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropane[2,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[cis-1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[trans-1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Ethylbenzene	3.23E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Hexanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Iodomethane	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Isopropylbenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
2	Isopropyltoluene[4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Methyl-2-pentanone[4-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
2	Methylene Chloride	1.62E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
2	Propylbenzene[1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Styrene	3.23E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
2	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachloroethane[1,1,1,2-]	3.23E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
2	Tetrachloroethane[1,1,2,2-]	3.23E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Tetrachloroethene	3.23E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
2	**Toluene**	**2.23E-03**	mg/kg	**Y**	NQ	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
2	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
2	Trichloroethane[1,1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
2	Trichloroethane[1,1,2-]	3.23E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
2	Trichloroethene	3.23E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
2	Trichlorofluoromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Trichloropropane[1,2,3-]	3.23E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
2	Trimethylbenzene[1,2,4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trimethylbenzene[1,3,5-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Vinyl Chloride	3.23E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
2	Xylene[1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	8.07E+02	FALSE	N/A	FALSE
2	Xylene[1,3-]+Xylene[1,4-]	6.47E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
3	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**7.96E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	**Heptachlorodibenzodioxins (Total)**	**3.17E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**1.49E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Heptachlorodibenzofurans (Total)**	**5.35E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Hexachlorodibenzodioxins (Total)**	**2.86E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**7.74E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**5.55E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofuran[1,2,3,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofuran[2,3,4,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachlorodibenzodioxin[2,3,7,8-]	1.01E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
3	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Tetrachlorodibenzofuran[2,3,7,8-]**	**2.27E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
3	**Tetrachlorodibenzofurans (Totals)**	**2.27E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Aluminum**	**2.95E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
3	Antimony	4.32E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	**Arsenic**	**1.95E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
3	**Barium**	**1.15E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
3	**Beryllium**	**3.50E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
3	Cadmium	9.18E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
3	**Calcium**	**3.50E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
3	**Chromium**	**4.92E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	TRUE
3	**Cobalt**	**4.12E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
3	**Copper**	**5.97E+02**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
3	**Iron**	**1.02E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
3	**Lead**	**3.52E+01**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	TRUE
3	**Magnesium**	**1.45E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
3	**Manganese**	**1.94E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
3	Mercury	3.43E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
3	**Nickel**	**7.70E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
3	**Potassium**	**8.10E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
3	**Selenium**	**6.31E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
3	**Silver**	**4.94E-01**	mg/kg	**Y**	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
3	**Sodium**	**6.05E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
3	Thallium	1.41E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
3	**Vanadium**	**2.07E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
3	**Zinc**	**4.84E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
3	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
3	**HMX**	**1.45E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
3	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
3	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
3	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
3	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
3	**TATB**	**2.22E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
3	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Perchlorate**	**7.69E-04**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
3	**Gross alpha**	**1.24E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Gross beta**	**2.56E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Plutonium-238	-5.73E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
3	Plutonium-239/240	-1.00E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
3	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
3	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
3	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
3	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
3	**Benzoic Acid**	**4.97E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Benzyl Alcohol**	**1.46E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
3	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
3	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
3	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
3	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
3	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
3	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
3	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
3	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
3	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
3	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
3	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
3	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
3	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
3	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
3	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
3	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
3	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
3	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
3	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
3	Acetone	1.59E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
3	Benzene	3.17E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
3	Bromobenzene	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bromochloromethane	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bromodichloromethane	3.17E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Bromoform	3.17E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Bromomethane	3.17E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
3	Butanone[2-]	1.59E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
3	Butylbenzene[n-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzene[sec-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzene[tert-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Carbon Disulfide	1.59E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
3	Carbon Tetrachloride	3.17E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
3	Chlorobenzene	3.17E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Chlorodibromomethane	3.17E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Chloroethane	3.17E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
3	Chloroform	3.17E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
3	Chloromethane	3.17E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
3	Chlorotoluene[2-]	3.17E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Chlorotoluene[4-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dibromo-3-Chloropropane[1,2-]	4.75E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
3	Dibromoethane[1,2-]	3.17E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
3	Dibromomethane	3.17E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
3	Dichlorobenzene[1,2-]	3.17E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,3-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,4-]	3.17E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3	Dichlorodifluoromethane	3.17E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
3	Dichloroethane[1,1-]	3.17E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
3	Dichloroethane[1,2-]	3.17E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
3	Dichloroethene[1,1-]	3.17E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
3	Dichloroethene[cis-1,2-]	3.17E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3	Dichloroethene[trans-1,2-]	3.17E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
3	Dichloropropane[1,2-]	3.17E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
3	Dichloropropane[1,3-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropane[2,2-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[1,1-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[cis-1,3-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[trans-1,3-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Ethylbenzene	3.17E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
3	Hexanone[2-]	1.59E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Iodomethane	1.59E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Isopropylbenzene	3.17E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
3	Isopropyltoluene[4-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Methyl-2-pentanone[4-]	1.59E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
3	**Methylene Chloride**	**4.16E-03**	mg/kg	**Y**	J	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
3	Propylbenzene[1-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Styrene	3.17E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
3	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachloroethane[1,1,1,2-]	3.17E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
3	Tetrachloroethane[1,1,2,2-]	3.17E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Tetrachloroethene	3.17E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
3	Toluene	3.17E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
3	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.59E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
3	Trichloroethane[1,1,1-]	3.17E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
3	Trichloroethane[1,1,2-]	3.17E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
3	Trichloroethene	3.17E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
3	Trichlorofluoromethane	3.17E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Trichloropropane[1,2,3-]	3.17E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
3	Trimethylbenzene[1,2,4-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trimethylbenzene[1,3,5-]	3.17E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Vinyl Chloride	3.17E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
3	Xylene[1,2-]	3.17E-04	mg/kg	N	U	N/A	FALSE	8.08E+02	FALSE	N/A	FALSE
3	Xylene[1,3-]+Xylene[1,4-]	6.34E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
4	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.74E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Heptachlorodibenzodioxins (Total)**	**6.18E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Heptachlorodibenzofurans (Total)**	**5.37E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**1.40E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.94E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofuran[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofuran[2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzodioxin[2,3,7,8-]	9.94E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
4	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.79E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
4	**Tetrachlorodibenzofurans (Totals)**	**3.36E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Aluminum**	**2.30E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
4	Antimony	3.16E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
4	**Arsenic**	**1.30E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	**Barium**	**2.58E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
4	**Beryllium**	**2.47E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
4	Cadmium	9.58E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
4	**Calcium**	**3.29E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
4	**Chromium**	**6.17E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
4	**Cobalt**	**2.83E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
4	**Copper**	**1.29E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
4	**Iron**	**7.68E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
4	**Lead**	**4.13E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
4	**Magnesium**	**1.39E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
4	**Manganese**	**1.19E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
4	Mercury	3.66E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
4	**Nickel**	**6.65E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
4	**Potassium**	**4.45E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
4	**Selenium**	**5.59E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
4	**Silver**	**1.81E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
4	**Sodium**	**4.73E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
4	Thallium	1.36E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
4	**Vanadium**	**1.49E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
4	**Zinc**	**1.85E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
4	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
4	**HMX**	**1.58E-01**	mg/kg	**Y**	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
4	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
4	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
4	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
4	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
4	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**RDX**	**6.08E-01**	mg/kg	**Y**	NQ	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
4	**TATB**	**1.48E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
4	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
4	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Perchlorate**	**1.31E-03**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
4	**Gross alpha**	**9.87E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Gross beta**	**2.25E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Plutonium-238	-2.04E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
4	Plutonium-239/240	-1.02E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
4	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
4	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
4	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
4	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Benzoic Acid	1.69E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloro-3-methylphenol[4-]	1.35E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
4	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
4	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
4	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
4	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
4	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
4	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
4	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
4	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
4	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
4	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
4	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
4	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
4	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
4	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
4	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
4	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
4	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
4	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
4	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
4	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
4	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
4	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
4	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
4	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
4	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
4	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
4	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
4	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
4	Benzene	3.30E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
4	Bromobenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bromochloromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bromodichloromethane	3.30E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Bromoform	3.30E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Bromomethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
4	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
4	Butylbenzene[n-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzene[sec-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzene[tert-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
4	Carbon Tetrachloride	3.30E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
4	Chlorobenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
4	Chlorodibromomethane	3.30E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Chloroethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
4	Chloroform	3.30E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
4	Chloromethane	3.30E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
4	Chlorotoluene[2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Chlorotoluene[4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dibromo-3-Chloropropane[1,2-]	4.96E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
4	Dibromoethane[1,2-]	3.30E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
4	Dibromomethane	3.30E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
4	Dichlorobenzene[1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,4-]	3.30E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
4	Dichlorodifluoromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
4	Dichloroethane[1,1-]	3.30E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
4	Dichloroethane[1,2-]	3.30E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
4	Dichloroethene[1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
4	Dichloroethene[cis-1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
4	Dichloroethene[trans-1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
4	Dichloropropane[1,2-]	3.30E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
4	Dichloropropane[1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropane[2,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[cis-1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[trans-1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Ethylbenzene	3.30E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
4	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Isopropylbenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
4	Isopropyltoluene[4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
4	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
4	Propylbenzene[1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Styrene	3.30E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
4	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachloroethane[1,1,1,2-]	3.30E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
4	Tetrachloroethane[1,1,2,2-]	3.30E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Tetrachloroethene	3.30E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
4	Toluene	3.30E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
4	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
4	Trichloroethane[1,1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
4	Trichloroethane[1,1,2-]	3.30E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
4	Trichloroethene	3.30E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
4	Trichlorofluoromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Trichloropropane[1,2,3-]	3.30E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
4	Trimethylbenzene[1,2,4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trimethylbenzene[1,3,5-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Vinyl Chloride	3.30E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
4	Xylene[1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	8.09E+02	FALSE	N/A	FALSE
4	Xylene[1,3-]+Xylene[1,4-]	6.61E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
5	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**8.19E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Heptachlorodibenzodioxins (Total)**	**2.69E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**8.29E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.00E-06	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofuran[1,2,3,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofuran[2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
5	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachlorodibenzofuran[2,3,7,8-]	2.36E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
5	**Tetrachlorodibenzofurans (Totals)**	**2.36E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Aluminum**	**3.16E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
5	Antimony	3.17E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
5	**Arsenic**	**1.17E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
5	**Barium**	**4.28E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	**Beryllium**	**2.68E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
5	Cadmium	9.60E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
5	**Calcium**	**4.04E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
5	**Chromium**	**1.01E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
5	**Cobalt**	**4.49E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
5	**Copper**	**4.48E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
5	**Iron**	**1.29E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
5	**Lead**	**6.52E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
5	**Magnesium**	**1.74E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
5	**Manganese**	**1.90E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
5	Mercury	3.66E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
5	**Nickel**	**6.93E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
5	**Potassium**	**6.12E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
5	**Selenium**	**5.13E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
5	**Silver**	**4.14E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
5	**Sodium**	**9.85E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
5	Thallium	1.37E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
5	**Vanadium**	**2.90E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	N/A	FALSE
5	**Zinc**	**2.58E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
5	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
5	**HMX**	**3.79E-01**	mg/kg	**Y**	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
5	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
5	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
5	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
5	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
5	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**RDX**	**4.23E-01**	mg/kg	**Y**	J	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
5	**TATB**	**1.38E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
5	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
5	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Perchlorate**	**1.32E-02**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
5	**Gross alpha**	**1.38E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Gross beta**	**2.36E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Plutonium-238	-1.27E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
5	Plutonium-239/240	-8.49E-10	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
5	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
5	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
5	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloro-3-methylphenol[4-]	1.35E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
5	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
5	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
5	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
5	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
5	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
5	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
5	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
5	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
5	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
5	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
5	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
5	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
5	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
5	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
5	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
5	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
5	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
5	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
5	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
5	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
5	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
5	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
5	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
5	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
5	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
5	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
5	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
5	Acetone	1.69E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
5	Benzene	3.37E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
5	Bromobenzene	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bromochloromethane	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bromodichloromethane	3.37E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Bromoform	3.37E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Bromomethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
5	Butanone[2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
5	Butylbenzene[n-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzene[sec-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzene[tert-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Carbon Disulfide	1.69E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
5	Carbon Tetrachloride	3.37E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
5	Chlorobenzene	3.37E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
5	Chlorodibromomethane	3.37E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Chloroethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Chloroform	3.37E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
5	Chloromethane	3.37E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
5	Chlorotoluene[2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Chlorotoluene[4-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dibromo-3-Chloropropane[1,2-]	5.06E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
5	Dibromoethane[1,2-]	3.37E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
5	Dibromomethane	3.37E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
5	Dichlorobenzene[1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,4-]	3.37E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
5	Dichlorodifluoromethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
5	Dichloroethane[1,1-]	3.37E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
5	Dichloroethane[1,2-]	3.37E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
5	Dichloroethene[1,1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
5	Dichloroethene[cis-1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
5	Dichloroethene[trans-1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
5	Dichloropropane[1,2-]	3.37E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
5	Dichloropropane[1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropane[2,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[1,1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[cis-1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[trans-1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Ethylbenzene	3.37E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
5	Hexanone[2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Iodomethane	1.69E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Isopropylbenzene	3.37E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Isopropyltoluene[4-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Methyl-2-pentanone[4-]	1.69E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
5	Methylene Chloride	1.69E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
5	Propylbenzene[1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Styrene	3.37E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
5	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachloroethane[1,1,1,2-]	3.37E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
5	Tetrachloroethane[1,1,2,2-]	3.37E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Tetrachloroethene	3.37E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
5	Toluene	3.37E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
5	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
5	Trichloroethane[1,1,1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
5	Trichloroethane[1,1,2-]	3.37E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
5	Trichloroethene	3.37E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
5	Trichlorofluoromethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Trichloropropane[1,2,3-]	3.37E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
5	Trimethylbenzene[1,2,4-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trimethylbenzene[1,3,5-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Vinyl Chloride	3.37E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
5	Xylene[1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	8.20E+02	FALSE	N/A	FALSE
5	Xylene[1,3-]+Xylene[1,4-]	6.75E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
6	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.06E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Heptachlorodibenzodioxins (Total)**	**4.75E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**1.02E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.94E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofuran[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofuran[2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachlorodibenzodioxin[2,3,7,8-]	9.94E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
6	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.87E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Aluminum**	**3.06E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
6	Antimony	3.15E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
6	**Arsenic**	**1.29E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
6	**Barium**	**4.59E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
6	**Beryllium**	**3.82E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Cadmium	9.56E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
6	**Calcium**	**2.15E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
6	**Chromium**	**6.90E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
6	**Cobalt**	**8.44E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
6	**Copper**	**6.72E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
6	**Iron**	**8.05E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
6	**Lead**	**5.42E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
6	**Magnesium**	**1.09E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
6	**Manganese**	**1.46E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
6	Mercury	3.68E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
6	**Nickel**	**7.27E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
6	**Potassium**	**6.54E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
6	**Selenium**	**5.57E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
6	**Silver**	**3.31E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
6	**Sodium**	**5.90E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
6	Thallium	1.29E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
6	**Vanadium**	**1.66E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
6	**Zinc**	**2.08E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
6	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	**HMX**	**2.10E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
6	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
6	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
6	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
6	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
6	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**RDX**	**2.57E+00**	mg/kg	**Y**	NQ	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
6	**TATB**	**1.01E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
6	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
6	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Perchlorate**	**6.37E-03**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
6	**Gross alpha**	**1.49E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Gross beta**	**2.86E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Plutonium-238	-7.06E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
6	Plutonium-239/240	-7.06E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
6	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
6	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
6	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
6	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Benzyl Alcohol**	**3.11E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
6	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
6	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
6	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
6	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
6	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
6	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
6	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
6	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
6	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
6	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
6	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
6	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
6	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
6	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
6	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
6	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
6	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
6	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
6	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Naphthalene**	**1.51E-02**	mg/kg	**Y**	J	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
6	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
6	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
6	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
6	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
6	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
6	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
6	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
6	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
6	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
6	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
6	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
6	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
6	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
6	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
6	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
6	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
6	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
6	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
6	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dibromo-3-Chloropropane[1,2-]	4.94E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
6	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
6	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
6	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
6	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
6	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
6	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
6	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
6	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
6	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
6	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
6	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
6	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
6	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
6	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
6	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
6	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
6	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
6	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
6	**Toluene**	**3.95E-04**	mg/kg	**Y**	J	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
6	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
6	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
6	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
6	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
6	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
6	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
6	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.10E+02	FALSE	N/A	FALSE
6	Xylene[1,3-]+Xylene[1,4-]	6.59E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
7	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.11E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Heptachlorodibenzodioxins (Total)**	**2.68E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**1.01E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.95E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzodioxin[2,3,7,8-]	9.95E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
7	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.71E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
7	**Tetrachlorodibenzofurans (Totals)**	**1.71E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Aluminum**	**3.76E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
7	Antimony	3.08E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
7	**Arsenic**	**1.44E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
7	**Barium**	**5.99E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
7	**Beryllium**	**4.53E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
7	Cadmium	9.32E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	**Calcium**	**2.24E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
7	**Chromium**	**6.86E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
7	**Cobalt**	**3.27E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
7	**Copper**	**9.02E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
7	**Iron**	**8.42E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
7	**Lead**	**6.49E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
7	**Magnesium**	**1.28E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
7	**Manganese**	**1.74E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
7	**Mercury**	**4.76E-03**	mg/kg	**Y**	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
7	**Nickel**	**7.98E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
7	**Potassium**	**9.29E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
7	**Selenium**	**6.10E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
7	**Silver**	**2.19E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	TRUE
7	**Sodium**	**5.98E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
7	Thallium	1.41E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
7	**Vanadium**	**1.64E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
7	**Zinc**	**2.53E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
7	2,4-Diamino-6-nitrotoluene	4.95E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	2,6-Diamino-4-nitrotoluene	6.53E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	3,5-Dinitroaniline	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
7	**HMX**	**9.78E-01**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
7	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
7	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
7	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
7	PETN	2.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**RDX**	**2.49E+00**	mg/kg	**Y**	NQ	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
7	**TATB**	**1.13E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
7	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
7	Tris (o-cresyl) phosphate	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Perchlorate**	**2.01E-02**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
7	**Gross alpha**	**1.62E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Gross beta**	**2.49E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Plutonium-238	-2.62E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
7	Plutonium-239/240	-6.55E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
7	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
7	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
7	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
7	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
7	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
7	**Bis(2-ethylhexyl)phthalate**	**2.52E-01**	mg/kg	**Y**	NQ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
7	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
7	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
7	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
7	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
7	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
7	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
7	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
7	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
7	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
7	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
7	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
7	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
7	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
7	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
7	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
7	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
7	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
7	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
7	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
7	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
7	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
7	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
7	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
7	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
7	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
7	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
7	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
7	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
7	Benzene	3.30E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
7	Bromobenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bromochloromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bromodichloromethane	3.30E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Bromoform	3.30E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Bromomethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
7	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
7	Butylbenzene[n-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzene[sec-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzene[tert-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
7	Carbon Tetrachloride	3.30E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
7	Chlorobenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
7	Chlorodibromomethane	3.30E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Chloroethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
7	Chloroform	3.30E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
7	Chloromethane	3.30E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Chlorotoluene[2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Chlorotoluene[4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dibromo-3-Chloropropane[1,2-]	4.95E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
7	Dibromoethane[1,2-]	3.30E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
7	Dibromomethane	3.30E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
7	Dichlorobenzene[1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,4-]	3.30E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
7	Dichlorodifluoromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
7	Dichloroethane[1,1-]	3.30E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
7	Dichloroethane[1,2-]	3.30E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
7	Dichloroethene[1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
7	Dichloroethene[cis-1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
7	Dichloroethene[trans-1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
7	Dichloropropane[1,2-]	3.30E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
7	Dichloropropane[1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropane[2,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[cis-1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[trans-1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Ethylbenzene	3.30E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
7	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Isopropylbenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
7	Isopropyltoluene[4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	**Methylene Chloride**	**3.51E-03**	mg/kg	**Y**	J	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
7	Propylbenzene[1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Styrene	3.30E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
7	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachloroethane[1,1,1,2-]	3.30E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
7	Tetrachloroethane[1,1,2,2-]	3.30E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Tetrachloroethene	3.30E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
7	Toluene	3.30E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
7	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
7	Trichloroethane[1,1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
7	Trichloroethane[1,1,2-]	3.30E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
7	Trichloroethene	3.30E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
7	Trichlorofluoromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Trichloropropane[1,2,3-]	3.30E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
7	Trimethylbenzene[1,2,4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trimethylbenzene[1,3,5-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Vinyl Chloride	3.30E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
7	Xylene[1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	8.11E+02	FALSE	N/A	FALSE
7	Xylene[1,3-]+Xylene[1,4-]	6.61E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
8	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**4.67E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Heptachlorodibenzodioxins (Total)**	**3.56E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Heptachlorodibenzofurans (Total)**	**8.79E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Hexachlorodibenzodioxins (Total)**	**1.46E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**4.30E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.33E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachlorodibenzodioxin[2,3,7,8-]	9.99E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
8	**Tetrachlorodibenzodioxins (Total)**	**2.42E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.44E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
8	**Tetrachlorodibenzofurans (Totals)**	**3.04E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Aluminum**	**4.14E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
8	Antimony	3.18E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
8	**Arsenic**	**1.63E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
8	**Barium**	**8.20E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
8	**Beryllium**	**5.30E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
8	Cadmium	9.64E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
8	**Calcium**	**2.62E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	**Chromium**	**6.67E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
8	**Cobalt**	**3.74E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
8	**Copper**	**3.72E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
8	**Iron**	**9.21E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
8	**Lead**	**8.26E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
8	**Magnesium**	**1.27E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
8	**Manganese**	**2.05E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
8	Mercury	3.96E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
8	**Nickel**	**6.45E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
8	**Potassium**	**1.26E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
8	**Selenium**	**7.73E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
8	**Silver**	**2.57E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
8	**Sodium**	**5.09E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
8	Thallium	1.37E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
8	**Vanadium**	**1.69E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
8	**Zinc**	**2.89E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
8	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
8	**HMX**	**5.91E-01**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
8	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
8	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
8	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
8	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**RDX**	**4.76E+00**	mg/kg	**Y**	NQ	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
8	**TATB**	**1.62E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
8	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
8	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Perchlorate**	**2.96E-02**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
8	**Gross alpha**	**1.50E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Gross beta**	**2.98E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Plutonium-238	-3.05E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
8	Plutonium-239/240	-1.52E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
8	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
8	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
8	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
8	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chloro-3-methylphenol[4-]	1.35E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
8	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
8	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
8	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
8	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
8	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
8	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
8	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
8	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
8	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
8	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
8	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
8	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
8	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
8	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
8	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
8	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
8	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
8	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
8	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
8	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
8	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
8	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
8	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
8	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
8	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
8	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
8	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
8	Acetone	1.62E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
8	Benzene	3.23E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
8	Bromobenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bromochloromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bromodichloromethane	3.23E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
8	Bromoform	3.23E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Bromomethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
8	Butanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
8	Butylbenzene[n-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzene[sec-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzene[tert-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Carbon Disulfide	1.62E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
8	Carbon Tetrachloride	3.23E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
8	Chlorobenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
8	Chlorodibromomethane	3.23E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Chloroethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
8	Chloroform	3.23E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
8	Chloromethane	3.23E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
8	Chlorotoluene[2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Chlorotoluene[4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dibromo-3-Chloropropane[1,2-]	4.85E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
8	Dibromoethane[1,2-]	3.23E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
8	Dibromomethane	3.23E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
8	Dichlorobenzene[1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,4-]	3.23E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
8	Dichlorodifluoromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
8	Dichloroethane[1,1-]	3.23E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
8	Dichloroethane[1,2-]	3.23E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
8	Dichloroethene[1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
8	Dichloroethene[cis-1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
8	Dichloroethene[trans-1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
8	Dichloropropane[1,2-]	3.23E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
8	Dichloropropane[1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropane[2,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[cis-1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[trans-1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Ethylbenzene	3.23E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
8	Hexanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Iodomethane	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Isopropylbenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
8	Isopropyltoluene[4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Methyl-2-pentanone[4-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
8	**Methylene Chloride**	**4.70E-03**	mg/kg	**Y**	J	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Propylbenzene[1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Styrene	3.23E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
8	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachloroethane[1,1,1,2-]	3.23E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
8	Tetrachloroethane[1,1,2,2-]	3.23E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
8	Tetrachloroethene	3.23E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
8	**Toluene**	**5.63E-04**	mg/kg	**Y**	J	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
8	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
8	Trichloroethane[1,1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
8	Trichloroethane[1,1,2-]	3.23E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
8	Trichloroethene	3.23E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
8	Trichlorofluoromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Trichloropropane[1,2,3-]	3.23E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
8	Trimethylbenzene[1,2,4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trimethylbenzene[1,3,5-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Vinyl Chloride	3.23E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
8	Xylene[1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	8.12E+02	FALSE	N/A	FALSE
8	Xylene[1,3-]+Xylene[1,4-]	6.48E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
9	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**2.20E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Heptachlorodibenzodioxins (Total)**	**1.75E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**3.44E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Heptachlorodibenzofurans (Total)**	**1.36E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Hexachlorodibenzodioxin[1,2,3,6,7,8-]**	**6.27E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Hexachlorodibenzodioxins (Total)**	**9.82E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Hexachlorodibenzofurans (Total)**	**3.52E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**1.82E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.01E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzodioxin[2,3,7,8-]	9.96E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
9	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzofuran[2,3,7,8-]	1.73E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
9	**Tetrachlorodibenzofurans (Totals)**	**1.55E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Aluminum**	**2.69E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
9	Antimony	3.25E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
9	**Arsenic**	**1.08E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
9	**Barium**	**7.05E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
9	**Beryllium**	**3.68E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
9	Cadmium	9.84E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
9	**Calcium**	**1.68E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
9	**Chromium**	**3.82E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	**Cobalt**	**2.28E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
9	**Copper**	**1.70E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
9	**Iron**	**6.94E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
9	**Lead**	**9.73E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
9	**Magnesium**	**8.53E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
9	**Manganese**	**2.10E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
9	Mercury	3.53E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
9	**Nickel**	**3.35E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
9	**Potassium**	**9.28E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
9	**Selenium**	**6.57E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
9	**Silver**	**1.58E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
9	**Sodium**	**4.22E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
9	Thallium	1.35E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
9	**Vanadium**	**9.50E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
9	**Zinc**	**3.69E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
9	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
9	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
9	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
9	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
9	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
9	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
9	**TATB**	**7.06E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
9	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
9	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Perchlorate**	**3.21E-03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
9	**Gross alpha**	**2.10E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Gross beta**	**9.72E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Plutonium-238	1.32E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
9	Plutonium-239/240	-1.32E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
9	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
9	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
9	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Benzo(a)anthracene**	**1.98E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	**Benzo(a)pyrene**	**2.18E-02**	mg/kg	**Y**	J	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
9	**Benzo(b)fluoranthene**	**3.15E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	**Benzo(g,h,i)perylene**	**1.31E-02**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Benzo(k)fluoranthene**	**1.11E-02**	mg/kg	**Y**	J	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
9	**Bis(2-ethylhexyl)phthalate**	**1.16E+00**	mg/kg	**Y**	NQ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
9	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
9	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Chrysene**	**1.88E-02**	mg/kg	**Y**	J	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
9	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
9	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
9	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
9	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
9	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
9	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
9	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
9	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
9	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Fluoranthene**	**3.38E-02**	mg/kg	**Y**	NQ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
9	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
9	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
9	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
9	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
9	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
9	**Indeno(1,2,3-cd)pyrene**	**1.31E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
9	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
9	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
9	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
9	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
9	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
9	**Phenanthrene**	**1.51E-02**	mg/kg	**Y**	J	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
9	**Pyrene**	**3.12E-02**	mg/kg	**Y**	J	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
9	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
9	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
9	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
9	Acetone	1.62E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
9	Benzene	3.23E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
9	Bromobenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bromochloromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bromodichloromethane	3.23E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Bromoform	3.23E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Bromomethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
9	Butanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
9	Butylbenzene[n-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzene[sec-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzene[tert-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Carbon Disulfide	1.62E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
9	Carbon Tetrachloride	3.23E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
9	Chlorobenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
9	Chlorodibromomethane	3.23E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Chloroethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
9	Chloroform	3.23E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
9	Chloromethane	3.23E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
9	Chlorotoluene[2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Chlorotoluene[4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Dibromo-3-Chloropropane[1,2-]	4.84E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
9	Dibromoethane[1,2-]	3.23E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
9	Dibromomethane	3.23E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
9	Dichlorobenzene[1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,4-]	3.23E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
9	Dichlorodifluoromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
9	Dichloroethane[1,1-]	3.23E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
9	Dichloroethane[1,2-]	3.23E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
9	Dichloroethene[1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
9	Dichloroethene[cis-1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
9	Dichloroethene[trans-1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
9	Dichloropropane[1,2-]	3.23E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
9	Dichloropropane[1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropane[2,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[cis-1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[trans-1,3-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Ethylbenzene	3.23E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
9	Hexanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Iodomethane	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Isopropylbenzene	3.23E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
9	Isopropyltoluene[4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Methyl-2-pentanone[4-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
9	**Methylene Chloride**	**5.73E-03**	mg/kg	**Y**	NQ	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
9	Propylbenzene[1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Styrene	3.23E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
9	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachloroethane[1,1,1,2-]	3.23E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
9	Tetrachloroethane[1,1,2,2-]	3.23E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Tetrachloroethene	3.23E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
9	**Toluene**	**2.09E-03**	mg/kg	**Y**	NQ	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
9	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
9	Trichloroethane[1,1,1-]	3.23E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
9	Trichloroethane[1,1,2-]	3.23E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
9	Trichloroethene	3.23E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
9	Trichlorofluoromethane	3.23E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Trichloropropane[1,2,3-]	3.23E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
9	Trimethylbenzene[1,2,4-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trimethylbenzene[1,3,5-]	3.23E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Vinyl Chloride	3.23E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
9	Xylene[1,2-]	3.23E-04	mg/kg	N	U	N/A	FALSE	8.13E+02	FALSE	N/A	FALSE
9	Xylene[1,3-]+Xylene[1,4-]	6.46E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
10	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**8.35E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Heptachlorodibenzodioxins (Total)**	**2.44E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**1.29E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Heptachlorodibenzofurans (Total)**	**1.29E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	**Hexachlorodibenzodioxins (Total)**	**1.04E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Hexachlorodibenzofurans (Total)**	**1.36E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**6.93E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**3.95E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
10	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzofuran[2,3,7,8-]	1.67E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Aluminum**	**3.30E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
10	Antimony	3.32E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
10	**Arsenic**	**2.28E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
10	**Barium**	**4.92E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
10	**Beryllium**	**5.88E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
10	Cadmium	1.01E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
10	**Calcium**	**2.35E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
10	**Chromium**	**4.43E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
10	**Cobalt**	**2.77E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	**Copper**	**8.21E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
10	**Iron**	**6.62E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
10	**Lead**	**6.38E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
10	**Magnesium**	**1.12E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
10	**Manganese**	**1.51E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
10	Mercury	3.71E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
10	**Nickel**	**8.01E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
10	**Potassium**	**6.99E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
10	**Selenium**	**9.37E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
10	**Silver**	**1.55E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
10	**Sodium**	**4.06E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
10	**Thallium**	**1.58E-01**	mg/kg	**Y**	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
10	**Vanadium**	**1.20E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
10	**Zinc**	**1.88E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
10	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
10	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
10	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
10	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
10	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
10	**TATB**	**3.93E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
10	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
10	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Perchlorate**	**1.07E-03**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
10	**Gross alpha**	**1.54E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Gross beta**	**2.94E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Plutonium-238	1.05E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
10	Plutonium-239/240	9.04E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
10	Acenaphthene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
10	Acenaphthene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
10	Acenaphthylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Acenaphthylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Aniline	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Aniline	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Anthracene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
10	Anthracene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
10	Azobenzene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Azobenzene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Benzo(a)anthracene**	**1.04E-02**	mg/kg	**Y**	J-	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	**Benzo(a)anthracene**	**2.95E-02**	mg/kg	**Y**	J-	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(a)pyrene	1.01E-02	mg/kg	N	UJ	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	**Benzo(a)pyrene**	**2.72E-02**	mg/kg	**Y**	J-	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
10	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	**Benzo(b)fluoranthene**	**3.25E-02**	mg/kg	**Y**	J-	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Benzo(g,h,i)perylene**	**2.21E-02**	mg/kg	**Y**	J-	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	UJ	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
10	**Benzo(k)fluoranthene**	**1.48E-02**	mg/kg	**Y**	J-	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Benzoic Acid	1.68E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzoic Acid	1.68E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzyl Alcohol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzyl Alcohol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	UJ	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	UJ	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	UJ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	UJ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloro-3-methylphenol[4-]	1.35E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
10	Chlorophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
10	Chlorophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
10	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chrysene	1.01E-02	mg/kg	N	UJ	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
10	**Chrysene**	**2.95E-02**	mg/kg	**Y**	J-	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
10	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	UJ	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
10	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	UJ	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
10	Dibenzofuran	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dibenzofuran	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	UJ	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	UJ	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	UJ	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	UJ	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
10	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
10	Diethylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
10	Diethylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
10	Dimethyl Phthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
10	Dimethyl Phthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
10	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Di-n-butylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	**Di-n-butylphthalate**	**3.29E-02**	mg/kg	**Y**	J-	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
10	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
10	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	UJ	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	UJ	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	UJ	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	UJ	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
10	Di-n-octylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Di-n-octylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Diphenylamine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Diphenylamine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Fluoranthene**	**1.55E-02**	mg/kg	**Y**	J-	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	**Fluoranthene**	**5.33E-02**	mg/kg	**Y**	J-	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Fluorene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Fluorene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Hexachlorobenzene	1.01E-01	mg/kg	N	UJ	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
10	Hexachlorobenzene	1.01E-01	mg/kg	N	UJ	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
10	Hexachlorobutadiene	1.01E-01	mg/kg	N	UJ	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Hexachlorobutadiene	1.01E-01	mg/kg	N	UJ	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
10	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
10	Hexachloroethane	1.01E-01	mg/kg	N	UJ	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Hexachloroethane	1.01E-01	mg/kg	N	UJ	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
10	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	**Indeno(1,2,3-cd)pyrene**	**2.05E-02**	mg/kg	**Y**	J-	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Isophorone	1.01E-01	mg/kg	N	UJ	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
10	Isophorone	1.01E-01	mg/kg	N	UJ	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
10	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
10	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
10	Methylphenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methylphenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Naphthalene	1.01E-02	mg/kg	N	UJ	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
10	Naphthalene	1.01E-02	mg/kg	N	UJ	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
10	Nitroaniline[2-]	1.11E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[2-]	1.11E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrobenzene	1.01E-01	mg/kg	N	UJ	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrobenzene	1.01E-01	mg/kg	N	UJ	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrophenol[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrophenol[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	UJ	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	UJ	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
10	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	UJ	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	UJ	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorophenol	1.01E-01	mg/kg	N	UJ	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
10	Pentachlorophenol	1.01E-01	mg/kg	N	UJ	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
10	**Phenanthrene**	**1.14E-02**	mg/kg	**Y**	J-	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	**Phenanthrene**	**2.78E-02**	mg/kg	**Y**	J-	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	Phenol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
10	Phenol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
10	**Pyrene**	**1.51E-02**	mg/kg	**Y**	J-	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	**Pyrene**	**5.57E-02**	mg/kg	**Y**	J-	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	Pyridine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pyridine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	UJ	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
10	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	UJ	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	UJ	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	UJ	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
10	Benzene	3.30E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
10	Bromobenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromochloromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromodichloromethane	3.30E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Bromoform	3.30E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Bromomethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
10	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
10	Butylbenzene[n-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzene[sec-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzene[tert-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
10	Carbon Tetrachloride	3.30E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
10	Chlorobenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
10	Chlorodibromomethane	3.30E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Chloroethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
10	Chloroform	3.30E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
10	Chloromethane	3.30E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
10	Chlorotoluene[2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Chlorotoluene[4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dibromo-3-Chloropropane[1,2-]	4.95E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
10	Dibromoethane[1,2-]	3.30E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
10	Dibromomethane	3.30E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	3.30E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorodifluoromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
10	Dichloroethane[1,1-]	3.30E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
10	Dichloroethane[1,2-]	3.30E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
10	Dichloroethene[1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
10	Dichloroethene[cis-1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Dichloroethene[trans-1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
10	Dichloropropane[1,2-]	3.30E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
10	Dichloropropane[1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropane[2,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[cis-1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[trans-1,3-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Ethylbenzene	3.30E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
10	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Isopropylbenzene	3.30E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
10	Isopropyltoluene[4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
10	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
10	Propylbenzene[1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Styrene	3.30E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
10	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachloroethane[1,1,1,2-]	3.30E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
10	Tetrachloroethane[1,1,2,2-]	3.30E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Tetrachloroethene	3.30E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
10	Toluene	3.30E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
10	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
10	Trichloroethane[1,1,1-]	3.30E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
10	Trichloroethane[1,1,2-]	3.30E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
10	Trichloroethene	3.30E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Trichlorofluoromethane	3.30E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Trichloropropane[1,2,3-]	3.30E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
10	Trimethylbenzene[1,2,4-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trimethylbenzene[1,3,5-]	3.30E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Vinyl Chloride	3.30E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
10	Xylene[1,2-]	3.30E-04	mg/kg	N	U	N/A	FALSE	8.14E+02	FALSE	N/A	FALSE
10	Xylene[1,3-]+Xylene[1,4-]	6.61E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
11	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**4.84E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Heptachlorodibenzodioxins (Total)**	**1.54E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**4.02E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Heptachlorodibenzofurans (Total)**	**1.55E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzodioxin[1,2,3,4,7,8-]**	**5.85E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzodioxin[1,2,3,6,7,8-]**	**1.09E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzodioxin[1,2,3,7,8,9-]**	**1.11E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzodioxins (Total)**	**1.73E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzofurans (Total)**	**4.93E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**3.90E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.39E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Pentachlorodibenzodioxins (Total)**	**6.85E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Pentachlorodibenzofurans (Totals)**	**1.17E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzodioxin[2,3,7,8-]	1.05E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
11	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzofuran[2,3,7,8-]	2.19E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
11	**Tetrachlorodibenzofurans (Totals)**	**4.42E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Aluminum**	**3.54E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
11	Antimony	3.16E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
11	**Arsenic**	**1.47E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
11	**Barium**	**9.85E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
11	**Beryllium**	**4.43E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
11	Cadmium	9.57E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
11	**Calcium**	**2.05E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
11	**Chromium**	**4.93E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
11	**Cobalt**	**3.04E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
11	**Copper**	**2.10E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
11	**Iron**	**7.50E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
11	**Lead**	**1.44E+01**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
11	**Magnesium**	**1.14E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
11	**Manganese**	**1.95E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
11	**Mercury**	**5.90E-03**	mg/kg	**Y**	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
11	**Nickel**	**4.85E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
11	**Potassium**	**1.16E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
11	**Selenium**	**5.83E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
11	**Silver**	**1.04E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	TRUE
11	**Sodium**	**3.73E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Thallium	1.30E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
11	**Vanadium**	**1.23E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
11	**Zinc**	**3.66E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
11	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
11	**HMX**	**1.26E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
11	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
11	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
11	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
11	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
11	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
11	**TATB**	**3.33E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
11	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
11	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Perchlorate**	**4.16E-03**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
11	**Gross alpha**	**2.26E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Gross beta**	**3.84E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Plutonium-238	5.70E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
11	Plutonium-239/240	1.71E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
11	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
11	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
11	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
11	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Benzoic Acid	1.69E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Benzyl Alcohol**	**4.98E-01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
11	**Bis(2-ethylhexyl)phthalate**	**9.79E-01**	mg/kg	**Y**	NQ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloro-3-methylphenol[4-]	1.35E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
11	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
11	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
11	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
11	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
11	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
11	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
11	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
11	**Di-n-butylphthalate**	**7.44E-01**	mg/kg	**Y**	NQ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
11	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
11	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
11	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
11	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
11	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
11	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
11	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
11	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
11	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
11	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
11	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
11	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
11	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
11	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
11	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
11	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
11	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
11	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
11	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
11	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
11	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
11	Benzene	3.31E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
11	Bromobenzene	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bromochloromethane	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bromodichloromethane	3.31E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Bromoform	3.31E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Bromomethane	3.31E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
11	Butylbenzene[n-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzene[sec-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzene[tert-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
11	Carbon Tetrachloride	3.31E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
11	Chlorobenzene	3.31E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
11	Chlorodibromomethane	3.31E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Chloroethane	3.31E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
11	Chloroform	3.31E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
11	Chloromethane	3.31E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
11	Chlorotoluene[2-]	3.31E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Chlorotoluene[4-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dibromo-3-Chloropropane[1,2-]	4.96E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
11	Dibromoethane[1,2-]	3.31E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
11	Dibromomethane	3.31E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
11	Dichlorobenzene[1,2-]	3.31E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,3-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,4-]	3.31E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
11	Dichlorodifluoromethane	3.31E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
11	Dichloroethane[1,1-]	3.31E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
11	Dichloroethane[1,2-]	3.31E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
11	Dichloroethene[1,1-]	3.31E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
11	Dichloroethene[cis-1,2-]	3.31E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
11	Dichloroethene[trans-1,2-]	3.31E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
11	Dichloropropane[1,2-]	3.31E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Dichloropropane[1,3-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropane[2,2-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[1,1-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[cis-1,3-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[trans-1,3-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Ethylbenzene	3.31E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
11	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Isopropylbenzene	3.31E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
11	Isopropyltoluene[4-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
11	**Methylene Chloride**	**4.68E-03**	mg/kg	**Y**	J	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
11	Propylbenzene[1-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Styrene	3.31E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
11	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachloroethane[1,1,1,2-]	3.31E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
11	Tetrachloroethane[1,1,2,2-]	3.31E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Tetrachloroethene	3.31E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
11	Toluene	3.31E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
11	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
11	Trichloroethane[1,1,1-]	3.31E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
11	Trichloroethane[1,1,2-]	3.31E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
11	Trichloroethene	3.31E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
11	Trichlorofluoromethane	3.31E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Trichloropropane[1,2,3-]	3.31E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Trimethylbenzene[1,2,4-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trimethylbenzene[1,3,5-]	3.31E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Vinyl Chloride	3.31E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
11	Xylene[1,2-]	3.31E-04	mg/kg	N	U	N/A	FALSE	8.15E+02	FALSE	N/A	FALSE
11	Xylene[1,3-]+Xylene[1,4-]	6.62E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
12	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.13E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Heptachlorodibenzodioxins (Total)**	**8.48E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**3.66E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Heptachlorodibenzofurans (Total)**	**1.80E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Hexachlorodibenzodioxin[1,2,3,4,7,8-]**	**6.79E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Hexachlorodibenzodioxin[1,2,3,6,7,8-]**	**1.45E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Hexachlorodibenzodioxin[1,2,3,7,8,9-]**	**9.91E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Hexachlorodibenzodioxins (Total)**	**5.36E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Hexachlorodibenzofurans (Total)**	**1.49E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**9.20E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.63E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Pentachlorodibenzofurans (Totals)**	**7.66E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Tetrachlorodibenzodioxin[2,3,7,8-]	9.95E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
12	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachlorodibenzofuran[2,3,7,8-]	1.59E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Aluminum**	**1.77E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
12	Antimony	3.08E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
12	**Arsenic**	**1.21E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
12	**Barium**	**4.87E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
12	**Beryllium**	**2.49E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
12	**Cadmium**	**2.80E-01**	mg/kg	**Y**	J	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
12	**Calcium**	**2.12E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
12	**Chromium**	**4.66E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
12	**Cobalt**	**2.42E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
12	**Copper**	**2.54E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
12	**Iron**	**6.51E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
12	**Lead**	**6.36E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
12	**Magnesium**	**1.19E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
12	**Manganese**	**1.19E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
12	**Mercury**	**7.75E-01**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	TRUE
12	**Nickel**	**7.38E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
12	**Potassium**	**4.31E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
12	**Selenium**	**5.18E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
12	**Silver**	**1.26E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
12	**Sodium**	**3.81E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
12	**Thallium**	**2.22E+00**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E-01	TRUE	7.30E-01	TRUE
12	**Vanadium**	**1.36E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	**Zinc**	**2.16E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
12	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
12	**HMX**	**8.52E-01**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
12	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
12	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
12	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
12	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
12	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
12	**TATB**	**1.70E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetryl	1.50E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
12	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
12	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Perchlorate	5.05E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
12	**Gross alpha**	**2.48E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Gross beta**	**3.52E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Plutonium-238	4.66E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Plutonium-239/240	-1.09E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
12	Acenaphthene	1.02E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
12	Acenaphthylene	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Aniline	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Anthracene	1.02E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
12	Azobenzene	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Benzo(a)anthracene**	**1.15E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	**Benzo(a)pyrene**	**1.02E-02**	mg/kg	**Y**	J	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
12	**Benzo(b)fluoranthene**	**1.87E-02**	mg/kg	**Y**	J	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(g,h,i)perylene	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(k)fluoranthene	1.02E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Benzoic Acid	1.70E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzyl Alcohol	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-chloroethoxy)methane	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-chloroethyl)ether	1.02E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-ethylhexyl)phthalate	1.02E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Bromophenyl-phenylether[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloro-3-methylphenol[4-]	1.36E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloroaniline[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloronaphthalene[2-]	1.02E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
12	Chlorophenol[2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
12	Chlorophenyl-phenyl[4-] Ether	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chrysene	1.02E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
12	Dibenz(a,h)anthracene	1.02E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Dibenzofuran	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,3-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,4-]	1.02E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
12	Dichlorobenzidine[3,3'-]	1.02E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorophenol[2,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
12	Diethylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
12	Dimethyl Phthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
12	Dimethylphenol[2,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Di-n-butylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
12	Dinitro-2-methylphenol[4,6-]	1.02E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
12	Dinitrophenol[2,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,4-]	1.02E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,6-]	1.02E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
12	Di-n-octylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Diphenylamine	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Fluoranthene	1.02E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
12	Fluorene	1.02E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
12	Hexachlorobenzene	1.02E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
12	Hexachlorobutadiene	1.02E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
12	Hexachlorocyclopentadiene	1.02E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
12	Hexachloroethane	1.02E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
12	Indeno(1,2,3-cd)pyrene	1.02E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Isophorone	1.02E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
12	Methylnaphthalene[2-]	1.02E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
12	Methylphenol[2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Methylphenol[3-,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Naphthalene	1.02E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
12	Nitroaniline[2-]	1.12E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitroaniline[3-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitroaniline[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrobenzene	1.02E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
12	Nitrophenol[2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrophenol[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrosodimethylamine[N-]	1.02E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
12	Nitroso-di-n-propylamine[N-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Oxybis(1-chloropropane)[2,2'-]	1.02E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorophenol	1.02E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
12	Phenanthrene	1.02E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
12	Phenol	1.02E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
12	Pyrene	1.02E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
12	Pyridine	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trichlorobenzene[1,2,4-]	1.02E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
12	Trichlorophenol[2,4,5-]	1.02E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
12	Trichlorophenol[2,4,6-]	1.02E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
12	Acetone	1.67E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
12	Benzene	3.33E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
12	Bromobenzene	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bromochloromethane	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bromodichloromethane	3.33E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Bromoform	3.33E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Bromomethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Butanone[2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
12	Butylbenzene[n-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzene[sec-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzene[tert-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Carbon Disulfide	1.67E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
12	Carbon Tetrachloride	3.33E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
12	Chlorobenzene	3.33E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
12	Chlorodibromomethane	3.33E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Chloroethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
12	Chloroform	3.33E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
12	Chloromethane	3.33E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
12	Chlorotoluene[2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Chlorotoluene[4-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dibromo-3-Chloropropane[1,2-]	5.00E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
12	Dibromoethane[1,2-]	3.33E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
12	Dibromomethane	3.33E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
12	Dichlorobenzene[1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,4-]	3.33E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
12	Dichlorodifluoromethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
12	Dichloroethane[1,1-]	3.33E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
12	Dichloroethane[1,2-]	3.33E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
12	Dichloroethene[1,1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
12	Dichloroethene[cis-1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
12	Dichloroethene[trans-1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
12	Dichloropropane[1,2-]	3.33E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Dichloropropane[1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropane[2,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[1,1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[cis-1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[trans-1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Ethylbenzene	3.33E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
12	Hexanone[2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Iodomethane	1.67E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Isopropylbenzene	3.33E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
12	Isopropyltoluene[4-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Methyl-2-pentanone[4-]	1.67E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
12	Methylene Chloride	1.67E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
12	Propylbenzene[1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Styrene	3.33E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
12	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachloroethane[1,1,1,2-]	3.33E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
12	Tetrachloroethane[1,1,2,2-]	3.33E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Tetrachloroethene	3.33E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
12	Toluene	3.33E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
12	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
12	Trichloroethane[1,1,1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
12	Trichloroethane[1,1,2-]	3.33E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
12	Trichloroethene	3.33E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
12	Trichlorofluoromethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Trichloropropane[1,2,3-]	3.33E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Trimethylbenzene[1,2,4-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trimethylbenzene[1,3,5-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Vinyl Chloride	3.33E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
12	Xylene[1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	8.16E+02	FALSE	N/A	FALSE
12	Xylene[1,3-]+Xylene[1,4-]	6.67E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
13	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**4.70E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Heptachlorodibenzodioxins (Total)**	**1.52E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**2.48E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Heptachlorodibenzofurans (Total)**	**1.03E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Hexachlorodibenzodioxin[1,2,3,6,7,8-]**	**8.22E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Hexachlorodibenzodioxin[1,2,3,7,8,9-]**	**6.55E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Hexachlorodibenzodioxins (Total)**	**1.08E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Hexachlorodibenzofurans (Total)**	**3.10E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**3.40E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**8.97E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Pentachlorodibenzofurans (Totals)**	**6.71E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Tetrachlorodibenzodioxin[2,3,7,8-]	9.95E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
13	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Tetrachlorodibenzofuran[2,3,7,8-]	2.51E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
13	**Tetrachlorodibenzofurans (Totals)**	**2.51E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Aluminum**	**1.90E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
13	Antimony	3.09E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
13	**Arsenic**	**1.45E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
13	**Barium**	**6.22E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
13	**Beryllium**	**2.08E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
13	**Cadmium**	**4.67E-01**	mg/kg	**Y**	J	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	TRUE
13	**Calcium**	**3.43E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
13	**Chromium**	**6.10E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
13	**Cobalt**	**2.90E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
13	**Copper**	**2.79E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
13	**Iron**	**7.73E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
13	**Lead**	**6.96E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
13	**Magnesium**	**1.48E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
13	**Manganese**	**1.19E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
13	**Mercury**	**4.67E-02**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
13	**Nickel**	**5.52E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
13	**Potassium**	**3.58E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
13	**Selenium**	**5.48E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
13	**Silver**	**2.00E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
13	**Sodium**	**6.60E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
13	**Thallium**	**2.82E-01**	mg/kg	**Y**	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
13	**Vanadium**	**1.69E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	**Zinc**	**2.41E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
13	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
13	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
13	**HMX**	**3.87E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
13	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
13	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
13	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
13	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
13	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**RDX**	**1.96E-01**	mg/kg	**Y**	J	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
13	**TATB**	**1.42E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Tetryl	1.50E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
13	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
13	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Perchlorate**	**5.72E-04**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
13	**Gross alpha**	**1.94E+01**	pCi/g	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	**Gross beta**	**3.32E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Plutonium-238	4.61E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
13	Plutonium-239/240	7.67E-10	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
13	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
13	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
13	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
13	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
13	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
13	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
13	**Bis(2-ethylhexyl)phthalate**	**1.91E-01**	mg/kg	**Y**	NQ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
13	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
13	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
13	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
13	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
13	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
13	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
13	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
13	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
13	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
13	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
13	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
13	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
13	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
13	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
13	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
13	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
13	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
13	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
13	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
13	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
13	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
13	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
13	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
13	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
13	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
13	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
13	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
13	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
13	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
13	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
13	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
13	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
13	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
13	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
13	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
13	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
13	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
13	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
13	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
13	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
13	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
13	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
13	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
13	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
13	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
13	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
13	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
13	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
13	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dibromo-3-Chloropropane[1,2-]	4.94E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
13	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
13	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
13	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
13	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
13	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
13	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
13	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
13	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
13	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
13	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
13	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
13	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
13	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
13	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
13	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
13	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
13	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
13	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
13	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
13	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
13	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
13	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
13	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
13	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
13	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
13	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
13	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
13	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
13	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
13	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.17E+02	FALSE	N/A	FALSE
13	Xylene[1,3-]+Xylene[1,4-]	6.59E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
14	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.59E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Heptachlorodibenzodioxins (Total)**	**5.98E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**9.11E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Heptachlorodibenzofurans (Total)**	**2.52E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Hexachlorodibenzodioxins (Total)**	**2.77E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Hexachlorodibenzofurans (Total)**	**7.43E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**1.14E-04**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**2.47E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Pentachlorodibenzofuran[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Pentachlorodibenzofuran[2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Tetrachlorodibenzodioxin[2,3,7,8-]	9.99E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
14	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Tetrachlorodibenzofuran[2,3,7,8-]	1.78E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
14	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Aluminum**	**2.46E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
14	Antimony	3.20E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
14	**Arsenic**	**1.19E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
14	**Barium**	**5.56E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
14	**Beryllium**	**2.13E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
14	**Cadmium**	**2.52E-01**	mg/kg	**Y**	J	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
14	**Calcium**	**3.17E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
14	**Chromium**	**8.55E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
14	**Cobalt**	**3.83E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
14	**Copper**	**2.77E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
14	**Iron**	**1.10E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
14	**Lead**	**9.29E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
14	**Magnesium**	**1.56E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
14	**Manganese**	**1.61E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
14	**Mercury**	**6.49E-03**	mg/kg	**Y**	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
14	**Nickel**	**4.97E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
14	**Potassium**	**4.58E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
14	**Selenium**	**5.49E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
14	**Silver**	**3.26E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
14	**Sodium**	**6.90E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
14	Thallium	1.36E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
14	**Vanadium**	**2.38E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
14	**Zinc**	**5.32E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	TRUE
14	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
14	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
14	**HMX**	**1.01E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
14	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
14	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
14	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
14	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
14	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
14	**TATB**	**1.11E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
14	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
14	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Perchlorate	4.99E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
14	**Gross alpha**	**1.73E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	**Gross beta**	**3.01E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Plutonium-238	-1.29E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
14	Plutonium-239/240	6.44E-10	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
14	Acenaphthene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Acenaphthene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
14	Acenaphthylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Acenaphthylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Aniline	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Aniline	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Anthracene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
14	Anthracene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
14	Azobenzene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Azobenzene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(a)anthracene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(a)anthracene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(a)pyrene	1.01E-02	mg/kg	N	UJ	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
14	Benzo(a)pyrene	1.01E-02	mg/kg	N	UJ	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
14	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	UJ	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
14	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	UJ	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
14	Benzoic Acid	1.68E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Benzoic Acid	1.68E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Benzyl Alcohol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Benzyl Alcohol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	UJ	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	UJ	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	UJ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
14	**Bis(2-ethylhexyl)phthalate**	**2.55E-02**	mg/kg	**Y**	J-	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
14	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Butylbenzylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Butylbenzylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chloroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chloroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
14	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
14	Chlorophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
14	Chlorophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
14	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Chrysene	1.01E-02	mg/kg	N	UJ	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
14	Chrysene	1.01E-02	mg/kg	N	UJ	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
14	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	UJ	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
14	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	UJ	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
14	Dibenzofuran	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dibenzofuran	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
14	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
14	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	UJ	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
14	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	UJ	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
14	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	UJ	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
14	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	UJ	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
14	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
14	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
14	Diethylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
14	**Diethylphthalate**	**1.44E-02**	mg/kg	**Y**	J-	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
14	Dimethyl Phthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
14	Dimethyl Phthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
14	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
14	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
14	Di-n-butylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
14	**Di-n-butylphthalate**	**1.31E-02**	mg/kg	**Y**	J-	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
14	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
14	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
14	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
14	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
14	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	UJ	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
14	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	UJ	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
14	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	UJ	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
14	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	UJ	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
14	Di-n-octylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Di-n-octylphthalate	1.01E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Diphenylamine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Diphenylamine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Fluoranthene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
14	Fluoranthene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
14	Fluorene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
14	Fluorene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
14	Hexachlorobenzene	1.01E-01	mg/kg	N	UJ	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
14	Hexachlorobenzene	1.01E-01	mg/kg	N	UJ	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
14	Hexachlorobutadiene	1.01E-01	mg/kg	N	UJ	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
14	Hexachlorobutadiene	1.01E-01	mg/kg	N	UJ	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
14	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
14	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
14	Hexachloroethane	1.01E-01	mg/kg	N	UJ	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
14	Hexachloroethane	1.01E-01	mg/kg	N	UJ	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
14	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
14	Isophorone	1.01E-01	mg/kg	N	UJ	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
14	**Isophorone**	**3.24E-01**	mg/kg	**Y**	J-	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
14	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
14	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
14	Methylphenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Methylphenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Naphthalene	1.01E-02	mg/kg	N	UJ	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
14	Naphthalene	1.01E-02	mg/kg	N	UJ	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
14	Nitroaniline[2-]	1.11E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Nitroaniline[2-]	1.11E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitroaniline[3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitroaniline[3-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitroaniline[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitrobenzene	1.01E-01	mg/kg	N	UJ	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
14	Nitrobenzene	1.01E-01	mg/kg	N	UJ	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
14	Nitrophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitrophenol[2-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitrophenol[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitrophenol[4-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	UJ	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
14	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	UJ	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
14	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	UJ	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
14	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	UJ	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
14	Pentachlorophenol	1.01E-01	mg/kg	N	UJ	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
14	Pentachlorophenol	1.01E-01	mg/kg	N	UJ	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
14	Phenanthrene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
14	Phenanthrene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
14	Phenol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
14	Phenol	1.01E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
14	Pyrene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
14	Pyrene	1.01E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
14	Pyridine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Pyridine	1.01E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	UJ	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
14	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	UJ	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
14	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
14	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
14	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	UJ	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
14	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	UJ	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
14	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
14	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
14	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
14	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
14	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
14	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
14	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
14	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
14	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
14	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
14	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
14	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
14	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
14	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dibromo-3-Chloropropane[1,2-]	4.94E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
14	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
14	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
14	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
14	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
14	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
14	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
14	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
14	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
14	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
14	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
14	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
14	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
14	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
14	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
14	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
14	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
14	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
14	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
14	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
14	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
14	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
14	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
14	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
14	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
14	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
14	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
14	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
14	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
14	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.18E+02	FALSE	N/A	FALSE
14	Xylene[1,3-]+Xylene[1,4-]	6.59E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
15	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**7.51E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	**Heptachlorodibenzodioxins (Total)**	**1.67E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**5.49E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.93E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Pentachlorodibenzofuran[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Pentachlorodibenzofuran[2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Tetrachlorodibenzodioxin[2,3,7,8-]	1.12E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
15	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Tetrachlorodibenzofuran[2,3,7,8-]	2.13E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
15	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	**Aluminum**	**2.90E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
15	Antimony	3.23E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
15	**Arsenic**	**1.41E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
15	**Barium**	**4.44E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
15	**Beryllium**	**3.31E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
15	Cadmium	9.77E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
15	**Calcium**	**2.28E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
15	**Chromium**	**7.33E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	**Cobalt**	**3.23E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
15	**Copper**	**2.30E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
15	**Iron**	**8.63E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
15	**Lead**	**5.39E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
15	**Magnesium**	**1.17E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
15	**Manganese**	**1.55E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
15	Mercury	3.83E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
15	**Nickel**	**7.63E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
15	**Potassium**	**6.91E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
15	**Selenium**	**5.71E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
15	**Silver**	**2.70E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
15	**Sodium**	**4.51E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
15	Thallium	1.41E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
15	**Vanadium**	**1.86E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
15	**Zinc**	**2.19E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
15	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
15	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
15	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
15	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
15	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
15	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
15	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
15	**TATB**	**1.26E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
15	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
15	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	**Perchlorate**	**1.10E-03**	mg/kg	**Y**	J-	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
15	**Gross alpha**	**1.52E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	**Gross beta**	**2.63E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Plutonium-238	4.88E-10	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
15	Plutonium-239/240	-7.31E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
15	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
15	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
15	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
15	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
15	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
15	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
15	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	**Benzyl Alcohol**	**1.18E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
15	**Bis(2-ethylhexyl)phthalate**	**1.32E+00**	mg/kg	**Y**	NQ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
15	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Chloro-3-methylphenol[4-]	1.35E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
15	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
15	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
15	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
15	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
15	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
15	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
15	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
15	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
15	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
15	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
15	**Di-n-butylphthalate**	**1.67E-01**	mg/kg	**Y**	NQ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
15	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
15	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
15	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
15	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
15	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
15	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
15	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
15	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
15	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
15	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
15	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
15	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
15	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
15	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
15	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
15	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
15	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
15	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
15	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
15	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
15	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
15	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
15	Acetone	1.62E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
15	Benzene	3.24E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
15	Bromobenzene	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Bromochloromethane	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Bromodichloromethane	3.24E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
15	Bromoform	3.24E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
15	Bromomethane	3.24E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
15	Butanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
15	Butylbenzene[n-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Butylbenzene[sec-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Butylbenzene[tert-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Carbon Disulfide	1.62E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
15	Carbon Tetrachloride	3.24E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
15	Chlorobenzene	3.24E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
15	Chlorodibromomethane	3.24E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
15	Chloroethane	3.24E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
15	Chloroform	3.24E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
15	Chloromethane	3.24E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
15	Chlorotoluene[2-]	3.24E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
15	Chlorotoluene[4-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	Dibromo-3-Chloropropane[1,2-]	4.87E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
15	Dibromoethane[1,2-]	3.24E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
15	Dibromomethane	3.24E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
15	Dichlorobenzene[1,2-]	3.24E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
15	Dichlorobenzene[1,3-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichlorobenzene[1,4-]	3.24E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
15	Dichlorodifluoromethane	3.24E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
15	Dichloroethane[1,1-]	3.24E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
15	Dichloroethane[1,2-]	3.24E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
15	Dichloroethene[1,1-]	3.24E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
15	Dichloroethene[cis-1,2-]	3.24E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
15	Dichloroethene[trans-1,2-]	3.24E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
15	Dichloropropane[1,2-]	3.24E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
15	Dichloropropane[1,3-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichloropropane[2,2-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichloropropene[1,1-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichloropropene[cis-1,3-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Dichloropropene[trans-1,3-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Ethylbenzene	3.24E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
15	Hexanone[2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Iodomethane	1.62E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Isopropylbenzene	3.24E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
15	Isopropyltoluene[4-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Methyl-2-pentanone[4-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
15	Methylene Chloride	1.62E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
15	Propylbenzene[1-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
15	Styrene	3.24E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
15	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Tetrachloroethane[1,1,1,2-]	3.24E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
15	Tetrachloroethane[1,1,2,2-]	3.24E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
15	Tetrachloroethene	3.24E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
15	Toluene	3.24E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
15	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.62E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
15	Trichloroethane[1,1,1-]	3.24E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
15	Trichloroethane[1,1,2-]	3.24E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
15	Trichloroethene	3.24E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
15	Trichlorofluoromethane	3.24E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
15	Trichloropropane[1,2,3-]	3.24E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
15	Trimethylbenzene[1,2,4-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Trimethylbenzene[1,3,5-]	3.24E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
15	Vinyl Chloride	3.24E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
15	Xylene[1,2-]	3.24E-04	mg/kg	N	U	N/A	FALSE	8.19E+02	FALSE	N/A	FALSE
15	Xylene[1,3-]+Xylene[1,4-]	6.49E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
1 dup	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**6.82E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Heptachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**4.56E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.94E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzofuran[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzofuran[2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Tetrachlorodibenzodioxin[2,3,7,8-]	9.94E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
1 dup	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.75E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Tetrachlorodibenzofurans (Totals)**	**1.75E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Aluminum**	**2.19E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
1 dup	Antimony	3.16E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
1 dup	**Arsenic**	**1.44E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
1 dup	**Barium**	**2.70E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
1 dup	**Beryllium**	**2.68E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
1 dup	Cadmium	9.57E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
1 dup	**Calcium**	**5.74E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
1 dup	**Chromium**	**6.25E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
1 dup	**Cobalt**	**3.14E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	**Copper**	**1.03E+02**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
1 dup	**Iron**	**9.24E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
1 dup	**Lead**	**4.00E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
1 dup	**Magnesium**	**1.34E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
1 dup	**Manganese**	**1.42E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
1 dup	Mercury	3.53E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
1 dup	**Nickel**	**6.34E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
1 dup	**Potassium**	**3.90E+02**	mg/kg	**Y**	J+	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
1 dup	**Selenium**	**5.07E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
1 dup	**Silver**	**2.37E-01**	mg/kg	**Y**	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
1 dup	**Sodium**	**4.71E+01**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
1 dup	Thallium	1.34E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
1 dup	**Vanadium**	**2.09E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
1 dup	**Zinc**	**1.96E+01**	mg/kg	**Y**	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
1 dup	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE
1 dup	**HMX**	**6.52E-01**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
1 dup	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1 dup	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
1 dup	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
1 dup	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
1 dup	**TATB**	**1.16E+01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Tetryl	1.50E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1 dup	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
1 dup	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Perchlorate	5.03E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
1 dup	**Gross alpha**	**9.73E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Gross beta**	**2.04E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Plutonium-238	1.60E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
1 dup	Plutonium-239/240	-6.41E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
1 dup	Acenaphthene	1.00E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
1 dup	Acenaphthylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Aniline	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Anthracene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
1 dup	Azobenzene	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(a)anthracene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(a)pyrene	1.00E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
1 dup	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzoic Acid	1.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzyl Alcohol	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bis(2-ethylhexyl)phthalate	1.00E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Butylbenzylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chloroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
1 dup	Chlorophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
1 dup	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chrysene	1.00E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dibenzofuran	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1 dup	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
1 dup	Diethylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
1 dup	Dimethyl Phthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
1 dup	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Di-n-butylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1 dup	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
1 dup	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	U	3.56E+00	FALSE	1.85E+01	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Di-n-octylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Diphenylamine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Fluoranthene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1 dup	Fluorene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1 dup	Hexachlorobenzene	1.00E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
1 dup	Hexachlorobutadiene	1.00E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
1 dup	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
1 dup	Hexachloroethane	1.00E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
1 dup	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Isophorone	1.00E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
1 dup	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
1 dup	Methylphenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Naphthalene	1.00E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
1 dup	Nitroaniline[2-]	1.10E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitroaniline[3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitrobenzene	1.00E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1 dup	Nitrophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitrophenol[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
1 dup	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorophenol	1.00E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
1 dup	Phenanthrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1 dup	Phenol	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Pyrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1 dup	Pyridine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
1 dup	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1 dup	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
1 dup	Acetone	1.58E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
1 dup	Benzene	3.16E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
1 dup	Bromobenzene	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bromochloromethane	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bromodichloromethane	3.16E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1 dup	Bromoform	3.16E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Bromomethane	3.16E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
1 dup	Butanone[2-]	1.58E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
1 dup	Butylbenzene[n-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Butylbenzene[sec-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Butylbenzene[tert-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Carbon Disulfide	1.58E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
1 dup	Carbon Tetrachloride	3.16E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
1 dup	Chlorobenzene	3.16E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
1 dup	Chlorodibromomethane	3.16E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Chloroethane	3.16E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
1 dup	Chloroform	3.16E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
1 dup	Chloromethane	3.16E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
1 dup	Chlorotoluene[2-]	3.16E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
1 dup	Chlorotoluene[4-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dibromo-3-Chloropropane[1,2-]	4.74E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Dibromoethane[1,2-]	3.16E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
1 dup	Dibromomethane	3.16E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,2-]	3.16E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,3-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,4-]	3.16E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1 dup	Dichlorodifluoromethane	3.16E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
1 dup	Dichloroethane[1,1-]	3.16E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
1 dup	Dichloroethane[1,2-]	3.16E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
1 dup	Dichloroethene[1,1-]	3.16E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
1 dup	Dichloroethene[cis-1,2-]	3.16E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1 dup	Dichloroethene[trans-1,2-]	3.16E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
1 dup	Dichloropropane[1,2-]	3.16E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
1 dup	Dichloropropane[1,3-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropane[2,2-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropene[1,1-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropene[cis-1,3-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropene[trans-1,3-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Ethylbenzene	3.16E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
1 dup	Hexanone[2-]	1.58E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Iodomethane	1.58E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Isopropylbenzene	3.16E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
1 dup	Isopropyltoluene[4-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Methyl-2-pentanone[4-]	1.58E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
1 dup	Methylene Chloride	1.58E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
1 dup	Propylbenzene[1-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Styrene	3.16E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Temperature	5.70E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Tetrachloroethane[1,1,1,2-]	3.16E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
1 dup	Tetrachloroethane[1,1,2,2-]	3.16E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1 dup	Tetrachloroethene	3.16E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
1 dup	Toluene	3.16E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
1 dup	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.58E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
1 dup	Trichloroethane[1,1,1-]	3.16E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
1 dup	Trichloroethane[1,1,2-]	3.16E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
1 dup	Trichloroethene	3.16E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
1 dup	Trichlorofluoromethane	3.16E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Trichloropropane[1,2,3-]	3.16E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
1 dup	Trimethylbenzene[1,2,4-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Trimethylbenzene[1,3,5-]	3.16E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Vinyl Chloride	3.16E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
1 dup	Xylene[1,2-]	3.16E-04	mg/kg	N	U	N/A	FALSE	8.06E+02	FALSE	N/A	FALSE
1 dup	Xylene[1,3-]+Xylene[1,4-]	6.33E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
Trip Blank	**Acetone**	**2.99E-02**	mg/kg	**Y**	NQ	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
Trip Blank	Benzene	3.20E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
Trip Blank	Bromobenzene	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Bromochloromethane	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Bromodichloromethane	3.20E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Bromoform	3.20E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Bromomethane	3.20E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
Trip Blank	**Butanone[2-]**	**3.03E-03**	mg/kg	**Y**	J	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[n-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[sec-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[tert-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Carbon Disulfide	1.60E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
Trip Blank	Carbon Tetrachloride	3.20E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
Trip Blank	Chlorobenzene	3.20E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
Trip Blank	Chlorodibromomethane	3.20E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Chloroethane	3.20E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
Trip Blank	Chloroform	3.20E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
Trip Blank	Chloromethane	3.20E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
Trip Blank	Chlorotoluene[2-]	3.20E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
Trip Blank	Chlorotoluene[4-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dibromo-3-Chloropropane[1,2-]	4.81E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Dibromoethane[1,2-]	3.20E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
Trip Blank	Dibromomethane	3.20E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,2-]	3.20E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,3-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,4-]	3.20E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
Trip Blank	Dichlorodifluoromethane	3.20E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethane[1,1-]	3.20E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
Trip Blank	Dichloroethane[1,2-]	3.20E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[1,1-]	3.20E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[cis-1,2-]	3.20E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[trans-1,2-]	3.20E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[1,2-]	3.20E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[1,3-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[2,2-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[1,1-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[cis-1,3-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Dichloropropene[trans-1,3-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Ethylbenzene	3.20E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
Trip Blank	**Hexanone[2-]**	**1.71E-03**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Iodomethane	1.60E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Isopropylbenzene	3.20E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
Trip Blank	Isopropyltoluene[4-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Methyl-2-pentanone[4-]	1.60E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
Trip Blank	Methylene Chloride	1.60E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
Trip Blank	Propylbenzene[1-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Styrene	3.20E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
Trip Blank	Temperature	4.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethane[1,1,1,2-]	3.20E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethane[1,1,2,2-]	3.20E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethene	3.20E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
Trip Blank	Toluene	3.20E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
Trip Blank	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.60E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE

Table 1. TA-36-8 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Trichloroethane[1,1,1-]	3.20E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
Trip Blank	Trichloroethane[1,1,2-]	3.20E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
Trip Blank	Trichloroethene	3.20E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
Trip Blank	Trichlorofluoromethane	3.20E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Trichloropropane[1,2,3-]	3.20E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
Trip Blank	Trimethylbenzene[1,2,4-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Trimethylbenzene[1,3,5-]	3.20E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Vinyl Chloride	3.20E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
Trip Blank	Xylene[1,2-]	3.20E-04	mg/kg	N	U	N/A	FALSE	8.21E+02	FALSE	N/A	FALSE
Trip Blank	Xylene[1,3-]+Xylene[1,4-]	6.41E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE

BOLD TEXT Constituent detected above the detection limit, but below the select soil screening limit

Highlighted “TRUE” value – constituent detected above either the selected soil screening level or above the background value

Supplement 4-6

Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 39-6

LA-UR-20-24479

<u>TA-39-6 Open Detonation Unit</u>

This summary report includes discussion of the analytical results associated with soil sampling conducted at the Technical Area 39, Building 6 (TA-39-6) open detonation unit on September 27, 2018. Twelve soil samples were collected from pre-selected locations (Figure 1) based on a defined area where deposition of particulates from air to soil, including predominant downwind locations, and areas of potential storm water runoff are most likely to occur. Soil samples were analyzed for volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), total metals, dioxins/furans, perchlorates and high explosives, gross alpha and beta and isotopic plutonium. Surface soil samples were collected as grab samples from a depth of 0 to 2 inches below ground surface.

In 2010 and early 2011, soil data were collected to determine the baseline soil constituent of concern concentrations at the unit after more than 50 years of use. A summary of the soil analytical results for the sample collection events is included in Attachment D of the *Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6), Revision 0* (LANL, 2011). Soil samples were analyzed for high explosives, metals, dioxins/furans, SVOCs, VOCs, PCBs, perchlorates, and radiological constituents (gross alpha, gross beta, and isotopic uranium). Analytical results indicate that the average soil constituent concentrations in and around the TA-39-6 open detonation unit are less than the New Mexico Environment Department (NMED) Residential Soil Screening Levels (RSSLs) (NMED, 2019).

The results of the 2018 soil sampling event, discussed in detail below, indicate that active operations at the unit does not pose an unnecessary risk to human health based on the soil sample analytical results. Any potential contamination at the site is believed to be primarily limited to the surface (i.e., the first few inches in depth) of the site.

Laboratory Analysis and Reporting

The soil samples collected in 2018 were analyzed at a qualified offsite laboratory. The LANL Sample Management Office qualifies contract laboratories and ensures these laboratories adhere to U.S. Environmental Protection Agency (EPA) quality assurance and quality control (QA/QC) requirements. All sampling and analyses were conducted in accordance with QA/QC procedures defined by the latest revision of SW-846 (EPA, 1986) or other NMED-approved procedures. Field sampling procedures and laboratory analyses are evaluated through the use of QA/QC samples to assess the overall quality of the data produced. The field QC samples included trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Field QC samples were given a unique sample identification number and submitted to the analytical laboratory as blind samples. Laboratory QC samples include calibrations, blanks, duplicates, and spike samples. QC sample results are included in the analytical results received from the laboratory so the results can be applied to the associated samples.

Samples were analyzed for the following constituents using the methods indicated in the parentheses:

- High explosives (SW-846-8330B)
- Metals (SW-846-6010C, SW-846-6020, and SW-846-7471A)
- Dioxins/Furans (SW-846-8290A)
- SVOCs (SW-846-8270D)
- VOCs (SW-846-8260B)
- Percphlorates (SW-846-6850)

- Gross alpha beta (SW-846 EPA Method 900)
- Isotopic plutonium (HASL-300:ISOP)

Complete analytical results are included in Table 1, *TA-39-6 Analytical Data Summary*. Data are reported with qualifiers that denote the following analytical situations:

- <u>For Dioxins/Furans</u>
  - U – Compound analyzed for, but not detected, reported quantity equals the contract required quantitation limit (CRQL)
  - J - Estimated value; the analyte is present, but at a concentration below the CRQL
    - J+ – percent recovery is over the qualification standard
    - J- – percent recovery is below the qualification standard
  - B – Analyte detected in associated blank
  - K – Estimated Maximum Possible Concentration
  - NQ – No qualification
- <u>For Metals and Isotopic Plutonium</u>
  - U – reading was less than the method detection limit (MDL); reported value equals the CRQL
  - J – The reported value was obtained from a reading less than the CRQL but greater than or equal to the MDL
    - J+ – percent recovery is over the qualification standard
    - J- – percent recovery is below the qualification standard
  - B – Analyte detected in associated blank
  - NQ – No qualification
- <u>For VOCs and SVOCs</u>
  - U – Compound analyzed for, but not detected; reported value equals the CRQL
  - J – Estimated value; the analyte is present, but at a concentration below the CRQL
    - J+ – percent recovery is over the qualification standard
    - J- – percent recovery is below the qualification standard
  - B – Analyte detected in associated blank
- <u>For Explosives</u>
  - U – Compound analyzed for, but not detected; reported value equals the CRQL
  - J – Estimated value; the analyte is present, but at a concentration below the CRQL
    - J+ – percent recovery is over the qualification standard
    - J- – percent recovery is below the qualification standard
  - B – Analyte detected in associated blank
  - Blank qualifier field – No qualification

Soil samples collected in 2018 were intended to be analyzed for isotopic uranium, but were analyzed for isotopic plutonium instead, which is not a constituent that should be present at the site. A miscommunication on the chain of custody forms for the sample suites led to analysis for isotopic plutonium and as expected, there was no plutonium detected at the site. However, previously collected data regarding isotopic uranium (the applicable constituent) concentration information is included within Attachment D of the *Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6), Revision 0* (LANL, 2011). The data were also analyzed within the 2013 revised risk assessment included as Permit Application Supplement 4-9, *Revised 2011 Open Detonation Risk Assessment*.

Summary of Results

Compiled data were compared to NMED RSSLs. It is important to note that very few constituents, when compared to the constituents that the soil was tested for, were detected. The paragraphs below provide a discussion of the compounds detected within the soil, as well as other information about the analytical data that provide a more in depth discussion regarding some of the results.

Organic constituents detected within the soils at the TA-39-6 open detonation unit include:

- 0 of the 62 VOCs analyzed;
- 6 of the 69 SVOCs analyzed;
- 2 of the 20 explosives compounds analyzed; and
- 10 of the 25 dioxin or furan compounds analyzed.

For the TA-39-6 open detonation unit, none of the detected concentrations of SVOCs within the samples exceed the NMED RSSLs. However, when a constituent is reported as a CRQL which is greater than the screening level, it appears that the constituent is detected at a concentration that is greater than the NMED RSSL. This is the case for n-nitrosodimethylamine within this dataset. It is not detected in any of the samples analyzed and is included within the 'U' qualifier, as referenced above. However, because the reported results are the same as the CRQL, and the CRQL is above the NMED RSSL, n-nitrosodimethylamine appears to be detected at a concentration greater than the NMED RSSLs. The method utilized by the analytical laboratory for the SVOC analysis can detect the presence of nitrosamines; however, it is not the most sensitive method and therefore, the detection limit is higher than the soil screening level. Since the presence of n-nitrosodimethylamine due to operations at the TA-36-8 open detonation is not likely, a more focused analytical validation was deemed not necessary. Further discussion regarding the likelihood of the presence of n-nitrosodimethylamine at the site is below.

N-nitrosodimethylamine is produced by industry only in small amounts for research. It was used to make rocket fuel, but this use was stopped after unusually high levels of the chemical were found in air, water, and soil samples collected near a rocket fuel manufacturing plant. It is currently used in some cosmetic and toiletry products and in cleansers. N-nitrosodimethylamine is unintentionally formed during various manufacturing processes and in air, water, and soil from reactions involving other chemicals called alkylamines. It is also found in some foods and may be formed in the body. When released to the air, it is broken down by sunlight in a matter of minutes. When released to soil, it may evaporate into air or could sink down into deeper soil. It is unlikely that n-nitrosodimethylamine was deposited by past or current activities at the TA-39-6 open detonation unit, given that rocket fuel was never manufactured at LANL.

The two explosives compounds (HMX and RDX) detected within the soil at TA-39-6 open detonation unit were detected at concentrations below the NMED RSSLs.

For dioxins and furans, EPA has established 50 parts per trillion (ppt) Toxic Equivalency Quantity (TEQ) as being an acceptable limit for residential contamination. The TEQ system was developed for the purpose of comparing the relative risk of exposure in areas of contamination that vary widely in the composition and level of most toxic dioxins and furans. Each of the 17 highly toxic dioxins/furans are assigned a Toxic Equivalency Factor (TEF) based on a particular chemical's toxicity relative to 2,3,7,8-tetrachlorodibenzodioxin (TCDD), with the toxicity of TCDD being equal to 1.0. The concentration of each dioxin/furan is multiplied by its respective TEF and the results are summed. The summed results are known as the TEQ of the sample and it is this value that is compared to the 50 ppt screening level. This analysis is conducted as part of the health and ecological risk assessment included with this application and is included within Permit Application Supplement 4-8, *Technical Area 39 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 39-6 Open Detonation Unit Human Health and Ecological Risk- Screening Assessments*.

There were no detections of perchlorate within the 12 locations sampled at the TA-39-6 open detonation unit.

Eighteen (18) of the 23 metals analyzed for were detected in the soil at the TA-39-6 open detonation unit. There were no detected metals above NMED RSSLs. Most of the detected metal concentrations are below the established background levels at the Los Alamos National Laboratory. Seven of the metals detected are present at concentrations above background values. Human health and ecological risks associated with these detections are included in Supplement 4-7, *Technical Area 36 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 36-8 Open Detonation Unit Human Health and Ecological Risk- Screening Assessments*.

- Calcium (2 locations)
- Chromium (3 locations)
- Cobalt (1 location)
- Copper (11 locations)
- Mercury (2 locations)
- Vanadium (4 locations)
- Zinc (2 locations)

Antimony, while not detected at in any soil samples collected at the site, is reported in 7 of the locations as a CRQL that is greater than the establish background value at LANL. The CRQL is less than the NMED RSSL.

Conclusion

Sampling and analysis results indicate that none of the soil samples have constituent concentrations greater than the screening levels (see Table 1) when compared directly to the screening levels. Detected metals at 11 of 12 soil sample locations were measured above established background values.

References

EPA, 1986 (and all approved updates). *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846, U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response, U.S Government Printing Office, Washington D.C.

LANL, 2011. *Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6), Revision 0*. Los Alamos National Laboratory. July 2011. (http://permalink.lanl.gov/object/tr?what=info:lanl-repo/lareport/LA-UR-11-04739)

NMED, 2010. *Los Alamos National Laboratory Hazardous Waste Facility Permit,* EPA ID# NM0890010515, New Mexico Environment Department, Santa Fe, New Mexico.

NMED, 2019. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation*, February 2019 (Revision 2, 6/19/19).

Figure 1. TA-39-6 Soil Sample Locations

Table 1. TA-39-6 2018 Analytical Data Summary

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**8.52E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Heptachlorodibenzodioxins (Total)**	**1.53E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**9.01E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Heptachlorodibenzofurans (Total)**	**2.91E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Hexachlorodibenzodioxins (Total)**	**5.90E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Hexachlorodibenzofurans (Total)**	**5.32E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**7.21E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**2.49E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
1	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Tetrachlorodibenzofuran[2,3,7,8-]**	**3.65E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
1	**Tetrachlorodibenzofurans (Totals)**	**6.28E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Aluminum**	**3.91E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Antimony	3.16E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
1	**Arsenic**	**7.58E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
1	**Barium**	**5.67E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
1	**Beryllium**	**2.32E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
1	Cadmium	9.57E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
1	**Calcium**	**4.70E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
1	**Chromium**	**1.05E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
1	**Cobalt**	**4.49E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
1	**Copper**	**2.78E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
1	**Iron**	**1.33E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
1	**Lead**	**9.00E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
1	**Magnesium**	**2.13E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
1	**Manganese**	**1.92E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
1	**Mercury**	**1.05E-01**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	TRUE
1	**Nickel**	**8.05E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
1	**Potassium**	**7.38E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
1	Selenium	3.57E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
1	Silver	3.31E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
1	**Sodium**	**3.17E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
1	Thallium	1.39E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
1	**Vanadium**	**2.77E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
1	**Zinc**	**3.36E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
1	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**HMX**	**2.82E-01**	mg/kg	**Y**	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
1	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
1	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
1	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
1	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
1	**TATB**	**6.76E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetryl	1.50E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
1	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Perchlorate	4.92E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
1	**Gross alpha**	**8.86E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	**Gross beta**	**2.49E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Plutonium-238	0.00E+00	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
1	Plutonium-239/240	1.87E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
1	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
1	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
1	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
1	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
1	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
1	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
1	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
1	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
1	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
1	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1	**Di-n-butylphthalate**	**2.38E-02**	mg/kg	**Y**	J	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
1	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
1	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
1	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
1	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
1	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
1	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
1	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
1	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
1	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
1	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
1	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
1	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
1	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
1	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
1	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
1	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
1	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
1	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
1	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
1	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
1	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
1	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dibromo-3-Chloropropane[1,2-]	4.94E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
1	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
1	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
1	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
1	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
1	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
1	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
1	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
1	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
1	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
1	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
1	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
1	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
1	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
1	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
1	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
1	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
1	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
1	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
1	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
1	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
1	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
1	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
1	Xylene[1,3-]+Xylene[1,4-]	6.59E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
2	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**4.57E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Heptachlorodibenzodioxins (Total)**	**7.80E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Heptachlorodibenzofurans (Total)**	**1.02E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**3.58E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.38E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofuran[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofuran[2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
2	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Tetrachlorodibenzofuran[2,3,7,8-]**	**2.01E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
2	**Tetrachlorodibenzofurans (Totals)**	**2.01E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Aluminum**	**3.91E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
2	Antimony	3.13E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
2	**Arsenic**	**1.28E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	**Barium**	**3.92E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
2	**Beryllium**	**2.23E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
2	Cadmium	9.47E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
2	**Calcium**	**4.81E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
2	**Chromium**	**1.21E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
2	**Cobalt**	**6.40E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
2	**Copper**	**5.56E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
2	**Iron**	**1.81E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
2	**Lead**	**1.56E+01**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
2	**Magnesium**	**2.34E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
2	**Manganese**	**2.17E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
2	**Mercury**	**1.92E-02**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
2	**Nickel**	**6.85E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
2	**Potassium**	**5.99E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
2	Selenium	3.53E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
2	Silver	5.94E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
2	**Sodium**	**2.49E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
2	Thallium	1.37E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
2	**Vanadium**	**4.38E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	TRUE
2	**Zinc**	**4.56E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
2	2,4-Diamino-6-nitrotoluene	4.95E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	2,6-Diamino-4-nitrotoluene	6.53E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	3,5-Dinitroaniline	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
2	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
2	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
2	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
2	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
2	PETN	2.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
2	**TATB**	**9.65E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetryl	1.49E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
2	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
2	Tris (o-cresyl) phosphate	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Perchlorate	4.86E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
2	**Gross alpha**	**1.34E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Gross beta**	**2.44E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Plutonium-238	-3.82E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
2	Plutonium-239/240	1.02E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
2	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
2	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
2	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	**Benzyl Alcohol**	**1.04E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
2	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
2	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
2	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
2	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
2	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
2	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
2	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
2	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	**Di-n-butylphthalate**	**1.54E-02**	mg/kg	**Y**	J	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
2	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
2	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
2	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
2	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
2	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
2	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
2	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
2	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
2	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
2	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
2	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
2	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
2	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
2	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
2	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
2	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
2	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
2	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
2	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
2	Benzene	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
2	Bromobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bromochloromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bromodichloromethane	3.35E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Bromoform	3.35E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Bromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
2	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
2	Butylbenzene[n-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzene[sec-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzene[tert-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
2	Carbon Tetrachloride	3.35E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
2	Chlorobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
2	Chlorodibromomethane	3.35E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Chloroethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Chloroform	3.35E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
2	Chloromethane	3.35E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
2	Chlorotoluene[2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chlorotoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dibromo-3-Chloropropane[1,2-]	5.03E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
2	Dibromoethane[1,2-]	3.35E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
2	Dibromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
2	Dichlorobenzene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,4-]	3.35E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
2	Dichlorodifluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
2	Dichloroethane[1,1-]	3.35E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
2	Dichloroethane[1,2-]	3.35E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
2	Dichloroethene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
2	Dichloroethene[cis-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
2	Dichloroethene[trans-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
2	Dichloropropane[1,2-]	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
2	Dichloropropane[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropane[2,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[cis-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[trans-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Ethylbenzene	3.35E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
2	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Isopropylbenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Isopropyltoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
2	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
2	Propylbenzene[1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Styrene	3.35E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
2	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachloroethane[1,1,1,2-]	3.35E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
2	Tetrachloroethane[1,1,2,2-]	3.35E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Tetrachloroethene	3.35E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
2	Toluene	3.35E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
2	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
2	Trichloroethane[1,1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
2	Trichloroethane[1,1,2-]	3.35E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
2	Trichloroethene	3.35E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
2	Trichlorofluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Trichloropropane[1,2,3-]	3.35E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
2	Trimethylbenzene[1,2,4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trimethylbenzene[1,3,5-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Vinyl Chloride	3.35E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
2	Xylene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
2	Xylene[1,3-]+Xylene[1,4-]	6.71E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
3	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**3.49E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Heptachlorodibenzodioxins (Total)**	**6.56E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	**Heptachlorodibenzofurans (Total)**	**7.60E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**2.99E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
3	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Tetrachlorodibenzofuran[2,3,7,8-]**	**2.57E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
3	**Tetrachlorodibenzofurans (Totals)**	**2.07E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Aluminum**	**4.01E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
3	Antimony	3.17E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
3	**Arsenic**	**8.68E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
3	**Barium**	**3.00E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
3	**Beryllium**	**1.88E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Cadmium	9.60E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
3	**Calcium**	**3.49E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
3	**Chromium**	**9.47E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
3	**Cobalt**	**3.89E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
3	**Copper**	**7.38E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
3	**Iron**	**1.12E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
3	**Lead**	**6.00E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
3	**Magnesium**	**2.17E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
3	**Manganese**	**1.47E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
3	**Mercury**	**1.51E-02**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
3	**Nickel**	**9.05E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
3	**Potassium**	**8.12E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
3	Selenium	3.48E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
3	Silver	2.33E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
3	**Sodium**	**3.36E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
3	Thallium	1.35E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
3	**Vanadium**	**2.22E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
3	**Zinc**	**2.47E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
3	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
3	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
3	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
3	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
3	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
3	**TATB**	**1.86E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetryl	1.49E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
3	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Perchlorate	5.01E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
3	**Gross alpha**	**1.10E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Gross beta**	**2.48E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Plutonium-238	-3.74E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
3	Plutonium-239/240	1.49E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
3	Acenaphthene	1.00E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
3	Acenaphthylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Aniline	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Anthracene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
3	Azobenzene	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(a)anthracene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(a)pyrene	1.00E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
3	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Benzoic Acid	1.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	**Benzyl Alcohol**	**3.33E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-ethylhexyl)phthalate	1.00E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
3	Chlorophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
3	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chrysene	1.00E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
3	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
3	Dibenzofuran	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
3	Diethylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
3	Dimethyl Phthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
3	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Di-n-butylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Di-n-octylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Diphenylamine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Fluoranthene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3	Fluorene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3	Hexachlorobenzene	1.00E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
3	Hexachlorobutadiene	1.00E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
3	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
3	Hexachloroethane	1.00E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
3	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Isophorone	1.00E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
3	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
3	Methylphenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Naphthalene	1.00E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
3	Nitroaniline[2-]	1.10E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitroaniline[3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrobenzene	1.00E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3	Nitrophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrophenol[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
3	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Pentachlorophenol	1.00E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
3	Phenanthrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3	Phenol	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
3	Pyrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3	Pyridine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
3	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
3	Acetone	1.64E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
3	Benzene	3.28E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
3	Bromobenzene	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bromochloromethane	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bromodichloromethane	3.28E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Bromoform	3.28E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Bromomethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
3	Butanone[2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
3	Butylbenzene[n-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzene[sec-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzene[tert-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Carbon Disulfide	1.64E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
3	Carbon Tetrachloride	3.28E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
3	Chlorobenzene	3.28E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
3	Chlorodibromomethane	3.28E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Chloroethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
3	Chloroform	3.28E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
3	Chloromethane	3.28E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Chlorotoluene[2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chlorotoluene[4-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dibromo-3-Chloropropane[1,2-]	4.93E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
3	Dibromoethane[1,2-]	3.28E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
3	Dibromomethane	3.28E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
3	Dichlorobenzene[1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,4-]	3.28E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3	Dichlorodifluoromethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
3	Dichloroethane[1,1-]	3.28E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
3	Dichloroethane[1,2-]	3.28E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
3	Dichloroethene[1,1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
3	Dichloroethene[cis-1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3	Dichloroethene[trans-1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
3	Dichloropropane[1,2-]	3.28E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
3	Dichloropropane[1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropane[2,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[1,1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[cis-1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[trans-1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Ethylbenzene	3.28E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
3	Hexanone[2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Iodomethane	1.64E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Isopropylbenzene	3.28E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
3	Isopropyltoluene[4-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Methyl-2-pentanone[4-]	1.64E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Methylene Chloride	1.64E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
3	Propylbenzene[1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Styrene	3.28E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
3	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachloroethane[1,1,1,2-]	3.28E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
3	Tetrachloroethane[1,1,2,2-]	3.28E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Tetrachloroethene	3.28E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
3	Toluene	3.28E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
3	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
3	Trichloroethane[1,1,1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
3	Trichloroethane[1,1,2-]	3.28E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
3	Trichloroethene	3.28E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
3	Trichlorofluoromethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Trichloropropane[1,2,3-]	3.28E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
3	Trimethylbenzene[1,2,4-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trimethylbenzene[1,3,5-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Vinyl Chloride	3.28E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
3	Xylene[1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
3	Xylene[1,3-]+Xylene[1,4-]	6.58E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
4	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**1.96E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.00E-06	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofuran[1,2,3,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
4	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzofuran[2,3,7,8-]	1.05E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Aluminum**	**3.48E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
4	Antimony	3.03E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
4	**Arsenic**	**1.01E+00**	mg/kg	**Y**	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
4	**Barium**	**4.19E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
4	**Beryllium**	**2.03E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
4	Cadmium	9.17E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
4	**Calcium**	**6.78E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	TRUE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	**Chromium**	**1.24E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
4	**Cobalt**	**4.84E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
4	**Copper**	**1.58E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
4	**Iron**	**1.26E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
4	**Lead**	**8.89E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
4	**Magnesium**	**2.32E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
4	**Manganese**	**2.81E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
4	Mercury	3.73E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
4	**Nickel**	**9.96E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
4	**Potassium**	**4.64E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
4	Selenium	3.45E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
4	Silver	2.44E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
4	**Sodium**	**2.04E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
4	Thallium	1.34E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
4	**Vanadium**	**2.83E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
4	**Zinc**	**2.44E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
4	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	HMX	1.50E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
4	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
4	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
4	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
4	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
4	TATB	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetryl	1.50E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
4	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
4	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Perchlorate	4.91E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
4	**Gross alpha**	**1.10E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	**Gross beta**	**2.42E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Plutonium-238	-9.85E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
4	Plutonium-239/240	5.63E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
4	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
4	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
4	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
4	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
4	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
4	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
4	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
4	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
4	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
4	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
4	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
4	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
4	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
4	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
4	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
4	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
4	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
4	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
4	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
4	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
4	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
4	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
4	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
4	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
4	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
4	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
4	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
4	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
4	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
4	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
4	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
4	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
4	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
4	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
4	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
4	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
4	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
4	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
4	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
4	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
4	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Dibromo-3-Chloropropane[1,2-]	4.94E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
4	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
4	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
4	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
4	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
4	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
4	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
4	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
4	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
4	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
4	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
4	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
4	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
4	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
4	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
4	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
4	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
4	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
4	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
4	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
4	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
4	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
4	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
4	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
4	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
4	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
4	Xylene[1,3-]+Xylene[1,4-]	6.58E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
5	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**8.28E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**5.50E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.00E-06	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofuran[1,2,3,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofuran[2,3,4,7,8-]	5.01E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
5	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.36E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
5	**Tetrachlorodibenzofurans (Totals)**	**1.36E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Aluminum**	**4.24E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
5	Antimony	3.31E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
5	**Arsenic**	**6.61E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
5	**Barium**	**2.80E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
5	**Beryllium**	**1.67E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
5	Cadmium	1.00E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
5	**Calcium**	**5.64E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
5	**Chromium**	**1.17E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
5	**Cobalt**	**5.31E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	**Copper**	**5.27E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
5	**Iron**	**1.42E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
5	**Lead**	**5.83E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
5	**Magnesium**	**2.45E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
5	**Manganese**	**1.95E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
5	Mercury	3.70E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
5	**Nickel**	**5.57E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
5	**Potassium**	**6.18E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
5	Selenium	3.35E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
5	Silver	2.47E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
5	**Sodium**	**2.76E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
5	Thallium	1.30E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
5	**Vanadium**	**3.18E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
5	**Zinc**	**2.98E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
5	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**HMX**	**6.66E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
5	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
5	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
5	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
5	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
5	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetryl	1.48E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
5	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
5	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Perchlorate	4.91E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
5	**Gross alpha**	**8.53E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Gross beta**	**2.32E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Plutonium-238	-1.62E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
5	Plutonium-239/240	-1.24E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
5	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
5	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
5	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
5	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	**Benzyl Alcohol**	**7.66E-01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
5	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
5	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
5	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
5	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
5	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
5	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
5	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
5	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
5	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
5	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
5	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
5	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
5	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
5	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
5	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
5	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
5	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
5	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
5	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
5	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
5	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
5	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
5	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
5	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
5	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
5	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
5	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
5	Benzene	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
5	Bromobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bromochloromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bromodichloromethane	3.35E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Bromoform	3.35E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Bromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
5	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
5	Butylbenzene[n-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzene[sec-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzene[tert-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
5	Carbon Tetrachloride	3.35E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
5	Chlorobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
5	Chlorodibromomethane	3.35E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Chloroethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
5	Chloroform	3.35E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
5	Chloromethane	3.35E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
5	Chlorotoluene[2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chlorotoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dibromo-3-Chloropropane[1,2-]	5.03E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
5	Dibromoethane[1,2-]	3.35E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Dibromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
5	Dichlorobenzene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,4-]	3.35E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
5	Dichlorodifluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
5	Dichloroethane[1,1-]	3.35E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
5	Dichloroethane[1,2-]	3.35E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
5	Dichloroethene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
5	Dichloroethene[cis-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
5	Dichloroethene[trans-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
5	Dichloropropane[1,2-]	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
5	Dichloropropane[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropane[2,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[cis-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[trans-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Ethylbenzene	3.35E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
5	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Isopropylbenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
5	Isopropyltoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
5	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
5	Propylbenzene[1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Styrene	3.35E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
5	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachloroethane[1,1,1,2-]	3.35E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
5	Tetrachloroethane[1,1,2,2-]	3.35E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Tetrachloroethene	3.35E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
5	Toluene	3.35E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
5	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
5	Trichloroethane[1,1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
5	Trichloroethane[1,1,2-]	3.35E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
5	Trichloroethene	3.35E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
5	Trichlorofluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Trichloropropane[1,2,3-]	3.35E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
5	Trimethylbenzene[1,2,4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trimethylbenzene[1,3,5-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Vinyl Chloride	3.35E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
5	Xylene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
5	Xylene[1,3-]+Xylene[1,4-]	6.72E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
6	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**8.60E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Heptachlorodibenzodioxins (Total)**	**1.45E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**7.97E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Heptachlorodibenzofurans (Total)**	**7.97E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**5.49E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**2.51E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofuran[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofuran[2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
6	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.87E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
6	**Tetrachlorodibenzofurans (Totals)**	**1.87E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Aluminum**	**2.93E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
6	Antimony	3.07E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
6	**Arsenic**	**6.99E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
6	**Barium**	**3.00E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
6	**Beryllium**	**1.90E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
6	Cadmium	9.32E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
6	**Calcium**	**2.93E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
6	**Chromium**	**8.96E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
6	**Cobalt**	**3.89E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
6	**Copper**	**2.02E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
6	**Iron**	**1.03E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	**Lead**	**7.72E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
6	**Magnesium**	**1.75E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
6	**Manganese**	**1.50E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
6	**Mercury**	**5.07E-03**	mg/kg	**Y**	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
6	**Nickel**	**6.68E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
6	**Potassium**	**5.44E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
6	Selenium	3.54E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
6	Silver	3.84E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
6	**Sodium**	**2.38E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
6	Thallium	1.38E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
6	**Vanadium**	**2.32E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
6	**Zinc**	**3.04E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
6	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	HMX	1.50E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
6	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
6	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
6	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
6	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
6	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
6	TATB	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetryl	1.50E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
6	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
6	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Perchlorate	4.98E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
6	**Gross alpha**	**1.01E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	**Gross beta**	**2.81E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Plutonium-238	-5.42E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
6	Plutonium-239/240	-8.67E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
6	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
6	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
6	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
6	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
6	**Benzoic Acid**	**4.83E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzyl Alcohol	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
6	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
6	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
6	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
6	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
6	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
6	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
6	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
6	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
6	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
6	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
6	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
6	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
6	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
6	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
6	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
6	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
6	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
6	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
6	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
6	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
6	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
6	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
6	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
6	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
6	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
6	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
6	Acetone	1.64E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
6	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
6	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
6	Butanone[2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
6	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Carbon Disulfide	1.64E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
6	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
6	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
6	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
6	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
6	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
6	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dibromo-3-Chloropropane[1,2-]	4.93E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
6	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
6	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
6	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
6	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
6	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
6	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
6	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
6	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
6	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
6	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
6	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
6	Hexanone[2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Iodomethane	1.64E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
6	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Methyl-2-pentanone[4-]	1.64E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
6	Methylene Chloride	1.64E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
6	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
6	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
6	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
6	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
6	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
6	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
6	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
6	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
6	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
6	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
6	Xylene[1,3-]+Xylene[1,4-]	6.58E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
7	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**5.86E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Heptachlorodibenzodioxins (Total)**	**1.01E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**2.21E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Heptachlorodibenzofurans (Total)**	**1.22E-05**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Hexachlorodibenzofurans (Total)**	**1.36E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**6.84E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.92E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
7	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzofuran[2,3,7,8-]	1.16E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Aluminum**	**5.28E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
7	Antimony	3.19E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
7	**Arsenic**	**8.22E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
7	**Barium**	**4.12E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
7	**Beryllium**	**1.67E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
7	Cadmium	9.68E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
7	**Calcium**	**5.81E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
7	**Chromium**	**1.86E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
7	**Cobalt**	**8.42E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
7	**Copper**	**1.74E+02**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
7	**Iron**	**2.14E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
7	**Lead**	**9.68E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
7	**Magnesium**	**3.74E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	**Manganese**	**2.58E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
7	Mercury	3.77E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
7	**Nickel**	**7.61E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
7	**Potassium**	**6.13E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
7	Selenium	3.44E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
7	Silver	6.85E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
7	**Sodium**	**2.61E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
7	Thallium	1.34E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
7	**Vanadium**	**4.83E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	TRUE
7	**Zinc**	**5.73E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	TRUE
7	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**HMX**	**1.72E-01**	mg/kg	**Y**	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
7	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
7	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
7	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
7	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
7	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
7	TATB	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Tetryl	1.49E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
7	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
7	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Perchlorate	4.93E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
7	**Gross alpha**	**8.70E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	**Gross beta**	**2.40E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Plutonium-238	-1.31E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
7	Plutonium-239/240	1.31E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
7	Acenaphthene	1.00E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
7	Acenaphthylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Aniline	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Anthracene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
7	Azobenzene	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(a)anthracene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(a)pyrene	1.00E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
7	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
7	Benzoic Acid	1.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzyl Alcohol	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-ethylhexyl)phthalate	1.00E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chloroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
7	Chlorophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
7	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chrysene	1.00E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
7	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
7	Dibenzofuran	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
7	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
7	Diethylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
7	Dimethyl Phthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
7	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Di-n-butylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
7	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
7	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Di-n-octylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Diphenylamine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Fluoranthene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
7	Fluorene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
7	Hexachlorobenzene	1.00E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Hexachlorobutadiene	1.00E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
7	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
7	Hexachloroethane	1.00E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
7	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Isophorone	1.00E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
7	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
7	Methylphenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Naphthalene	1.00E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
7	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitroaniline[3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrobenzene	1.00E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
7	Nitrophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrophenol[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
7	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorophenol	1.00E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
7	Phenanthrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
7	Phenol	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
7	Pyrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
7	Pyridine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
7	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
7	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
7	Benzene	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
7	Bromobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bromochloromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bromodichloromethane	3.35E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Bromoform	3.35E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Bromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
7	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
7	Butylbenzene[n-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzene[sec-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzene[tert-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
7	Carbon Tetrachloride	3.35E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
7	Chlorobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
7	Chlorodibromomethane	3.35E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Chloroethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
7	Chloroform	3.35E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
7	Chloromethane	3.35E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
7	Chlorotoluene[2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chlorotoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dibromo-3-Chloropropane[1,2-]	5.03E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
7	Dibromoethane[1,2-]	3.35E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
7	Dibromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
7	Dichlorobenzene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,4-]	3.35E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Dichlorodifluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
7	Dichloroethane[1,1-]	3.35E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
7	Dichloroethane[1,2-]	3.35E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
7	Dichloroethene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
7	Dichloroethene[cis-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
7	Dichloroethene[trans-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
7	Dichloropropane[1,2-]	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
7	Dichloropropane[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropane[2,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[cis-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[trans-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Ethylbenzene	3.35E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
7	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Isopropylbenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
7	Isopropyltoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
7	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
7	Propylbenzene[1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Styrene	3.35E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
7	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachloroethane[1,1,1,2-]	3.35E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
7	Tetrachloroethane[1,1,2,2-]	3.35E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Tetrachloroethene	3.35E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Toluene	3.35E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
7	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
7	Trichloroethane[1,1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
7	Trichloroethane[1,1,2-]	3.35E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
7	Trichloroethene	3.35E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
7	Trichlorofluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Trichloropropane[1,2,3-]	3.35E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
7	Trimethylbenzene[1,2,4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trimethylbenzene[1,3,5-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Vinyl Chloride	3.35E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
7	Xylene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
7	Xylene[1,3-]+Xylene[1,4-]	6.71E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
8	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.13E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Heptachlorodibenzodioxins (Total)**	**1.13E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**9.66E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
8	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.44E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
8	**Tetrachlorodibenzofurans (Totals)**	**1.44E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Aluminum**	**3.96E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
8	Antimony	3.07E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
8	**Arsenic**	**8.66E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
8	**Barium**	**4.71E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
8	**Beryllium**	**1.79E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
8	Cadmium	9.31E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
8	**Calcium**	**4.19E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
8	**Chromium**	**3.20E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	TRUE
8	**Cobalt**	**8.95E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	TRUE
8	**Copper**	**2.54E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
8	**Iron**	**2.01E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
8	**Lead**	**7.31E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
8	**Magnesium**	**2.31E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
8	**Manganese**	**2.44E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
8	Mercury	3.55E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	**Nickel**	**1.01E+01**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
8	**Potassium**	**6.34E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
8	Selenium	3.57E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
8	Silver	5.76E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
8	**Sodium**	**2.86E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
8	Thallium	1.39E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
8	**Vanadium**	**4.65E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	TRUE
8	**Zinc**	**3.95E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
8	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**HMX**	**1.37E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
8	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
8	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
8	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
8	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
8	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
8	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetryl	1.48E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
8	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
8	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Perchlorate	4.96E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
8	**Gross alpha**	**1.01E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Gross beta**	**2.36E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Plutonium-238	-3.76E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
8	Plutonium-239/240	1.13E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
8	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
8	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
8	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
8	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	**Benzyl Alcohol**	**1.27E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-ethylhexyl)phthalate	1.01E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
8	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
8	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
8	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
8	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
8	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
8	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
8	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
8	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
8	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
8	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
8	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
8	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
8	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
8	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
8	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
8	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
8	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
8	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
8	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
8	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
8	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
8	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
8	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
8	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
8	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
8	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
8	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
8	Benzene	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Bromobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bromochloromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bromodichloromethane	3.35E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
8	Bromoform	3.35E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Bromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
8	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
8	Butylbenzene[n-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzene[sec-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzene[tert-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
8	Carbon Tetrachloride	3.35E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
8	Chlorobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
8	Chlorodibromomethane	3.35E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Chloroethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
8	Chloroform	3.35E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
8	Chloromethane	3.35E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
8	Chlorotoluene[2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chlorotoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dibromo-3-Chloropropane[1,2-]	5.04E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
8	Dibromoethane[1,2-]	3.35E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
8	Dibromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
8	Dichlorobenzene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,4-]	3.35E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
8	Dichlorodifluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
8	Dichloroethane[1,1-]	3.35E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Dichloroethane[1,2-]	3.35E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
8	Dichloroethene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
8	Dichloroethene[cis-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
8	Dichloroethene[trans-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
8	Dichloropropane[1,2-]	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
8	Dichloropropane[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropane[2,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[cis-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[trans-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Ethylbenzene	3.35E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
8	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Isopropylbenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
8	Isopropyltoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
8	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
8	Propylbenzene[1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Styrene	3.35E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
8	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachloroethane[1,1,1,2-]	3.35E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
8	Tetrachloroethane[1,1,2,2-]	3.35E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
8	Tetrachloroethene	3.35E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
8	Toluene	3.35E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
8	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Trichloroethane[1,1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
8	Trichloroethane[1,1,2-]	3.35E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
8	Trichloroethene	3.35E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
8	Trichlorofluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Trichloropropane[1,2,3-]	3.35E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
8	Trimethylbenzene[1,2,4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trimethylbenzene[1,3,5-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Vinyl Chloride	3.35E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
8	Xylene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
8	Xylene[1,3-]+Xylene[1,4-]	6.72E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
9	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**6.07E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Heptachlorodibenzodioxins (Total)**	**6.07E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**3.91E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzodioxin[2,3,7,8-]	9.96E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
9	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Tetrachlorodibenzofuran[2,3,7,8-]**	**1.06E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Aluminum**	**4.10E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
9	Antimony	3.12E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
9	**Arsenic**	**7.81E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
9	**Barium**	**4.55E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
9	**Beryllium**	**1.43E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
9	Cadmium	9.46E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
9	**Calcium**	**6.00E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
9	**Chromium**	**4.79E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	TRUE
9	**Cobalt**	**6.65E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
9	**Copper**	**2.71E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
9	**Iron**	**1.71E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
9	**Lead**	**9.07E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
9	**Magnesium**	**2.62E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
9	**Manganese**	**2.22E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
9	Mercury	3.90E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
9	**Nickel**	**1.04E+01**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
9	**Potassium**	**7.58E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Selenium	3.30E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
9	Silver	2.59E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
9	**Sodium**	**3.22E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
9	Thallium	1.28E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
9	**Vanadium**	**3.39E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
9	**Zinc**	**3.65E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
9	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**HMX**	**2.95E-01**	mg/kg	**Y**	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
9	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
9	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
9	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
9	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
9	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
9	TATB	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetryl	1.49E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
9	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
9	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Perchlorate	4.97E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
9	**Gross alpha**	**7.22E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Gross beta**	**2.19E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Plutonium-238	-4.05E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
9	Plutonium-239/240	-2.70E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
9	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
9	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
9	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
9	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	**Benzyl Alcohol**	**1.60E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-ethylhexyl)phthalate	1.38E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
9	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
9	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
9	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
9	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
9	Diethylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
9	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
9	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Di-n-butylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
9	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
9	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
9	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
9	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
9	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
9	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
9	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
9	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
9	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
9	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
9	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
9	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
9	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
9	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
9	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
9	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
9	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
9	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
9	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
9	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
9	Benzene	3.36E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
9	Bromobenzene	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bromochloromethane	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Bromodichloromethane	3.36E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Bromoform	3.36E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Bromomethane	3.36E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
9	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
9	Butylbenzene[n-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzene[sec-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzene[tert-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
9	Carbon Tetrachloride	3.36E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
9	Chlorobenzene	3.36E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
9	Chlorodibromomethane	3.36E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Chloroethane	3.36E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
9	Chloroform	3.36E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
9	Chloromethane	3.36E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
9	Chlorotoluene[2-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chlorotoluene[4-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dibromo-3-Chloropropane[1,2-]	5.04E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
9	Dibromoethane[1,2-]	3.36E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
9	Dibromomethane	3.36E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
9	Dichlorobenzene[1,2-]	3.36E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,3-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,4-]	3.36E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
9	Dichlorodifluoromethane	3.36E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
9	Dichloroethane[1,1-]	3.36E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
9	Dichloroethane[1,2-]	3.36E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
9	Dichloroethene[1,1-]	3.36E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Dichloroethene[cis-1,2-]	3.36E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
9	Dichloroethene[trans-1,2-]	3.36E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
9	Dichloropropane[1,2-]	3.36E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
9	Dichloropropane[1,3-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropane[2,2-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[1,1-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[cis-1,3-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[trans-1,3-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Ethylbenzene	3.36E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
9	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Isopropylbenzene	3.36E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
9	Isopropyltoluene[4-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
9	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
9	Propylbenzene[1-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Styrene	3.36E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
9	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachloroethane[1,1,1,2-]	3.36E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
9	Tetrachloroethane[1,1,2,2-]	3.36E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Tetrachloroethene	3.36E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
9	Toluene	3.36E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
9	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
9	Trichloroethane[1,1,1-]	3.36E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
9	Trichloroethane[1,1,2-]	3.36E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Trichloroethene	3.36E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
9	Trichlorofluoromethane	3.36E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Trichloropropane[1,2,3-]	3.36E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
9	Trimethylbenzene[1,2,4-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trimethylbenzene[1,3,5-]	3.36E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Vinyl Chloride	3.36E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
9	Xylene[1,2-]	3.36E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
9	Xylene[1,3-]+Xylene[1,4-]	6.73E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
10	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**5.21E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Heptachlorodibenzodioxins (Total)**	**1.04E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**6.88E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**4.10E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**1.18E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
10	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Tetrachlorodibenzofuran[2,3,7,8-]**	**5.50E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
10	**Tetrachlorodibenzofurans (Totals)**	**2.41E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Aluminum**	**4.13E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
10	Antimony	3.15E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
10	**Arsenic**	**7.59E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
10	**Barium**	**8.86E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
10	**Beryllium**	**1.62E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
10	Cadmium	9.55E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
10	**Calcium**	**5.04E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
10	**Chromium**	**2.16E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	TRUE
10	**Cobalt**	**6.60E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
10	**Copper**	**1.58E+02**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
10	**Iron**	**1.76E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
10	**Lead**	**1.39E+01**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
10	**Magnesium**	**2.45E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
10	**Manganese**	**2.35E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
10	**Mercury**	**5.68E-02**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
10	**Nickel**	**8.75E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
10	**Potassium**	**6.88E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
10	Selenium	3.33E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
10	Silver	5.31E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	**Sodium**	**3.04E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
10	Thallium	1.29E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
10	**Vanadium**	**4.29E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	TRUE
10	**Zinc**	**4.55E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
10	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**HMX**	**1.14E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
10	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
10	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
10	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
10	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
10	**TATB**	**1.06E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetryl	1.50E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
10	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
10	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Perchlorate	4.98E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
10	**Gross alpha**	**1.22E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	**Gross beta**	**3.21E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Plutonium-238	1.01E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
10	Plutonium-239/240	1.15E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
10	Acenaphthene	1.00E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
10	Acenaphthylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Aniline	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Anthracene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
10	Azobenzene	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(a)anthracene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(a)pyrene	1.00E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
10	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Benzoic Acid	1.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Benzyl Alcohol**	**1.65E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-ethylhexyl)phthalate	3.05E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Butylbenzylphthalate**	**3.21E-02**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
10	Chlorophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
10	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chrysene	1.00E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
10	Dibenzofuran	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
10	Diethylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
10	Dimethyl Phthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
10	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
10	**Di-n-butylphthalate**	**2.48E-02**	mg/kg	**Y**	J	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
10	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Di-n-octylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Diphenylamine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	**Fluoranthene**	**1.87E-02**	mg/kg	**Y**	J	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Fluorene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Hexachlorobenzene	1.00E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
10	Hexachlorobutadiene	1.00E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
10	Hexachloroethane	1.00E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
10	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Isophorone	1.00E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
10	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Methylphenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Naphthalene	1.00E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
10	Nitroaniline[2-]	1.10E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrobenzene	1.00E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrophenol[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
10	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorophenol	1.00E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
10	Phenanthrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	Phenol	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
10	**Pyrene**	**1.61E-02**	mg/kg	**Y**	J	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	Pyridine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Acetone	1.64E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
10	Benzene	3.28E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
10	Bromobenzene	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromochloromethane	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromodichloromethane	3.28E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Bromoform	3.28E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Bromomethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
10	Butanone[2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
10	Butylbenzene[n-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzene[sec-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzene[tert-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Carbon Disulfide	1.64E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
10	Carbon Tetrachloride	3.28E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
10	Chlorobenzene	3.28E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
10	Chlorodibromomethane	3.28E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Chloroethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
10	Chloroform	3.28E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
10	Chloromethane	3.28E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
10	Chlorotoluene[2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chlorotoluene[4-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dibromo-3-Chloropropane[1,2-]	4.93E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
10	Dibromoethane[1,2-]	3.28E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
10	Dibromomethane	3.28E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	3.28E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorodifluoromethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
10	Dichloroethane[1,1-]	3.28E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
10	Dichloroethane[1,2-]	3.28E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
10	Dichloroethene[1,1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
10	Dichloroethene[cis-1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
10	Dichloroethene[trans-1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Dichloropropane[1,2-]	3.28E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
10	Dichloropropane[1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropane[2,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[1,1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[cis-1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[trans-1,3-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Ethylbenzene	3.28E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
10	Hexanone[2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Iodomethane	1.64E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Isopropylbenzene	3.28E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
10	Isopropyltoluene[4-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methyl-2-pentanone[4-]	1.64E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
10	Methylene Chloride	1.64E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
10	Propylbenzene[1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Styrene	3.28E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
10	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachloroethane[1,1,1,2-]	3.28E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
10	Tetrachloroethane[1,1,2,2-]	3.28E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Tetrachloroethene	3.28E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
10	Toluene	3.28E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
10	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.64E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
10	Trichloroethane[1,1,1-]	3.28E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
10	Trichloroethane[1,1,2-]	3.28E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
10	Trichloroethene	3.28E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
10	Trichlorofluoromethane	3.28E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Trichloropropane[1,2,3-]	3.28E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
10	Trimethylbenzene[1,2,4-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trimethylbenzene[1,3,5-]	3.28E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Vinyl Chloride	3.28E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
10	Xylene[1,2-]	3.28E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
10	Xylene[1,3-]+Xylene[1,4-]	6.57E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
11	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**1.17E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Heptachlorodibenzodioxins (Total)**	**2.07E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**1.10E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Heptachlorodibenzofurans (Total)**	**2.70E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzodioxins (Total)**	**9.86E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Hexachlorodibenzofurans (Total)**	**7.05E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**9.57E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**3.40E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzodioxin[2,3,7,8-]	9.96E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
11	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Tetrachlorodibenzofuran[2,3,7,8-]**	**5.60E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Aluminum**	**4.37E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
11	Antimony	3.24E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
11	**Arsenic**	**8.85E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
11	**Barium**	**3.93E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
11	**Beryllium**	**2.25E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
11	Cadmium	9.81E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
11	**Calcium**	**3.59E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
11	**Chromium**	**1.49E+01**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
11	**Cobalt**	**5.81E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
11	**Copper**	**6.42E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
11	**Iron**	**1.39E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
11	**Lead**	**9.56E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
11	**Magnesium**	**3.16E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
11	**Manganese**	**2.05E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
11	**Mercury**	**1.31E-01**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	TRUE
11	**Nickel**	**8.35E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
11	**Potassium**	**6.09E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
11	Selenium	3.42E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
11	Silver	3.49E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
11	**Sodium**	**2.66E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
11	Thallium	1.33E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	**Vanadium**	**2.80E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
11	**Zinc**	**6.25E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	TRUE
11	2,4-Diamino-6-nitrotoluene	4.95E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	2,6-Diamino-4-nitrotoluene	6.53E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	3,5-Dinitroaniline	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**HMX**	**1.93E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
11	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
11	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
11	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
11	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
11	PETN	2.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
11	**TATB**	**7.91E-01**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetryl	1.49E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
11	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
11	Tris (o-cresyl) phosphate	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Perchlorate	5.04E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
11	**Gross alpha**	**1.29E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Gross beta**	**2.77E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Plutonium-238	6.80E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	**Plutonium-239/240**	**4.62E-02**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
11	Acenaphthene	1.01E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
11	Acenaphthylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Aniline	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Anthracene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
11	Azobenzene	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(a)anthracene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(a)pyrene	1.01E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
11	Benzo(b)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(g,h,i)perylene	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(k)fluoranthene	1.01E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Benzoic Acid	1.68E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Benzyl Alcohol**	**4.34E-01**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-chloroethoxy)methane	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-chloroethyl)ether	1.01E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-ethylhexyl)phthalate	1.48E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Bromophenyl-phenylether[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	**Butylbenzylphthalate**	**6.35E-02**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloronaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
11	Chlorophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
11	Chlorophenyl-phenyl[4-] Ether	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chrysene	1.01E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
11	Dibenz(a,h)anthracene	1.01E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
11	Dibenzofuran	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Dichlorobenzene[1,2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,4-]	1.01E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
11	Dichlorobenzidine[3,3'-]	1.01E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
11	Diethylphthalate	1.28E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
11	Dimethyl Phthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
11	Dimethylphenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
11	**Di-n-butylphthalate**	**1.00E-01**	mg/kg	**Y**	NQ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
11	Dinitro-2-methylphenol[4,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
11	Dinitrophenol[2,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,4-]	1.01E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,6-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Di-n-octylphthalate	1.01E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Diphenylamine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Fluoranthene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
11	Fluorene	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
11	Hexachlorobenzene	1.01E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
11	Hexachlorobutadiene	1.01E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
11	Hexachlorocyclopentadiene	1.01E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
11	Hexachloroethane	1.01E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
11	Indeno(1,2,3-cd)pyrene	1.01E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Isophorone	1.01E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
11	Methylnaphthalene[2-]	1.01E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
11	Methylphenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Methylphenol[3-,4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Naphthalene	1.01E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
11	Nitroaniline[2-]	1.11E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitroaniline[3-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitroaniline[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrobenzene	1.01E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
11	Nitrophenol[2-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrophenol[4-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrosodimethylamine[N-]	1.01E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
11	Nitroso-di-n-propylamine[N-]	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Oxybis(1-chloropropane)[2,2'-]	1.01E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorophenol	1.01E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
11	Phenanthrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
11	Phenol	1.01E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
11	Pyrene	1.01E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
11	Pyridine	1.01E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trichlorobenzene[1,2,4-]	1.01E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
11	Trichlorophenol[2,4,5-]	1.01E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
11	Trichlorophenol[2,4,6-]	1.01E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
11	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
11	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
11	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
11	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
11	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
11	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
11	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
11	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
11	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
11	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dibromo-3-Chloropropane[1,2-]	4.95E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
11	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
11	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
11	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
11	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
11	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
11	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
11	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
11	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
11	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
11	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
11	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
11	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
11	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
11	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
11	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
11	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
11	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
11	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
11	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
11	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
11	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
11	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
11	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
11	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
11	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
11	Xylene[1,3-]+Xylene[1,4-]	6.60E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
12	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**3.01E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Heptachlorodibenzodioxins (Total)**	**5.65E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**2.49E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.93E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofuran[1,2,3,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofuran[2,3,4,7,8-]	4.96E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachlorodibenzodioxin[2,3,7,8-]	9.93E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Tetrachlorodibenzofuran[2,3,7,8-]**	**3.75E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
12	**Tetrachlorodibenzofurans (Totals)**	**3.75E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Aluminum**	**1.76E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
12	Antimony	3.08E+00	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
12	**Arsenic**	**3.65E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
12	**Barium**	**1.68E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
12	**Beryllium**	**2.05E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
12	Cadmium	9.34E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
12	**Calcium**	**5.88E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
12	**Chromium**	**3.22E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
12	**Cobalt**	**2.25E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
12	**Copper**	**4.92E+00**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
12	**Iron**	**9.03E+03**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
12	**Lead**	**7.11E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
12	**Magnesium**	**3.75E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
12	**Manganese**	**2.17E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
12	Mercury	3.77E-03	mg/kg	N	U	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
12	**Nickel**	**1.27E+00**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
12	**Potassium**	**3.74E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
12	Selenium	3.58E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
12	Silver	1.67E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
12	**Sodium**	**1.28E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
12	Thallium	1.39E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
12	**Vanadium**	**1.14E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
12	**Zinc**	**3.86E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Amino-2,6-dinitrotoluene[4-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	HMX	1.50E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
12	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
12	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
12	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
12	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
12	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
12	TATB	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetryl	1.50E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
12	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trinitrotoluene[2,4,6-]	1.50E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
12	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Perchlorate	4.92E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
12	**Gross alpha**	**1.42E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	**Gross beta**	**3.67E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Plutonium-238	-5.36E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
12	Plutonium-239/240	2.01E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
12	Acenaphthene	1.00E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Acenaphthylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Aniline	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Anthracene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
12	Azobenzene	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(a)anthracene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(a)pyrene	1.00E-02	mg/kg	N	U	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
12	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Benzoic Acid	1.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzyl Alcohol	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-ethylhexyl)phthalate	1.00E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
12	Chlorophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
12	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chrysene	1.00E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
12	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
12	Dibenzofuran	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
12	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
12	Diethylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
12	Dimethyl Phthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
12	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Di-n-butylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
12	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
12	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Di-n-octylphthalate	1.00E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Diphenylamine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Fluoranthene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
12	Fluorene	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
12	Hexachlorobenzene	1.00E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
12	Hexachlorobutadiene	1.00E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
12	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
12	Hexachloroethane	1.00E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
12	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Isophorone	1.00E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
12	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
12	Methylphenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Naphthalene	1.00E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
12	Nitroaniline[2-]	1.10E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Nitroaniline[3-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitroaniline[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrobenzene	1.00E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
12	Nitrophenol[2-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrophenol[4-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
12	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorophenol	1.00E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
12	Phenanthrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
12	Phenol	1.00E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
12	Pyrene	1.00E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
12	Pyridine	1.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
12	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
12	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
12	Acetone	1.67E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
12	Benzene	3.34E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
12	Bromobenzene	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bromochloromethane	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bromodichloromethane	3.34E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Bromoform	3.34E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Bromomethane	3.34E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
12	Butanone[2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
12	Butylbenzene[n-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzene[sec-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Butylbenzene[tert-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Carbon Disulfide	1.67E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
12	Carbon Tetrachloride	3.34E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
12	Chlorobenzene	3.34E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
12	Chlorodibromomethane	3.34E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Chloroethane	3.34E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
12	Chloroform	3.34E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
12	Chloromethane	3.34E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
12	Chlorotoluene[2-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chlorotoluene[4-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dibromo-3-Chloropropane[1,2-]	5.02E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
12	Dibromoethane[1,2-]	3.34E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
12	Dibromomethane	3.34E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
12	Dichlorobenzene[1,2-]	3.34E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,3-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,4-]	3.34E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
12	Dichlorodifluoromethane	3.34E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
12	Dichloroethane[1,1-]	3.34E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
12	Dichloroethane[1,2-]	3.34E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
12	Dichloroethene[1,1-]	3.34E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
12	Dichloroethene[cis-1,2-]	3.34E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
12	Dichloroethene[trans-1,2-]	3.34E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
12	Dichloropropane[1,2-]	3.34E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
12	Dichloropropane[1,3-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropane[2,2-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[1,1-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Dichloropropene[cis-1,3-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[trans-1,3-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Ethylbenzene	3.34E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
12	Hexanone[2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Iodomethane	1.67E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Isopropylbenzene	3.34E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
12	Isopropyltoluene[4-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Methyl-2-pentanone[4-]	1.67E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
12	Methylene Chloride	1.67E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
12	Propylbenzene[1-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Styrene	3.34E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
12	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachloroethane[1,1,1,2-]	3.34E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
12	Tetrachloroethane[1,1,2,2-]	3.34E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Tetrachloroethene	3.34E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
12	Toluene	3.34E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
12	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
12	Trichloroethane[1,1,1-]	3.34E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
12	Trichloroethane[1,1,2-]	3.34E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
12	Trichloroethene	3.34E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
12	Trichlorofluoromethane	3.34E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Trichloropropane[1,2,3-]	3.34E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
12	Trimethylbenzene[1,2,4-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trimethylbenzene[1,3,5-]	3.34E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Vinyl Chloride	3.34E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Xylene[1,2-]	3.34E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
12	Xylene[1,3-]+Xylene[1,4-]	6.70E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
1 dup	**Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]**	**9.83E-06**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Heptachlorodibenzodioxins (Total)**	**1.76E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Heptachlorodibenzofuran[1,2,3,4,6,7,8-]**	**1.00E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Heptachlorodibenzofurans (Total)**	**3.22E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Hexachlorodibenzodioxins (Total)**	**1.10E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Hexachlorodibenzofurans (Total)**	**6.26E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]**	**8.89E-05**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]**	**2.73E-06**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzofuran[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzofuran[2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
1 dup	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Tetrachlorodibenzofuran[2,3,7,8-]**	**3.63E-07**	mg/kg	**Y**	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	**Tetrachlorodibenzofurans (Totals)**	**3.63E-07**	mg/kg	**Y**	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Aluminum**	**4.67E+03**	mg/kg	**Y**	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
1 dup	Antimony	3.13E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
1 dup	**Arsenic**	**8.18E-01**	mg/kg	**Y**	J	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
1 dup	**Barium**	**5.37E+01**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
1 dup	**Beryllium**	**1.91E-01**	mg/kg	**Y**	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
1 dup	Cadmium	9.48E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
1 dup	**Calcium**	**7.16E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	TRUE
1 dup	**Chromium**	**9.63E+00**	mg/kg	**Y**	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
1 dup	**Cobalt**	**5.17E+00**	mg/kg	**Y**	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
1 dup	**Copper**	**5.15E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
1 dup	**Iron**	**1.50E+04**	mg/kg	**Y**	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
1 dup	**Lead**	**7.04E+00**	mg/kg	**Y**	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
1 dup	**Magnesium**	**3.40E+03**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
1 dup	**Manganese**	**2.16E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
1 dup	**Mercury**	**8.37E-02**	mg/kg	**Y**	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
1 dup	**Nickel**	**1.38E+01**	mg/kg	**Y**	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
1 dup	**Potassium**	**6.20E+02**	mg/kg	**Y**	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
1 dup	Selenium	3.43E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
1 dup	Silver	3.02E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
1 dup	**Sodium**	**3.99E+02**	mg/kg	**Y**	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
1 dup	Thallium	1.33E-01	mg/kg	N	U	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
1 dup	**Vanadium**	**2.36E+01**	mg/kg	**Y**	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
1 dup	**Zinc**	**3.73E+01**	mg/kg	**Y**	J+	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
1 dup	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
1 dup	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1 dup	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
1 dup	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
1 dup	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
1 dup	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
1 dup	**TATB**	**4.31E+00**	mg/kg	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Tetryl	1.48E-01	mg/kg	N	UJ	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1 dup	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
1 dup	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Perchlorate	4.86E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
1 dup	**Gross alpha**	**7.77E+00**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	**Gross beta**	**2.70E+01**	pCi/g	**Y**	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Plutonium-238	1.68E-02	pCi/g	N	U	N/A	FALSE	N/A	FALSE	2.30E-02	FALSE
1 dup	Plutonium-239/240	3.05E-03	pCi/g	N	U	N/A	FALSE	N/A	FALSE	5.40E-02	FALSE
1 dup	Acenaphthene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
1 dup	Acenaphthylene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Aniline	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Anthracene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
1 dup	Azobenzene	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(a)anthracene	1.00E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(a)pyrene	1.00E-02	mg/kg	N	UJ	1.12E+00	FALSE	1.74E+01	FALSE	N/A	FALSE
1 dup	Benzo(b)fluoranthene	1.00E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(g,h,i)perylene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzo(k)fluoranthene	1.00E-02	mg/kg	N	UJ	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzoic Acid	1.67E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Benzyl Alcohol	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bis(2-chloroethoxy)methane	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bis(2-chloroethyl)ether	1.00E-01	mg/kg	N	UJ	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bis(2-ethylhexyl)phthalate	1.00E-02	mg/kg	N	UJ	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Bromophenyl-phenylether[4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Butylbenzylphthalate	1.00E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chloro-3-methylphenol[4-]	1.34E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chloroaniline[4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chloronaphthalene[2-]	1.00E-02	mg/kg	N	UJ	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
1 dup	Chlorophenol[2-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
1 dup	Chlorophenyl-phenyl[4-] Ether	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chrysene	1.00E-02	mg/kg	N	UJ	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dibenz(a,h)anthracene	1.00E-02	mg/kg	N	UJ	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dibenzofuran	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,2-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,3-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,4-]	1.00E-01	mg/kg	N	UJ	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1 dup	Dichlorobenzidine[3,3'-]	1.00E-01	mg/kg	N	UJ	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Dichlorophenol[2,4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
1 dup	Diethylphthalate	1.00E-02	mg/kg	N	UJ	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
1 dup	Dimethyl Phthalate	1.00E-02	mg/kg	N	UJ	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
1 dup	Dimethylphenol[2,4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	**Di-n-butylphthalate**	**5.46E-02**	mg/kg	**Y**	J-	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1 dup	Dinitro-2-methylphenol[4,6-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	7.33E+01	FALSE	N/A	FALSE
1 dup	Dinitrophenol[2,4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,4-]	1.00E-01	mg/kg	N	UJ	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1 dup	Dinitrotoluene[2,6-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Di-n-octylphthalate	1.00E-02	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Diphenylamine	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Fluoranthene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1 dup	Fluorene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1 dup	Hexachlorobenzene	1.00E-01	mg/kg	N	UJ	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
1 dup	Hexachlorobutadiene	1.00E-01	mg/kg	N	UJ	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
1 dup	Hexachlorocyclopentadiene	1.00E-01	mg/kg	N	UJ	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
1 dup	Hexachloroethane	1.00E-01	mg/kg	N	UJ	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
1 dup	Indeno(1,2,3-cd)pyrene	1.00E-02	mg/kg	N	UJ	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Isophorone	1.00E-01	mg/kg	N	UJ	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
1 dup	Methylnaphthalene[2-]	1.00E-02	mg/kg	N	UJ	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
1 dup	Methylphenol[2-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Methylphenol[3-,4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Naphthalene	1.00E-02	mg/kg	N	UJ	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
1 dup	Nitroaniline[2-]	1.11E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitroaniline[3-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitroaniline[4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Nitrobenzene	1.00E-01	mg/kg	N	UJ	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1 dup	Nitrophenol[2-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitrophenol[4-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Nitrosodimethylamine[N-]	1.00E-01	mg/kg	N	UJ	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
1 dup	Nitroso-di-n-propylamine[N-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Oxybis(1-chloropropane)[2,2'-]	1.00E-01	mg/kg	N	UJ	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Pentachlorophenol	1.00E-01	mg/kg	N	UJ	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
1 dup	Phenanthrene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1 dup	Phenol	1.00E-01	mg/kg	N	UJ	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
1 dup	Pyrene	1.00E-02	mg/kg	N	UJ	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1 dup	Pyridine	1.00E-01	mg/kg	N	UJ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Trichlorobenzene[1,2,4-]	1.00E-01	mg/kg	N	UJ	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
1 dup	Trichlorophenol[2,4,5-]	1.00E-01	mg/kg	N	UJ	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1 dup	Trichlorophenol[2,4,6-]	1.00E-01	mg/kg	N	UJ	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
1 dup	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
1 dup	Benzene	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
1 dup	Bromobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bromochloromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Bromodichloromethane	3.35E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1 dup	Bromoform	3.35E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Bromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
1 dup	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
1 dup	Butylbenzene[n-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Butylbenzene[sec-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Butylbenzene[tert-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Carbon Tetrachloride	3.35E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
1 dup	Chlorobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
1 dup	Chlorodibromomethane	3.35E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Chloroethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
1 dup	Chloroform	3.35E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
1 dup	Chloromethane	3.35E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
1 dup	Chlorotoluene[2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Chlorotoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dibromo-3-Chloropropane[1,2-]	5.03E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
1 dup	Dibromoethane[1,2-]	3.35E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
1 dup	Dibromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichlorobenzene[1,4-]	3.35E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1 dup	Dichlorodifluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
1 dup	Dichloroethane[1,1-]	3.35E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
1 dup	Dichloroethane[1,2-]	3.35E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
1 dup	Dichloroethene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
1 dup	Dichloroethene[cis-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1 dup	Dichloroethene[trans-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
1 dup	Dichloropropane[1,2-]	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
1 dup	Dichloropropane[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropane[2,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropene[cis-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Dichloropropene[trans-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1 dup	Ethylbenzene	3.35E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
1 dup	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Isopropylbenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
1 dup	Isopropyltoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
1 dup	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
1 dup	Propylbenzene[1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Styrene	3.35E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
1 dup	Temperature	5.20E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Tetrachloroethane[1,1,1,2-]	3.35E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
1 dup	Tetrachloroethane[1,1,2,2-]	3.35E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1 dup	Tetrachloroethene	3.35E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
1 dup	Toluene	3.35E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
1 dup	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
1 dup	Trichloroethane[1,1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
1 dup	Trichloroethane[1,1,2-]	3.35E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
1 dup	Trichloroethene	3.35E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
1 dup	Trichlorofluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1 dup	Trichloropropane[1,2,3-]	3.35E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
1 dup	Trimethylbenzene[1,2,4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Trimethylbenzene[1,3,5-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1 dup	Vinyl Chloride	3.35E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
1 dup	Xylene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
1 dup	Xylene[1,3-]+Xylene[1,4-]	6.71E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	**Acetone**	**3.05E-02**	mg/kg	**Y**	J-	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
Trip Blank	Benzene	3.33E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
Trip Blank	Bromobenzene	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Bromochloromethane	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Bromodichloromethane	3.33E-04	mg/kg	N	U	6.19E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
Trip Blank	Bromoform	3.33E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Bromomethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
Trip Blank	**Butanone[2-]**	**2.89E-03**	mg/kg	**Y**	J-	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[n-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[sec-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[tert-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Carbon Disulfide	1.67E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
Trip Blank	Carbon Tetrachloride	3.33E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
Trip Blank	Chlorobenzene	3.33E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
Trip Blank	Chlorodibromomethane	3.33E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Chloroethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
Trip Blank	Chloroform	3.33E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
Trip Blank	Chloromethane	3.33E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
Trip Blank	Chlorotoluene[2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Chlorotoluene[4-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dibromo-3-Chloropropane[1,2-]	5.00E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
Trip Blank	Dibromoethane[1,2-]	3.33E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
Trip Blank	Dibromomethane	3.33E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,4-]	3.33E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Dichlorodifluoromethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethane[1,1-]	3.33E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
Trip Blank	Dichloroethane[1,2-]	3.33E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[1,1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[cis-1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[trans-1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[1,2-]	3.33E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[2,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[1,1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[cis-1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[trans-1,3-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Ethylbenzene	3.33E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
Trip Blank	Hexanone[2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Iodomethane	1.67E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Isopropylbenzene	3.33E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
Trip Blank	Isopropyltoluene[4-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Methyl-2-pentanone[4-]	1.67E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
Trip Blank	Methylene Chloride	1.67E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
Trip Blank	Propylbenzene[1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Styrene	3.33E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
Trip Blank	Temperature	5.00E+00	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethane[1,1,1,2-]	3.33E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethane[1,1,2,2-]	3.33E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethene	3.33E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
Trip Blank	Toluene	3.33E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE

Table 1. TA-39-6 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.67E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
Trip Blank	Trichloroethane[1,1,1-]	3.33E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
Trip Blank	Trichloroethane[1,1,2-]	3.33E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
Trip Blank	Trichloroethene	3.33E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
Trip Blank	Trichlorofluoromethane	3.33E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Trichloropropane[1,2,3-]	3.33E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
Trip Blank	Trimethylbenzene[1,2,4-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Trimethylbenzene[1,3,5-]	3.33E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Vinyl Chloride	3.33E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
Trip Blank	Xylene[1,2-]	3.33E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
Trip Blank	Xylene[1,3-]+Xylene[1,4-]	6.67E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE

BOLD TEXT Constituent detected above the detection limit, but below the select soil screening limit

Highlighted “TRUE” value – constituent detected above either the selected soil screening level or above the background value

Supplement 4-7

Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk Screening Assessments

LA-UR-20-24479

OPEN DETONATION UNIT AT TECHNICAL AREA 36
HUMAN HEALTH AND ECOLOGICAL RISK-SCREENING ASSESSMENTS

June 15, 2020

EXECUTIVE SUMMARY

The area around the open detonation (OD) area Technical Area (TA) 36 (the TA-36 OD Unit) within the Los Alamos National Laboratory (LANL) was sampled as part of the application process for a Resource Conservation and Recovery Act (RCRA) permit to perform hazardous waste treatment operations. The TA-36 OD Unit is referred to as “the Unit” in the remainder of this risk assessment. Surface soil samples were collected in September 2018 and analyzed for inorganic and organic compounds. Data from these samples were used to conduct human health and ecological risk-screening assessments to determine whether hazardous contaminants from ongoing treatment operations are being released into the soil at levels that pose an unacceptable risk to human health or the environment.

For the human health risk-screening assessment, residential and industrial exposure scenarios were evaluated by comparing the maximum exposure point concentration for each analyte to the New Mexico Environment Department (NMED) soil screening levels (NMSSLs). The following conclusions are made:

- **Detected inorganics were compared to background values (BVs) and risk-based screening levels (i.e., the NMSSLs).** Eight detected inorganics exceeded background, although three of those were only 1.2 to 2 times higher than background. Only thallium exceeded risk-based screening levels (SLs).
- **Detected organics were compared to risk-based SLs.** There are no individual organic constituents that exceed SLs.
- **Screening Level Hazard Indices (HI) were calculated.** The sum of the screening level cancer risk ratios or the noncancer hazard quotients (HQs) is called a HI. The HIs based on a cancer endpoint for inorganics or organics do not exceed a value of one. This is not equivalent to cancer risk, but is an indicator of how the exposure point concentration (EPC) compares to the conservative screening levels. The noncancer HI for the hypothetical future resident is 3, and the HI for workers is less than 1. A statistically – based estimate of the EPC for thallium was below the screening level and no further evaluation for human health risk analysis was done.
- **The screening evaluation indicates that residents or workers are not at risk due to exposure to soils at the Unit.**

Potential risk to ecological receptors was evaluated by analyzing different lines of evidence that were weighed to draw a conclusion regarding potential for adverse ecological effects. This included:

- **Comparing maximum exposure point concentrations (EPC) to minimum no effect (NE) and low effect (LE) ecological screening levels (ESLs).** There were 10 analytes for which the maximum value exceeded NE ESLs, and eight analytes that exceeded LE ESLs. A total of 13 analytes had HQs greater than 0.3 for comparison of the maximum detected value to the NE ESL.
- **Comparing upper 95th percentile confidence limits (UCL95) as the EPC to minimum NE and LE ESLs.** There were five analytes for which the UCL95 EPC exceeded NE ESLs, and three that also exceeded LE ESLs.
- **Calculating HIs.** The HIs for NE ESL and LE ESL comparisons to the UCL95 as the EPC exceeded 1.
- **Application of site-specific area use factors.** The American robin, plants, and earthworms had HQs above 1 under the area use factor analysis. There were no analytes that exceeded LE ESLs once the areal extent of the Unit was taken into consideration in conjunction with typical home range for ecological receptors. The HIs for plants and earthworms were 6 and 20 respectively for NE ESLs, and 2 for earthworms for LE ESLs. The HIs for robins feeding as omnivores or insectivores for comparison to NE ESLs were 2 and 3, respectively. Plants and earthworms are

not expected to occur in the Unit due to intended use and bare ground, and robins are not expected to feed on a daily basis totally within the Unit due to lack of food and cover, as well as human disturbance due to intended use.

- **Avian and mammalian population information does not indicate that birds or mammals are adversely affected**.
- **The ecological risk assessment concludes that there is likely no risk to ecological receptors at the Unit.**

Table of Contents

List of Tables

List of Figures

Acronyms and Abbreviations

AUF	Area Use Factor
BMP	Best Management Practice
BV	Background Value
COPC	Contaminant of Potential Concern
COPEC	Contaminant of Potential Ecological Concern
CSEM	Conceptual Site Exposure Model
EPC	Exposure Point Concentration
ERA	Ecological Risk Assessment
ESL	Ecological Screening Level
HHRA	Human Health Risk Assessment
HI	Hazard Index
HMX	Cyclotetramethylene-tetranitramine
HQ	Hazard Quotient
HR	Home Range
LANL	Los Alamos National Laboratory
LD50	Lethal Dose for Half of the Population
LE	Low Effect
LOAEL	Lowest Observed Adverse Effect Level
MDL	Method Detection Limit
NE	No Effect
NMED	New Mexico Environment Department
NMSSL	New Mexico Soil Screening Levels
NOAEL	No Observed Adverse Effect Level
OD	Open Detonation
PAUF	Population Area Use Factor
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RSL	Regional Screening Level
SD	Standard Deviation
SF	Cancer Slope Factor
SL	Screening Level
TA	Technical Area
TATB	2,4,6-Triamino-1,3,5-trinitrobenzene
TECi	Toxicity Equivalent Concentration for congener ***i***
TEF	Toxicity Equivalency Factor
TEQ	Toxicity Equivalent Quotient
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
UCL95	95% Upper Confidence Limit of The Mean
WHO	World Health Organization

1. INTRODUCTION

The area around the open detonation (OD) area at Technical Area (TA) 36 (the TA-36 OD Unit) within the Los Alamos National Laboratory (LANL) was sampled as part of the application process for a Resource Conservation and Recovery Act (RCRA) permit to perform hazardous waste treatment operations. The TA-36 OD Unit is referred to as "the Unit" in the remainder of this risk assessment.

The Unit is a hazardous waste management unit located in the southern portion of LANL (Figure 1-1), near Building 8. The unit was established in 1959 for the testing of explosives materials and has been used for open detonation of high explosives debris potentially contaminated with depleted uranium and other metals. The Unit consists of a relatively flat area that measures approximately 1.44 acres. All waste treatment detonations are conducted above ground with the use of a predetermined amount of explosive to initiate and increase the effectiveness of the treatment. Waste treatment shots are assembled in a manner to ensure complete detonation of the waste with minimized fragmentation dispersal. There are several firing sites and support buildings. The firing pit is bounded on the east, south, and west sides by storm water best management practices (BMPs) consisting of earth berms that have been hydroseeded and mulched.

One surface soil sampling event of the top 2 inches of soil at 15 discrete locations (Figure 1-1) was conducted in and around the Unit on September 19, 2018. Sample collection included soil both in and out of potential run-off areas; however, sample collection did not include rocks, debris, or vegetation. Data from these samples were used to conduct human health and ecological risk-screening assessments to determine whether hazardous contaminants from ongoing treatment operations are being released to soil at levels that pose an unacceptable risk to human health or the environment.

The results of the risk assessments are presented in the following sections.

2. HUMAN HEALTH RISK ASSESSMENT

2.1. CONCEPTUAL SITE MODEL

The primary land use is industrial because only authorized Laboratory workers currently have access to the area around the Unit. Laboratory workers are the primary human receptors, and the industrial scenario is the defining scenario for the human health risk-screening assessment (i.e., the scenario on which decisions are based). Because the site is located within the boundaries of an operational facility (i.e., TA-36), the reasonably foreseeable future land use will continue to be industrial. A Hypothetical Future Residential exposure is also assessed and provided for comparison purposes.

The release of contaminants from open detonation operations has potentially occurred for many years. Releases are transported primarily by wind, which rapidly disperses the material in ambient air. Most material is likely deposited close to the source(s), and concentrations are expected to decrease with distance from the source. Exposure to a site worker may occur through various surface soil contact pathways. Potential exposure pathways are:

- Incidental ingestion of surface soil
- Inhalation of fugitive dust or volatiles emanating from surface soil
- Dermal contact with surface soil

2.2. IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

2.2.1. Sampling and Data Analysis

Fifteen surface soil samples and one duplicate were collected September 19, 2018. Surface soil samples were collected as grab samples (independent, discrete samples) from a depth of 0 to 2 inches below ground surface. The duplicate pair was sample 1 and 1 dup (WST36-18-162834 and WST36-18-162985). Each sample set was analyzed for the following:

- Volatile Organic Compounds (VOCs)
- Semi-Volatile Organic Compounds (SVOCs)
- Total Metals
- Dioxins/Furans
- Perchlorates
- High Explosives

A staged approach was used for the risk assessment. Duplicates were handled consistent with the New Mexico Environment Department (NMED) guidance (NMED 2019) which states that in the initial screening assessment the maximum, and not the average, of the duplicate pair must be used. The approach for the human health (HHRA) risk assessment was as follows:

- An attribution analysis (NMED 2019) was conducted by comparing the inorganic site data to background values (BVs). Analytes less than BVs were eliminated from further evaluation.
- The screening approach then used the maximum of all detected data, including the duplicate pair, for the initial screening evaluation. The maximum concentration of each analyte was divided by its screening level (SL). For the HHRA, this meant using two SLs based on toxicity endpoints, (i.e., a cancer and noncancer SL were used to obtain a cancer ratio and non-cancer hazard quotient (HQ)).
- All analytes that exceeded the initial SLs were considered to have "failed" the initial screen. These are considered to be contaminants of potential concern (COPCs).
- A refinement of the exposure point concentrations (EPCs) was performed. Duplicates were averaged prior to calculating an upper 95th percent confidence limit on the mean (UCL95). The UCL95 concentrations were compared to SLs, and any analytes above the SLs were evaluated further if necessary.

Figure 1-1 shows the current sampling locations from which data were obtained for use in the risk assessment.

2.2.2. Evaluation of Inorganic Analytes

Inorganic analytes are first compared to BVs established for the site (LANL 1998). No further evaluation is necessary for analytes for which the maximum is less than the BV, and these data are not compared to risk-based SLs. For analytes for which the maximum exceeded the BV but did not exceed risk-based SLs known as the New Mexico Soil Screening Levels (NMSSLs) (NMED 2019), no further evaluation is necessary. If the maximum exceeded the BV and one or more risk-based SLs as indicated by a ratio of the maximum to the SL being > 1, a UCL95 was calculated with the USEPA ProUCL 5.1.002 software (EPA 2015). This UCL95 was then compared to the SLs. The toxicity of the various constituents analyzed in this investigation is incorporated into the screening levels.

Where an NMSSL was not available, the USEPA Regional Screening Level (RSL) was used. If an RSL was also not available, a suitable surrogate is proposed if toxicity and physicochemical data are sufficient to allow identifying a suitable surrogate. The following inorganic analytes required surrogates:

- Calcium, sodium, potassium, magnesium – these are macronutrients, so unless concentrations exceed background they are not evaluated for toxicity. SLs for these are lacking.
- Chromium (Cr) – the toxicity values based on NMED CrIII were used since NMED has no SLs specifically for total Cr, and the site is unlikely to have significant CrVI because CrIII is more stable in the environment that CrVI, and CrVI is most often associated with industrial processes (ATSDR 2012).
- Mercury – the toxicity values for NMED mercuric salts was used for the SL as this is the form expected in arid soils
- Lead – the EPA toxicity values of 400 mg/kg for residents and 800 mg/kg for workers were applied for lead.

All reporting limits were adequate for nondetected inorganics as indicated by ratios of the maximum reporting limit to minimum screening level being 1 or less. There were no rejected (R-qualified) inorganic data in the dataset.

2.2.3. Evaluation of Organic Analytes

Twelve soil samples and one duplicate were collected for analysis of organics, but some organic analytes were evaluated by more than one method, resulting in an apparently higher sample count (i.e., 2,4- and 2,6- dinitrotoluene, dichlorobenzenes). The maximum concentration regardless of the method was used as the EPC.

Organic analytes are not compared to background values as a matter of standard practice, although there are naturally occurring sources of organic constituents. Organics are compared to risk-based SLs. Where a SL was not available, a suitable surrogate is proposed. Surrogates were obtained for the following analytes:

- Acenapthylene – there are no NMSSLs or RSLs for this chemical. The NMSSL for naphthalene was used as a surrogate.
- Benzoic Acid – there are no NMSSLs. The EPA RSLs were used to represent noncancer health effects.
- Benzyl Alcohol– there are no NMSSLs. The EPA RSLs were used to represent noncancer health effects.
- Butylbenzylphthalate – there are no NMSSLs and the EPA RSLs were used to represent cancer and noncancer health effects. The RSL was adjusted to a 10^{-5} cancer risk level consistent with NMED practice.
- 2,4,6-triamino-1,3,5- trinitrobenzene (TATB) – there is no NMSSL or RSL for TATB. RSLs for 1,3,5-trinitrobenzene were used as a surrogate because of structural similarity.
- 1,2 and 1,4 Xylene [m,p-xylenes] - the toxicity values for m-xylene (1,3-xylene) were used as the basis of the screening levels as it is just slightly more conservative than using values for p-xylene (1,4-xylene).

Reporting limits were adequate for all analytes with the exception of nitrosodimethylamine[N-], for which the reporting limit to residential SL ratio was 4. This analyte was not detected in any of the samples, and all reporting limits were similar and exceeded the screening level. It is subject to photodecomposition, and degrades with heat or biological processes (EPA 2014). Therefore, it is not expected to be stable in the environment and is not expected to occur at the Unit. This chemical is not considered further. There were no rejected (R-qualified) inorganic data in the dataset.

2.3. Exposure Point Concentrations

A phased approach was used to establish the EPCs. First the maximum detected value for each analyte was used as the EPC and was compared to a screening level. Analytes for which the maximum value was less than the lowest screening level are not evaluated further. If the maximum EPC exceeded screening levels, evaluation was continued with the UCL95 used as the EPC for the comparison. If there were too few detected concentrations reported to allow calculation of a UCL95 (i.e., number of detects <6), the median of all the data for the analyte including the detected concentrations and the method detection limits (MDLs) was used. All non-rejected data were used to calculate the UCL95 for the risk-screening assessments, if appropriate.

Guidance from NMED was used to evaluate concentrations with the potential toxicity of the dioxin/furans. This guidance relies on the 2005 World Health Organization (WHO) toxicity equivalency factors (TEF) (Van den berg et al. 2006) approach. The TEFs are multiplied by the measured concentration to obtain a congener-specific product called the toxicity equivalent concentration (TECi), and the product for each (TECi) is summed for each sample location. This sum is referred to as the toxicity equivalent quotient (TEQ). The TEQ is divided by the NMED screening level for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) to obtain a risk ratio.

2.4. Screening Evaluation

The following sections present the human health risk-screening assessments for the Unit. The EPCs are presented in Table 2-1.

The EPC for each detected analyte was divided by the industrial and residential soil SLs to obtain a hazard quotient (HQ), and the hazard index (HI) was calculated by summing the HQs (NMED 2019). The chemical SLs used in the evaluations were obtained from current NMED guidance (NMED 2019) or the most recent EPA regional screening levels (RSLs) (EPA 2019) if an NMED value was not available. The cancer-based EPA RSLs were multiplied by 10 to adjust them to a cancer risk level of $1\text{x}10^{-5}$, consistent with the NMSSLs. The NMSSLs for carcinogens are equivalent to a 1×10^{-5} cancer risk, and for noncarcinogens the NMSSLs correlate to a ratio or HQ of 1. The EPC was compared to the carcinogenic and noncarcinogenic SL for residents and industrial workers, and the hazard index (HI) was calculated by summing the HQs (NMED 2019). Any detected organic analytes that exceeded the SLs were considered COPCs. Any inorganic analytes that exceeded both background and the SL were also considered COPCs.

2.4.1. Background Data

The background data used in this evaluation were obtained from LANL “Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory,” Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico, September 1998. The background data are used in the RCRA corrective action process to distinguish between contaminated and uncontaminated media and have been accepted by NMED. As stated in LANL (1998) on page 4, section 3.1.1,

> Twenty-one soil profiles distributed across the Pajarito Plateau were described in the field and were sampled for inorganic chemical analyses. These samples provide information about the varied soils

and geomorphic settings that occur on the Pajarito Plateau, allowing for an evaluation of the variability in soil characteristics and chemistry within several of the soil series previously described by Nyhan et al. (1978, 05702). Most sampled soils were collected from mesa tops. Other geomorphic settings sampled include hillslopes and canyon bottoms.

The locations sampled as part of the background study were not impacted by deposition from the historical operation of the OD units or other firing sites. Benchmarks termed BVs were obtained from this document to use in comparison to site data.

2.4.2. **Data Analysis**

Table 2-1 presents summary statistics for the September 2018 surface soil samples. There were 15 samples included in this data set collected in September 2018. However, including data from duplicate pair for grid point 1, and including analysis by different methods for certain analytes, results in an increased apparent sample size above 15 for some analytes (Table 2-1). Maximum concentrations in the soil samples analyzed for inorganics were compared to the established soil BVs (LANL 1998) (Table 2-1).

Inorganics

For detected inorganic analytes, the maximum detected reported result was used as the initial EPC (Table 2-1). Background values for the site are from the 1998 background report (LANL 1998), and soil screening levels are NMSSLs (Table 2-2). The maximum concentration for the following detected inorganics exceeded BVs:

- Chromium
- Copper
- Mercury
- Silver
- Thallium

There were three other detected inorganics that were approximately equivalent or just slightly higher than BVs. These were as follows:

- Cadmium – 1.2 times above background
- Lead – 1.6 times above background
- Zinc – 1.1 times above background

All other inorganics were equal to or lower than BVs. A BV for perchlorate was not available.

Only thallium exceeded the residential NMSSLs (NMED 2019) based on a noncancer toxicity endpoint. Thallium did not exceed the worker NMSSL.

The sum of the screening level risk ratios is termed a Hazard Index (HI), which were calculated for inorganics and organics separately. The cancer-based sum of the screening level HQs for maximum detected soil concentrations of inorganics above background was 5E-06 for residents, and 1E-06 for workers (Table 2-2). This is not a cancer risk estimate in terms of cancer probability, but an indication of how soil concentrations compare to screening levels. The noncancer-based sum of the screening level HQs for maximum detected soil concentrations of inorganics above background was 3 for residents, and 0.2 for workers.

Organics

Numerous organics were detected in the surface soil samples (Table 2-1). These include energetics or explosives (e.g., HMX [cyclotetramethylene-tetranitramine] and TATB). SVOCs including fluoranthene and pyrene were detected. Phthalates (e.g., butylbenzyl- and di-n-butylphthalate) were also detected (Table 2-1), as were some dioxin/furan congeners.

No individual constituents exceeded NMSSLs (NMED 2019). The HI for the evaluation of maximum detected soil concentrations of organics for cancer-based health effects was 0.1 for residents, and 0.02 for workers (Table 2-2). The noncancer-based HI for maximum detected soil concentrations of organics was 0.03 for residents, and 0.002 for workers.

Dioxin/Furans

The dioxin/furans are organics but are evaluated in the analysis differently than other organics. Dioxins/furans were detected in the surface soil samples (Table 2-1). The evaluation of the dioxin/furans is summarized in Table 2-3. The measured detected concentration or the MDL for nondetects is shown for each congener in each sample. The detection status is indicated by a zero for nondetect, and a 1 for a detected value. The TEFs are shown for each congener, and multiplying the TEF by the concentration produces the TECi. Summing the TECi yields the TEQ. Dividing the TEQ for each sample by the residential or industrial SL also shown in Table 2-3 produces a ratio which for all samples was 1 or less. Therefore, the dioxins and furans do not exceed risk-based SLs.

Data Analysis Conclusions

The initial risk analysis for all inorganic and organic analytes was based on comparison of the maximum detected value as the EPC. Thallium is the only individual constituent that exceeded SLs. The noncancer HI exceeded a value of one. Thallium was carried forward for further evaluation with a UCL95 as described in Section 2.4.3.

2.4.3. **Additional Data Analysis**

The UCL95 for thallium cannot be calculated due to low detection frequency (n=3); and therefore the value used as the EPC was 0.137 mg/kg. This is based on the median of all detected data and the MDLs to reflect an estimate of the concentration throughout the area. The median value was used as the EPC since a UCL95 cannot be reliably calculated. There are no cancer-based toxicity values for thallium. The EPC was therefore compared only to the noncancer NMSSLs for thallium. The HQ for the hypothetical future resident is less than 1, indicating that there is unlikely any excess noncancer hazard for hypothetical future residents potentially exposed to thallium. The worker ratio was even lower at 0.01. The highest concentration (2.22 mg/kg) was at point 12 (WST36-18-162995), and all other concentrations or MDLs were about an order of magnitude lower. The mean of 0.286 mg/kg for thallium would produce an HQ of 0.4 for residential use and an HQ of 0.02 for industrial use. Thallium is not widespread throughout the exposure area, and potential hazard is minimal.

HHRA	EPC (mg/kg)	EPC Type	Residential Noncancer SSL	Residential HQ	Worker Noncancer SSL	HQ
Thallium	0.137	Median all data	7.8E-01	0.2	1.3E+01	0.01

2.5. Uncertainty Analysis

The human health risk assessment has inherent uncertainties associated with data and data evaluation, exposure assessment, and the toxicity values on which the SLs are based. Each or all of these uncertainties may affect the assessment results, biasing the risk assessment results high or low.

2.5.1. Data and Data Analysis

Uncertainties in the data or its analysis may include errors in sampling, laboratory analysis, and data analysis. Data evaluation uncertainties are expected to have little effect on the assessment results because the data have undergone validation to minimize errors, and any errors are not expected to bias the results high or low. The J-flagged (estimated) qualification of detected concentrations of some organic COPCs does not affect the assessment. The data represent deposition from more than 60 years of operation into 2019. Therefore, the data and subsequently the screening assessment results represent current baseline conditions.

The use of a judgemental sampling design biases the risk results high since samples were targeted to locations where contamination was most likely to occur or known to occur from past sampling events.

The use of the maximum or a UCL95 as the COPC EPC for each COPC is also expected to bias risk estimates high, erring towards being conservative. Use of the maximum as the EPC overestimates exposure, as by definition all other concentrations are below this value. Use of the UCL95 may also result in an overestimation of risk since by definition true mean values are nearly always going to be less than this value.

2.5.2. Exposure Assessment

The exposure assessment assumptions bias the risk results high (i.e., overestimate risk). Assumptions for the industrial SLs are that the potentially exposed individual is a Laboratory worker who is outside at the site for 8 hours per day for 225 days per year (NMED 2019), and who spends the entire 8 hours on-site within the contaminated area. Assumptions for the residential SLs are that the potentially exposed individual is a resident who is present 24 hours per day for 350 days per year (NMED 2019) and spends the entire 24 hours on-site within the contaminated area. Because it is unlikely the worker or resident would be within the contaminated area for the entire time, the screening assessments overestimate the exposure. As a result, risks may be overestimated.

Assumptions underlying the exposure parameters, routes of exposure, and intake rates for routes of exposure are consistent with NMED parameters and default values (NMED 2019). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that overestimate the reasonably expected risk levels.

2.5.3. Toxicity Values

The primary uncertainty associated with the screening values is related to the derivation of toxicity values used in their calculation. Toxicity values (slope factors [SFs] and reference doses [RfDs]) were used to derive the risk-based screening values used in the screening evaluation (NMED 2019). Uncertainties were identified in four areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) variability between individuals in the human population, (3) the derivation of RfDs and SFs, and (4) the chemical form of the COPC.

The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist between animals and humans in chemical absorption, metabolism, excretion, and toxic responses. Differences in body weight, surface area, and pharmacokinetic relationships between animals and humans are taken into account to address these uncertainties in the dose-response relationship. However, conservatism is usually incorporated in each of these steps, potentially biasing the estimate high and resulting in the overestimation of potential risk.

For noncarcinogenic effects, the degree of variability in human physical characteristics is important both in determining the risks that can be expected at low exposures and in defining the no observed adverse effect level (NOAEL). The NOAEL uncertainty factor approach incorporates a 10-fold factor to reflect individual variability within the human population that can contribute to uncertainty in the risk assessment. This factor of 10 is generally considered to result in a conservative estimate of risk for noncarcinogenic COPCs.

The RfDs and SFs for different chemicals are derived from experiments conducted by different laboratories that may have different accuracy and precision that could lead to an over- or underestimation of risk. The uncertainty associated with the toxicity factors for noncarcinogens is measured by the uncertainty factor, the modifying factor, and the confidence level. For carcinogens, the weight of evidence classification indicates the likelihood that a contaminant is a human carcinogen.

COPCs may be bound to the environmental matrix and not be available for absorption into the human body following ingestion. However, the exposure scenarios typically default to the assumption that the COPCs are bioavailable. This assumption can lead to an overestimation of the total exposure and overestimate risk.

2.5.4. **Additive Approach**

For noncarcinogens, the effects of exposure to multiple chemicals are generally unknown and possible interactions could be synergistic or antagonistic, resulting in either an underestimation or overestimation of the potential risk by assuming additivity. Additionally, RfDs used in the risk calculations typically are not based on the same endpoints with respect to severity, effects, or target organs. Therefore, the potential for noncarcinogenic effects may be overestimated by the HI considering individual COPCs act by different mechanisms and on different target organs but are addressed additively. Cancer risks are typically assumed to be additive.

2.6. CONCLUSIONS

Inorganics were compared to BVs and risk-based SLs. Eight inorganics exceeded background to some extent. One inorganic exceeded risk-based SLs. The cancer and noncancer screening level HIs for inorganics for workers were less than 1, and for hypothetical residents the cancer HI was less than 1, and the noncancer HI was 3 due to thallium. Additional evaluation using a statistically based EPC indicated thallium would not exceed the noncancer NMSSL for residential use.

Organics were compared to risk-based SLs. There were numerous organics detected, including some energetics, some SVOCs, and dioxin/furans. However, maximum concentrations of all of the detected analytes were below SLs for all constituents. None of the TEQs for dioxin/furans exceeded the TCDD SL. The Unit does not present an elevated cancer risk or noncancer hazard to human health due to exposure to surficial soils. The following interpretation can be made from the analysis:

- Based on an industrial scenario, inorganics above background, and maximum detected concentrations for each analyte, the noncancer (0.2) and cancer-based (0.000001) HIs are less than the NMED target level of 1. This means that the sum of the ratios for maximum concentrations divided by SLs correlate to a cancer risk less than $1x10^{-5}$ and a noncancer hazard less than 1.
- For the residential scenario, inorganics above background, and maximum detected concentrations for each analyte, the noncancer HI (3) exceeds the NMED target level of 1. The cancer HI of 0.000005 is below the NMED target level of 1.
- The median value of 0.137 mg/kg for thallium representing exposure throughout the exposure area produced an HQ of 0.2 for residential use and 0.01 for industrial use. The mean of 0.286 mg/kg for thallium would produce an HQ of 0.4 for residential use and an HQ of 0.02 for industrial use.
- The concentration of each dioxin/furan congener was summed to obtain a TEQ which was compared to the NMED NMSSL for TCDD. The maximum ratio was 0.04 for residential use and 0.0002 for industrial use.
- Summing the maximum dioxin/furan ratio with the other cancer risk HIs provides an HI for residential use of 0.2 and an HI for industrial use of 0.02.
- The maximum lead concentration of 35.2 mg/kg at TA-36 is just slightly above the background value of 22.3 mg/kg, and is much less than the residential SSL (400 mg/kg).
- There are no elevated human health risks for exposure to soils based on this evaluation.

3. ECOLOGICAL RISK ASSESSMENT

3.1. INTRODUCTION

The ecological risk assessment (ERA) for the Unit is presented in the following sections. The ecological risk-screening evaluation identifies chemicals of potential ecological concern (COPECs) and is based on the comparison of EPCs with Ecological Screening Levels (ESLs) in accordance with Laboratory guidance (LANL 2012a) and NMED (2017) guidance.

Site information including ESLs, biological studies, and historical information were reviewed and a site visit was conducted. A preliminary conceptual site exposure model (CSEM) was prepared.

The ESLs obtained from the ECORISK Database, Version 4.1 (LANL 2017; LANL 2019) are presented in Table 3-1. The ESLs are based on toxicity data for laboratory species similar to those expected to occur at the site, and are derived from experimentally determined NOAELs, lowest observed adverse effect levels (LOAELs), or doses determined to be lethal to 50% of the test population (LD50). Information relevant to the calculation of ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values, are presented in the ECORISK Database, Versions 2.0, 3.1, and 4.1 (LANL 2003; LANL 2012b; LANL 2017).

The screening evaluation is conducted by dividing the EPCs by the ESLs to obtain a HQ calculated for each COPEC and screening receptor. As a generalization, the higher the contaminant levels relative to the ESLs, the higher the potential risk to receptors; conversely, the higher the ESLs relative to the contaminant levels, the lower the potential risk to receptors. The analysis begins with a comparison of the minimum ESL for each COPEC to the EPC. HQs greater than 0.3 are used to identify COPECs requiring additional evaluation (LANL 2012a).

Individual HQs for a receptor are summed to derive a HI. An HI greater than 1 indicates that further assessment may be needed to ensure exposure to multiple COPECs at a site will not lead to potential adverse impacts to a given receptor population. The HQ and HI analysis is a conservative indication of potential adverse effects and is designed to minimize the potential of overlooking possible COPECs at the site.

3.2. Problem Formulation and Conceptual Site Exposure Model

The Unit is a terrestrial ecosystem. The area is disturbed with little to no vegetation present. Vegetation increases with distance from the OD area and consists of grasses and shrubs. There are likely terrestrial birds and small mammals including deer mice or ground squirrels using the area, although intermittently due to the lack of food or cover. There is not enough vegetation within the 1.44-acre Unit to support large herbivores.

Due to the site history, there is the potential for energetic compounds or their breakdown products to be present in surface soils, where terrestrial animals and plants may contact surface soils and potentially be exposed. This possibility led to the collection of data and ecological risk assessment.

3.2.1. Data Summary

Soil samples used in this analysis were collected in September 2018. Surface soil samples were collected as grab samples (independent, discrete samples) from a depth of 0 - 2 inches below ground surface. Each sample set was analyzed for the following:

- VOCs –15 samples and one duplicate
- SVOCs –15 samples and one duplicate
- Total Metals –15 samples and one duplicate
- Dioxins/Furans –15 samples and one duplicate
- High Explosives –15 samples and one duplicate

In addition, two samples were resampled for SVOCs, and some organics were analyzed by more than one method, resulting in an apparently higher sample count (i.e., 2,4 and 2,6 dinitrotoluene, nitrobenzene, dinitrobenzenes). Figure 1-1 shows a map of the site including the current sampling locations from which data were obtained for use in the risk assessment, and habitat in the immediate site vicinity is also shown in Figure 1-1.

3.2.2. Site Visit Summary

A site visit was conducted in March 2019. The area is disturbed by human activity with buildings, roads, and maintained cleared areas to minimize fire danger. The vicinity around the Unit is a terrestrial ecosystem, although within the Unit it is largely bare ground (Figure 1-1). There are likely terrestrial birds and small mammals including deer mice or ground squirrels using the area; however, there is not enough vegetation within the Unit to support birds or mammals or their prey items.

3.2.3. Receptors and Pathways

Exposure pathways are considered complete if all of the following components are present (US EPA, 1989; NMED, 2017):

•A source and mechanism for hazardous waste/constituent release into the environment;

•An environmental transport medium or mechanism;

- •A point of contact directly between the receptor and site-related contaminated media, or indirectly via dietary ingestion of prey or forage items contaminated by contact with site related contaminants; and
- •An exposure route leading to interaction of the contaminant with target organs within the receptor.

If any of the above components are missing from the exposure pathway, it is not a complete pathway for the site.

A CSEM was developed for the site (Figure 3-1). The primary contaminant source is the testing of explosives and detonation of explosives debris at the site. Any uncombusted material, if present, could remain in soil or be released to air as fugitive dust. Materials in surface soil could be carried by overland flow or percolate into the subsurface with rain, whereas material in air could be transported by wind. Receptors could contact contaminants within the immediate site area, up to the site boundary, or slightly beyond. The use of stormwater BMPs and earthern berms reduces the potential for migration beyond the Unit.

Ingestion of soil, plants, or animals are all potential exposure routes to ecological receptors. Although inhalation is recognized to occur, it is typically considered insignificant relative to ingestion and only quantified for burrowing animals where volatile organics are present in the subsurface. Respirable dust particles are likely ingested rather than inhaled by ecological receptors, and this pathway is considered negligible (EPA 1997; EPA 2003), while non-respirable dust is ingested and accounted for in incidental soil ingestion values for wildlife species (EPA 1993; EPA 2003). Therefore, the exposure pathways considered in the development of the ecological screening levels (ESLs) used in the risk-screening assessment capture the primary exposure for wildlife receptors.

Terrestrial flora (i.e., plants) and fauna (e.g., invertebrates, birds, and mammals) are the general categories of ecological receptors that could be exposed. The primary ecological exposure pathways are based on direct or indirect contact with surface soils. These include root uptake, incidental ingestion of soil, and biotic uptake leading to food-web transport. Exposure of plants and soil invertebrates is not related to dietary pathways but is the result of direct contact with, and uptake from, the surrounding medium. For terrestrial wildlife, most exposure is considered to be through the oral pathway from the diet and incidental soil ingestion (Sample et al. 1998). The dermal contact and inhalation pathways are not typically assessed quantitatively in ecological risk assessments, based on guidance indicating the ingestion route is most important to terrestrial animals (EPA 1997; EPA 2003). Dermal exposure to wildlife is mitigated by the fur or feathers covering the bodies of most vertebrates and the incidental soil consumption during grooming is included in the direct soil ingestion estimates.

3.2.4. Technical Decision Point and Recommendations

Because of the ecological habitat near the Unit boundaries, and because of the potential for exposure, the data were used to perform a quantitative screening level ecological evaluation.

3.3. Ecological Screening Evaluation

The summary statistics for the data were presented in Table 2-1. Maximum detected concentrations of each analyte are used as the initial EPC. The EPCs and the screening results for the ecological screening assessment are presented in Table 3-1. Any analytes for which the measured maximum detected value exceeded the minimum SL were considered COPECs and were evaluated further by calculating UCL95s and comparing the UCL95s to the SLs. The initial ESLs were the minimum no effect (NE) and low effect (LE) SLs in the 2019 LANL database for each of the analytes. The approach used to evaluate the data for ecological risk was as follows:

- An attribution analysis (NMED 2019) was conducted by comparing the inorganic site data to BVs. Analytes less than BVs were eliminated from further evaluation.
- The screening approach then used the maximum of all detected data, including the duplicate pair, for the initial screening evaluation. The maximum concentration of each analyte was divided by its SL. For the ERA, the minimum no effect and low effect ESL was used.
- All analytes that exceeded the initial SLs were considered to have "failed" the initial screen. These are considered to be COPCs.
- A refinement of the EPCs was performed. Duplicates were averaged prior to calculating a UCL95. The UCL95 concentrations were compared to SLs, and any analytes above the SLs would be evaluated further if necessary.

3.3.1. **Inorganics**

There are five inorganics that exceed site BVs by a factor of 2 or more, and three that are less than a factor of 2 above background. The maximum concentration of each of these was compared to the minimum no effect (NE) ESL, if one was available, to determine if the resulting HQ >0.3. Some of these analytes also exceeded the low effect (LE) ESL to produce an HQ >0.3. The analytes that exceed ecological SLs are as follows (Table 3-1):

- Cadmium– exceeds NE ESLs for ratio > 0.3; 1.2 times higher than BV
- Chromium – exceeds NE ESLs for ratio > 0.3; 2.5 times higher than BV
- Copper – exceeds NE and LE ESLs for ratio > 0.3; 41 times higher than BV
- Lead– exceeds NE and LE ESLs for ratio > 0.3; 1.6 times higher than BV
- Mercury– exceeds NE and LE ESLs for ratio > 0.3; 7.8 times higher than BV
- Silver– exceeds NE ESLs for ratio > 0.3; 2 times higher than BV
- Thallium– exceeds NE and LE ESLs for ratio > 0.3; 3 times higher than BV
- Zinc – exceeds NE ESL for ratio >0.3, 1.1 times higher than BV

If an inorganic analyte maximum exceeded the BV and the ratio of the maximum to the risk-based SL was greater than 0.3, a UCL95 was calculated with the USEPA ProUCL 5.1.002 software (EPA 2015). This UCL95 was then compared to the SLs found in Table 3-2 consistent with the NMED (2017) Tier II approach. Note that comparison to the UCL95s was made prior to incorporating area use factors (AUFs) into the analysis. Receptor-specific dietary composition is built into the receptor-specific ESLs. The concentrations for each of the samples in the duplicate pair 1 and 1 dup (Figure 1-1) were averaged and the UCL95 calculated with a sample size of 15.

UCL95 values for copper and mercury exceeded the NE ESL and LE ESL with UCL95/ESL ratios above 1 (Table 3-2). The median for thallium exceeded NE ESLs. The UCL95s for the other inorganics were below the minimum NE and LE ESL. This suggests some limited potential for adverse ecological effects at the Unit, and therefore these COPECs are evaluated in more detail in the uncertainty analysis in Section 3.4.8.

3.3.2. **Dioxin and Furans**

Dioxins and furans are evaluated in a multi-step process that takes the concentration of each congener and multiplies it by a TEF for mammals or birds (Table 3-3). The resulting TECi values are summed to obtain a TEQ. The TEQ is divided by the lowest mammalian and avian SL for species that could occur on the Site. Due to lack of its preferred riparian habitat and lack of dense cover, the montane shrew (*Sorex monticolus*) is not expected to occur, and the next lowest ESL for TCDD for mammals is used in this analysis. The mammalian NE ESL and LE ESL for TCDD used in this risk assessment are based on potential toxicity to the deer mouse (*Peromyscus maniculatus*). The avian NE ESL is from the ECORISK Database, Version 2.0 (LANL 2003) as reported in "Attachment H, Technical Area 16 Burn Ground Human Health and Ecological Risk-Screening Assessments (LA-UR-13-24177), Class 3 Permit Modification Request for Addition of an Open Burning Unit at Technical Area (TA) 16 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM0890010515. September 30, 2013. Refer To: WM-D0-13-0064, LAUR: 13-27579."

Dioxin and furans were detected in multiple samples in the September 2018 data set. The TEFs for birds and mammals were applied to calculate a TEQ for each sample. Four of 15 samples had TEQs that exceeded the NE ESL for TCDD for mammals (Table 3-4) resulting in a HQ >0.3, and one sample exceeded the LE ESL. None of the samples exceeded the NE ESL for birds (Table 3-5) when evaluated individually.

The potential for risk to mammalian species was then investigated further. A UCL95 based on the sample-specific data for each congener was calculated with ProUCL (EPA 2015) using both the detected and nondetected data, then multiplying each congener-specific UCL95 by the congener-specific TEFs and summing the products to obtain a TEQ (Table 3-6).Since this TEQ is the sum of UCLs, it is expected to be highly conservative. When the UCL95 was divided by the NE ESL for TCDD for mammals, the resulting ratio or HQ was one, as shown below:

Mammal		
UCL TEQ (mg/kg)	**NE ESL (mg/kg)**	**NE HQ[1]**
7.34E-07	5.8E-07	1

[1] *– the NE HQ is the ratio of the UCL TEQ/NE ESL*

The dioxin/furans do not present a potential risk to mammals or birds and are not further evaluated.

3.3.3. **Other Organics**

- Xylenes – the toxicity values for total xylenes were used to represent each of the individual fractions.

Maximum concentrations of five other organics exceeded the minimum ecological screening levels. These were benzoic acid, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, RDX, and TATB. UCL95 values were calculated and compared to the minimum NE ESLs and LE ESLs (Table 3-2).

There were only two detections of benzoic acid, and four detections of di-n-butylphthalate. The low detection frequency for these two constituents means that a robust UCL95 cannot be calculated. Therefore, a median of the detected concentrations and the reported detection limit values was calculated and used as the estimate of the EPC. This approach is consistent with ProUCL guidance (EPA 2015) that recommends use of alternative statistics when detection frequency is low.

UCL95 or median values for bis(2-ethylhexyl)phthalate and TATB exceeded the minimum NE ESLs, and bis(2-ethylhexyl)phthalate also exceeded the LE ESLs (Table 3-2). These two organics are further evaluated in the risk analysis in Section 3.4.8.

3.4. Uncertainty Analysis

3.4.1. Chemical Form

Inorganic analytes can speciate into different forms with varying degrees of toxicity. The assumptions used in the ESL derivations are conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. These factors tend to result in conservative ESL estimates, which may lead to an overestimation of the potential risk. Toxicological data are typically based on the most toxic and bioavailable chemical species, which may or may not be found in the environment. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2012a), and the values are biased toward overestimating the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation. COPECs are generally not 100% bioavailable to receptors in the natural environment because of interference from other natural processes, such as the adsorption of chemical constituents to matrix surfaces (e.g., soil) or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes.

3.4.2. Reporting Limits

The evaluation was focused on detected values. Reporting limits were adequate (i.e., below SLs) for all analytes with one exception, indicating that the data were adequate for use in the risk assessment:

Dinitrobenzene[1,3-]–

- This analyte was not detected in any sample. Reporting limits were less than the non-cancer based NMSSL for residents or workers.
- The reporting limits were two times higher than the minimum NE ESL.
- Reporting limits were below the minimum LE ESL.
- This analyte is not considered further. This is not expected to bias the risk assessment results high or low.

3.4.3. Exposure and Risk Estimates

Exposure parameters including the EPC and the intakes likely bias risk estimates high because they presume no movement of receptors in and out of source areas. Sampling focused on areas of known or expected contamination, which biases the EPC high. Receptors are assumed to spend 100% of their time in the contaminated area which results in conservative estimates of exposure.

Another source of uncertainty is inherent in the calculation of exposure and risk estimates. Although the toxicity values are expressed to more than one significant figure, it is unlikely that the toxicity data are this accurate, especially given that the data are extrapolated from laboratory animal studies to wildlife receptors that are mobile in the environment. Likewise, given all the variables inherent in assessing exposure, exposure intakes by ecological receptors also should not be considered more accurate than one significant figure. This means that an HQ identified as 0.8 or 1.2 is actually 1, and an HQ identified as 1.5 is actually 2.

Calculating risk for dioxins is a multi-step process that involves multiplying the measured concentration by a toxicity factor (TEF) to obtain a value called the TECi that when summed adjusts the measured congener concentrations to that relative to TCDD, where the sum of all TECi is called the TEQ. Nondetected congeners were not included in the TEQ calculation, which biases the TEQ high, and biases dioxin risk estimates high for any given sample. When calculating the UCL95 as the EPC, the TEQs can be used directly but this provides a UCL95 EPC based only on detected data. ProUCL (EPA 2015) accommodates both detected and nondetected results, reducing bias and uncertainty by not ignoring the influence of nondetects on the EPC. Therefore, UCL95s were calculated for each congener, then adjusted with the TEFs, and then TECi for each congener summed to obtain the TEQ as opposed to averaging the TEQs directly. This procedure of calculating UCL95s for each congener increased the TEQ and HQs slightly for mammals, and reduced the TEQ and HQ for birds, but was considered to be slightly more accurate.

3.4.4. **Mixture Toxicity**

The assumption of additive effects for multiple COPECs may result in an over- or under-estimation of the potential risk to receptors. Exposure to multiple contaminants may result in other than additive effects. Conservative assumptions made with regards to EPCs would tend to overestimate exposure to any given constituent, and this would suggest that the toxicity of multiple constituents would not be underestimated. Therefore, mixture toxicity is not likely to bias the risk results high or low.

3.4.5. **COPECs without ESLs**

ESLs were not available for the cations and anions generally regarded as nutrients calcium, magnesium, nitrate, potassium, and sodium. ESLs were also not available for iron, but human health risk ratios for residents were 0.2 or lower. Lack of ESLs for these inorganics is not expected to underestimate risk at the site.

Several organic chemicals do not have ESLs for any receptor in release 4.1 of the ECORISK Database (LANL 2017; LANL 2019). Predominantly, the constituents lacking ESLs are nondetected organics. In the absence of a chemical-specific ESL, concentrations can be compared with the ESLs for a surrogate chemical, if available. Comparison to surrogate ESLs provides an estimate of potential effects of a chemically related compound and a line of evidence to indicate the likelihood that ecological receptors are potentially impacted. Some chemicals without ESLs do not have chemical-specific toxicity data or surrogate chemicals to be used in the screening assessments and cannot be assessed quantitatively for potential ecological risk.

The chemical TATB was detected in all samples. TATB did not have any ESLs for use in the evaluation. The toxicity values for 1,3,5-trinitrobenzene (NE ESL = 1.2 mg/kg; LE ESL = 12 mg/kg) were used as a surrogate based on structural similarity. This is not expected to bias the risk assessment results.

Chemicals lacking ESLs are often infrequently detected across the site. In these cases, comparisons with human health SLs are presented as part of a qualitative assessment, if human health SLs are available. The comparison of concentrations to human health SLs is a viable alternative for several reasons. Animal studies are used as the basis of toxicity values for human health risk assessments, and are the basic premise of modern toxicology (EPA 1989). In addition, toxicity values derived for the calculation of human health SLs (e.g., histopathology or biochemical changes) may be based on potential adverse effects more sensitive than the ones typically used to derive ESLs (e.g., survival, growth, or reproductive effects). EPA also applies uncertainty factors or modifying factors to ensure the toxicity values are protective (i.e., toxicity values are divided by uncertainty factors resulting in values much lower than initial study results). Since there were no predicted adverse effects on human health, chemicals lacking ESLs are unlikely to pose an ecological risk.

There is no avian ESL for TCDD in the current (2019) LANL EcoRisk database. A value from the 2002 EcoRisk database (LANL 2003) was used as the NE ESL. The lowest ESL value is 4.1×10^{-6} mg/kg based on the robin feeding as an insectivore, which has previously been utilized in LANL risk assessments. A reported LOAEL-based ESL is 4.1×10^{-5} mg/kg. These values were used in the current risk assessment in the absence of more recent data.

3.4.6. Small-Mammal Field Investigations

Small mammal trapping and analysis of whole organisms were conducted in the area around unit TA-36 in 2010. This information was considered useful for the current analysis as an additional line of evidence. Field mice were collected around the site and analyzed for dioxins and furans as well as metals, and for polychlorinated biphenyls (PCBs) (Fresquez 2011). Small-mammal community and population parameters were also measured across the site (Bennett and Robinson 2011).

Small mammals expected at TA-36 are the deer mouse (*Peromyscus maniculatus*), brush mouse (*Peromyscus boylii*), pinyon mouse (*Peromyscus truei*), silky pocket mouse (*Perognathus flavescens*), western harvest mouse (*Reithrodontomys megalotis*), white-throated woodrat (*Neotoma albigula*), and the Mexican woodrat (*Neotoma mexicana*) (Bennett and Robinson 2011). The vegetation community consists of piñon (*Pinus edulis Engelm*.)-juniper (*Juniperus monosperma [Englem.] Sarg*.) with scattered ponderosa pine (*Pinus ponderosa C. Lawson*) and gambel oak (*Quercus gambelii Nutt*.) (Bennett and Robinson 2011). The capture rate and species diversity were highest at TA-36 relative to the control area, and five species were captured. There were no differences in deer mouse sex ratios between TA-36 and the control area. Average body weight of adult male deer mice was slightly higher at TA-26 than at the control area. The authors of the study concluded that there was no apparent adverse effects on small mammal populations at TA-36 relative to controls.

Radionuclides and chemical concentrations in biota were compared to regional statistical reference levels (RSRLs). RSRLs represent natural and fallout levels, and are the upper-level background concentrations (mean plus three standard deviations = 99% confidence level) for radionuclides and chemicals calculated from biota that was collected from regional locations away from the influence of the Laboratory (over nine miles away) (Fresquez 2011). The only analytes that exceeded RSRLs were barium (two out of three samples) and lead (three out of three samples). Dioxins/furans and explosives were not detected. These data suggest that there are no impacts to small mammal populations at TA-36.

3.4.7. Avian Field Investigations

Two western bluebird (*Sialia mexicana*) egg samples were obtained in 2018 from TA-36 and analyzed for inorganic elements (Gaukler and Stanek 2019).

Concentrations of inorganic elements were compared with the upper-level bounds of background concentrations in bird eggs. The data indicated aluminum, antimony, arsenic, beryllium, cadmium, lead, nickel, silver, or vanadium were not detected in eggs (Gaukler and Stanec 2019). Barium, calcium, chromium, cobalt, iron, magnesium, manganese, mercury, potassium, selenium, sodium, thallium, and zinc were detected but were all below the RSRL for avian eggs. Copper at 4.1 mg/kg in one egg exceeded the RSRL of 3.6 mg/kg. Copper EPCs based on the UCL95 were compared to the ESLs for birds and were all below ESLs, suggesting that there would be no impact to bird populations due to copper. One sample of mountain bluebird (*Sialia currucoides*) eggs was collected in 2019, and no analytes were above the RSRLs (Gaukler and Stanek 2020).

Avian population metrics also do not suggest that birds in the vicinity are being negatively impacted (Hathcock et al 2018). Metrics including species richness and diversity were not statistically different from the Unit than at the control area. Species diversity was higher than at the control area in 2014, and afterwards was similar. Abundance varied in the Unit and control area annually, but abundance in the Unit compared to controls were similar over time, and just slightly lower than controls in 2016 and 2017. Species composition appears more influenced by habitat type, and indicates little difference between the Unit and control sites.

Combined, the egg concentration data and population metrics suggest that adverse health effects are not expected at the observed concentrations.

3.4.8. Area Use Factors

The Unit is very small with an areal extent of 1.44 acres (0.58 hectares (ha)). This is approximately the size of the home range (HR) of an individual robin as shown in Table 3-7. The HR is used to calculate area use factors (AUFs) that are used in the EcoPRG equations (LANL 2017). Individual AUFs and population area use factors (PAUFs) may be used to modify the estimate of risk to wildlife receptors to allow estimates to be more site-specific. The application of AUFs or PAUFs reduces potential overestimation of risks for those receptors with HRs larger than the area of contamination being evaluated. The estimated ecological risk as indicated by the HQ or HI is multiplied by the AUF or PAUF. HQs for plants or invertebrates are not adjusted by area use.

Table 3-7 presents the area use hazard analysis based on NE ESLs. The NE ESLs for each COPC that failed the screening evaluation (i.e., because EPCs exceeded the SLs) are shown for each receptor. The site specific AUF and PAUFs are shown for an area equivalent to the Unit. The UCL95 EPC is divided by the ESL and multiplied by the PAUF to obtain revised HQs. The habitat is not suitable for Mexican Spotted Owls or other special status species, and so an AUF evaluation was not conducted.

There is one HQ above 1 for birds or mammals based on comparison of UCL95 values as the EPC to the NE ESLs for each receptor (Table 3-7). The HQ above 1 is for the American robin modeled as an insectivorous bird. The HQs for copper for plants and earthworms, and the HQ for mercury for earthworms, were greater than 1. The HQ for thallium for plants was greater than 1.

Table 3-8 presents the area use hazard analysis based on comparison of the UCL95 values as the EPC to the LE ESLs for each receptor. There are no HQs above 1. Table 3-9 presents HIs for NE and LE ESLs calculated by summing the HQs. Note that HIs are above 1 for robins, plants and earthworms for the NE ESL comparison. HIs are above 1 only for earthworms for the LE ESL comparison. Summing the HQs presumes effects will be additive, when effects may occur on different target organs and not be additive.

3.5. Conclusions

The ecological risk assessment used a tiered approach for determining if the Unit would present an ecological risk. The results of the initial and highly conservative screening step indicated several inorganics occurring above background concentrations, and several detected organics, would present a potential ecological risk. Maximum concentrations of eight detected inorganics (i.e., cadmium, chromium, copper, lead, mercury, silver, thallium, and zinc) exceeded background. Maximum concentrations of these inorganics also exceeded NE ESLs.

Dioxin/furans, some polynuclear aromatic hydrocarbons (PAHs), phthalates, benzoic acid, benzyl alcohol, and explosives were among the organics detected in the unit. Of the detected organics, only five (benzoic acid, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, RDX, and TATB) exceeded minimum ESLs in the initial screening level evaluation which compared maximum detected values to the minimum ESLs.

Further evaluation by statistically estimating UCL95's to use as EPCs in soil suggested few inorganics or organics would occur at concentrations hazardous to ecological receptors. Use of the UCL95 as the EPC provides a conservative estimate of average exposure across the Unit. Copper, mercury, and thallium were the only inorganics with an HQ above 1 based on dividing the UCL95 by the minimum NE ESL. UCL95's for bis(2-ethylhexyl)phthalate and TATB exceeded NE ESLs.

Additional consideration of site ecology and receptor-specific adjustments to exposure by considering home range and site area further reduced the analytes exceeding NE ESLs. Only HQs for copper for earthworms and plants, mercury for earthworms and robins, and thallium for plants were above 1 based on a site-specific hazard analysis and NE ESLs. The HQs above 1 occurred for robins modeled as insectivores, and for plants and earthworms for which the area use evaluation is not relevant as they are largely immobile in the environment. However, the Unit is not vegetated because of its designated use as an OD area, and so plants and invertebrates have no habitat in the Unit. Robins would be unable to forage totally within the unit due to lack of prey and forage items. The LE ESLs are not exceeded for any receptor for any individual constituents, but the HI for earthworms is 2.

Finally, there is no suggestion of human health risk at the Unit, and the Unit is small relative to surrounding habitat, being only 1.44 acres. Due to disturbance, ecological receptors are unlikely to remain within the Unit on a regular basis. The Unit is not likely to present an ecological risk to any receptor evaluated.

4. REFERENCES

ATSDR. 2012. Toxicological Profile for Chromium. September 2012. Pg 374.https://www.atsdr.cdc.gov/toxprofiles/tp7.pdf

Bennett, K., and R. Robinson. 2011. Small Mammal Sampling at Open-Detonation Firing Sites. LA-UR-11-00717. January 2011. (Bennett and Robinson 2011)

EPA (U.S. Environmental Protection Agency), December 1989. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final," EPA/540/1-89/002, Office of Emergency and Remedial Response, Washington, D.C. (EPA 1989)

EPA (U.S. Environmental Protection Agency), 1993. "Wildlife Exposure Factors Handbook," U.S. Environmental Protection Agency document EPA/600/P93/187A, Office of Research and Development, Washington, D.C. (EPA 1993)

EPA (U.S. Environmental Protection Agency), June 5, 1997. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final," U.S. Environmental Protection Agency, Environmental Response Team, Edison NJ. (EPA 1997)

EPA (U.S. Environmental Protection Agency), November 2003. "Guidance for Developing Ecological Soil Screening Levels, Evaluation of Dermal Contact and Inhalation Exposure Pathways for the Purpose of Setting Eco-SSLs, Attachment 1-3, U.S. Environmental Protection Agency document OSWER Directive 92857-55, Office of Solid Waste and Emergency Response. (EPA 2003)

EPA (U.S. Environmental Protection Agency), December 2010a. "Final Report Bioavailability of Dioxins and Dioxin-Like Compounds in Soil," Office of Superfund Remediation and Technology Innovation, Environmental Response Team, West Las Vegas, Nevada (http://epa.gov/superfund/health/contaminants/dioxin/pdfs/Final_dioxin_RBA_Report_12_20_10.p df). (EPA 2010a)

EPA (U.S. Environmental Protection Agency), December 2010b. "Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8=Tetrachloro-p-dioxin and Dioxin-Like Compounds." EPA/100/R 10/005. (EPA 2010b)

EPA (U.S. Environmental Protection Agency), January 2014. "Technical Fact Sheet – N-Nitroso-dimethylamine (NDMA)". https://www.epa.gov/sites/production/files/2014-03/documents/ffrrofactsheet_contaminant_ndma_january2014_final.pdf . (EPA 2014)

EPA (U.S. Environmental Protection Agency), October 2015. "ProUCL Version 5.1.002 User Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations." EPA/600/R-07/041. ORD Site Characterization and Monitoring Technical Support Center. (EPA 2015)

EPA (U.S. Environmental Protection Agency), August 2019. Regional Screening Levels (RSLs) – Generic Tables Dated May 2019. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables. (EPA 2019)

Fresquez, P.R. 2011. Chemical Concentrations In Field Mice Collected From Open-Detonation Firing Sites Ta-36 Minie And Ta-39 Point 6 At Los Alamos National Laboratory. LA-UR-11-10614. May 2011. (Fresquez 2011)

Gaukler, S. and J Stanek. 2019. " Inorganic Element Concentrations in Passerine Eggs Collected at Technical Areas 36, 39, and 16 at Los Alamos National Laboratory". LA-UR-19-25647. June 2019. (Gaukler and Stanek 2019)

Gaukler, S. and J Stanek. 2020. "2019 Results for Avian Monitoring of Inorganic and Organic Element Concentrations in Passerine Eggs and a Nestling Collected from Technical Area 16 Burn Grounds, Technical Area 36 Minie, and Technical Area 39 Point 6 at Los Alamos National Laboratory." March 25 2020. LA-UR-20-22529. (Gaukler and Stanek 2020)

Hathcock, C. D., Bartlow, A. W., and B.E. Thompson. 2018. "2017 Results for Avian Monitoring at the TA-36 Minie Site, TA-39 Point 6, and TA-16 Burn Ground at Los Alamos National Laboratory". 2018-04-30 (rev.1) LA-UR-18-22897. (Hathcock et al. 2018)

LANL (Los Alamos National Laboratory), September 1998. "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998)

LANL (Los Alamos National Laboratory), November 2003. "ECORISK Database (Version 2.0)," on CD, Los Alamos, New Mexico. (LANL 2003)

LANL (Los Alamos National Laboratory), November 2012. "Screening-Level Ecological Risk Assessment Methods, Revision 3," Los Alamos National Laboratory document LA-UR-12-24152, Los Alamos, New Mexico. (LANL 2012a)

LANL (Los Alamos National Laboratory), October 2012. "ECORISK Database (Release 3.1)," LA-UR-12- 24548, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012b)

LANL (Los Alamos National Laboratory), 2017. "ECORISK Database User Guide, Revision 1". LA-UR-17-26376. Los Alamos National Laboratory, Los Alamos, New Mexico. September 2017. (LANL 2017)

LANL (Los Alamos National Laboratory), 2019. "ECORISK Database (Release 4.1)," March 2019 Release. (LANL 2019)

NMED (New Mexico Environment Department). 2017. Risk Assessment Guidance for Site Investigations and Remediation. Volume II. Soil Screening Guidance for Ecological Risk Assessments.2017 Revised. (NMED 2017)

NMED (New Mexico Environment Department). February 2019. Risk Assessment Guidance for Site Investigations and Remediation. Volume I. Soil Screening Guidance for Human Health Risk Assessments. February 2019. Rev. 1 (3/7/19) (NMED 2019)

Sample, B.E., Suter III, G.W., Efroymson, R.A., and Jones, D.A., May 1998. "A Guide to the ORNL Ecotoxicological Screening Benchmarks: Background, Development, and Application," Oak Ridge National Laboratory, Environmental Sciences Division, Publication No. 4783, ORNL/TM13615, Oak Ridge, TN. May 1998 (Sample et al. 1998)

Van den Berg et.al, 2006. The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency factors for Dioxin and Dioxin-like Compounds. ToxiSci Advance Access, July 7, 2006. (Van den Berg et al. 2006)

WHO (World Health Organization). September 2009. "Project For The Re-Evaluation Of Human And Mammalian Toxic Equivalency Factors (TEFS) Of Dioxins And Dioxin-Like Compounds". International Programme on Chemical Safety. http://www.who.int/ipcs/assessment/tef_update/en/ (WHO 2009)

Tables

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Inorganics								
Aluminum	16	1.77E+03	4.14E+03	2.89E+03	7.00E+02	6.24E+00	6.84E+00	16
Antimony	16	3.08E-01	4.32E-01	3.25E-01	2.94E-02	3.03E-01	3.32E-01	0
Arsenic	16	8.44E-01	2.28E+00	1.41E+00	3.37E-01	3.12E-01	3.42E-01	16
Barium	16	2.58E+01	1.15E+02	5.80E+01	2.53E+01	9.18E-02	1.01E-01	16
Beryllium	16	2.08E-01	5.88E-01	3.48E-01	1.19E-01	1.85E-02	2.02E-02	16
Cadmium	16	9.18E-02	4.67E-01	1.41E-01	1.05E-01	9.18E-02	1.01E-01	3
Calcium	16	1.68E+03	5.74E+03	2.99E+03	1.07E+03	7.34E+00	8.05E+00	16
Chromium	16	3.82E+00	4.92E+01	9.05E+00	1.08E+01	1.38E-01	1.51E-01	16
Cobalt	16	2.28E+00	8.44E+00	3.56E+00	1.43E+00	1.38E-01	1.51E-01	16
Copper	16	8.21E+00	5.97E+02	7.06E+01	1.43E+02	2.75E-01	3.02E-01	16
Iron	16	6.51E+03	1.29E+04	8.82E+03	1.77E+03	7.34E+00	8.05E+00	16
Lead	16	4.00E+00	3.52E+01	9.08E+00	7.56E+00	3.03E-01	3.32E-01	16
Magnesium	16	8.53E+02	2.58E+03	1.36E+03	3.90E+02	7.80E+00	8.55E+00	16
Manganese	16	1.19E+02	2.99E+02	1.70E+02	4.59E+01	1.84E-01	2.01E-01	16
Mercury	16	3.43E-03	7.75E-01	5.51E-02	1.92E-01	3.43E-03	3.44E-02	6
Nickel	16	3.35E+00	8.01E+00	6.28E+00	1.43E+00	9.24E-02	1.01E-01	16
Perchlorate	16	4.98E-04	2.96E-02	5.25E-03	8.52E-03	4.96E-04	1.01E-03	11
Potassium	16	3.58E+02	1.26E+03	6.89E+02	2.78E+02	5.87E+00	6.44E+00	16
Selenium	16	4.78E-01	9.37E-01	6.15E-01	1.29E-01	3.33E-01	3.64E-01	16
Silver	16	1.25E-01	2.19E+00	4.25E-01	5.20E-01	9.18E-02	1.01E-01	16
Sodium	16	3.73E+01	9.85E+01	5.33E+01	1.56E+01	6.43E+00	7.04E+00	16
Thallium	16	1.29E-01	2.22E+00	2.77E-01	5.19E-01	1.29E-01	1.42E-01	3
Vanadium	16	9.50E+00	2.90E+01	1.73E+01	4.96E+00	9.18E-02	1.01E-01	16
Zinc	16	1.85E+01	5.32E+01	2.89E+01	1.11E+01	3.67E-01	4.02E-01	16
Organics								
2,4-Diamino-6-nitrotoluene	16	4.93E-01	5.00E-01	4.96E-01	2.93E-03	4.93E-01	5.00E-01	0
2,6-Diamino-4-nitrotoluene	16	6.50E-01	6.60E-01	6.54E-01	4.15E-03	6.50E-01	6.60E-01	0
3,5-Dinitroaniline	16	2.96E-01	3.00E-01	2.98E-01	1.71E-03	2.96E-01	3.00E-01	0
Acenaphthene	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Acenaphthylene	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Acetone	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0
Amino-2,6-dinitrotoluene[4-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Amino-4,6-dinitrotoluene[2-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Aniline	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Anthracene	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Azobenzene	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Benzene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Benzo(a)anthracene	18	1.00E-02	2.95E-02	1.21E-02	5.04E-03	1.00E-02	1.02E-02	5
Benzo(a)pyrene	18	1.00E-02	2.72E-02	1.19E-02	4.75E-03	1.00E-02	1.02E-02	4
Benzo(b)fluoranthene	18	1.00E-02	3.25E-02	1.33E-02	7.20E-03	1.00E-02	1.02E-02	4
Benzo(g,h,i)perylene	18	1.00E-02	2.21E-02	1.09E-02	2.88E-03	1.00E-02	1.02E-02	2
Benzo(k)fluoranthene	18	1.00E-02	1.48E-02	1.04E-02	1.12E-03	1.00E-02	1.02E-02	2
Benzoic Acid	18	1.67E-01	4.97E-01	2.03E-01	1.00E-01	1.67E-01	1.70E-01	2
Benzyl Alcohol	18	1.00E-01	4.98E-01	1.38E-01	1.03E-01	1.00E-01	1.02E-01	4
Bis(2-chloroethoxy)methane	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Bis(2-chloroethyl)ether	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Bis(2-ethylhexyl)phthalate	18	1.00E-02	1.32E+00	2.25E-01	4.36E-01	1.00E-02	1.02E-02	6
Bromobenzene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Bromochloromethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Bromodichloromethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Bromoform	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Bromomethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Bromophenyl-phenylether[4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Butanone[2-]	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0
Butylbenzene[n-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Butylbenzene[sec-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Butylbenzene[tert-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Butylbenzylphthalate	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Carbon Disulfide	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0
Carbon Tetrachloride	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chloro-3-methylphenol[4-]	18	1.34E-01	1.36E-01	1.34E-01	6.16E-04	1.34E-01	1.36E-01	0
Chloroaniline[4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Chlorobenzene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chlorodibromomethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chloroethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Chloroform	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chloromethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chloronaphthalene[2-]	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Chlorophenol[2-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Chlorophenyl-phenyl[4-] Ether	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Chlorotoluene[2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chlorotoluene[4-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Chrysene	18	1.00E-02	2.95E-02	1.19E-02	4.91E-03	1.00E-02	1.02E-02	3
Dibenz(a,h)anthracene	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Dibenzofuran	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Dibromo-3-Chloropropane[1,2-]	16	4.66E-04	5.06E-04	4.89E-04	1.05E-05	4.66E-04	5.06E-04	0
Dibromoethane[1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dibromomethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichlorobenzene[1,2-]	34	3.10E-04	1.02E-01	5.36E-02	5.10E-02	3.10E-04	1.02E-01	0
Dichlorobenzene[1,3-]	34	3.10E-04	1.02E-01	5.36E-02	5.10E-02	3.10E-04	1.02E-01	0
Dichlorobenzene[1,4-]	34	3.10E-04	1.02E-01	5.36E-02	5.10E-02	3.10E-04	1.02E-01	0
Dichlorobenzidine[3,3'-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Dichlorodifluoromethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloroethane[1,1-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloroethane[1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloroethene[1,1-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloroethene[cis-1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloroethene[trans-1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichlorophenol[2,4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Dichloropropane[1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloropropane[1,3-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloropropane[2,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloropropene[1,1-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloropropene[cis-1,3-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Dichloropropene[trans-1,3-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Diethylphthalate	18	1.00E-02	1.44E-02	1.03E-02	1.02E-03	1.00E-02	1.02E-02	1
Dimethyl Phthalate	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Dimethylphenol[2,4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Di-n-butylphthalate	18	1.00E-02	7.44E-01	6.10E-02	1.74E-01	1.00E-02	1.02E-02	4
Dinitro-2-methylphenol[4,6-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Dinitrobenzene[1,3-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Dinitrophenol[2,4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Dinitrotoluene[2,4-]	34	1.00E-01	1.50E-01	1.23E-01	2.42E-02	1.00E-01	1.50E-01	0
Dinitrotoluene[2,6-]	34	1.00E-01	1.50E-01	1.23E-01	2.42E-02	1.00E-01	1.50E-01	0
Di-n-octylphthalate	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Diphenylamine	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Ethylbenzene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Fluoranthene	18	1.00E-02	5.33E-02	1.50E-02	1.16E-02	1.00E-02	1.02E-02	4
Fluorene	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	16	6.82E-07	1.13E-04	1.74E-05	2.99E-05	1.66E-06	1.68E-06	16
Heptachlorodibenzodioxins (Total)	16	0.00E+00	8.48E-04	9.44E-05	2.10E-04			15
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	16	4.97E-07	4.02E-06	1.38E-06	1.28E-06	1.66E-06	1.68E-06	8
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.66E-06	1.68E-06	0
Heptachlorodibenzofurans (Total)	16	0.00E+00	1.80E-05	4.30E-06	6.31E-06			10
Hexachlorobenzene	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Hexachlorobutadiene	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Hexachlorocyclopentadiene	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	16	4.97E-07	6.79E-07	5.15E-07	4.87E-08	1.73E-06	1.75E-06	2
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	16	4.97E-07	1.45E-06	6.23E-07	2.74E-07	1.66E-06	1.68E-06	4
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	16	4.97E-07	1.11E-06	5.77E-07	1.90E-07	1.95E-06	1.97E-06	3
Hexachlorodibenzodioxins (Total)	16	0.00E+00	5.36E-05	6.26E-06	1.36E-05			9
Hexachlorodibenzofuran[1,2,3,4,7,8-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.66E-06	1.68E-06	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.66E-06	1.68E-06	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.71E-06	1.74E-06	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.66E-06	1.68E-06	0
Hexachlorodibenzofurans (Total)	16	0.00E+00	4.93E-06	9.46E-07	1.56E-06			6
Hexachloroethane	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Hexanone[2-]	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0
HMX	16	1.48E-01	3.87E+00	8.78E-01	9.83E-01	1.48E-01	1.50E-01	11
Indeno(1,2,3-cd)pyrene	18	1.00E-02	2.05E-02	1.08E-02	2.51E-03	1.00E-02	1.02E-02	2
Iodomethane	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Isophorone	18	1.00E-01	3.24E-01	1.13E-01	5.26E-02	1.00E-01	1.02E-01	1
Isopropylbenzene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Isopropyltoluene[4-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Methyl-2-pentanone[4-]	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0
Methylene Chloride	16	1.55E-03	5.73E-03	2.55E-03	1.46E-03	1.55E-03	1.69E-03	5
Methylnaphthalene[2-]	18	1.00E-02	1.02E-02	1.01E-02	4.16E-05	1.00E-02	1.02E-02	0
Methylphenol[2-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Methylphenol[3-,4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Naphthalene	18	1.00E-02	1.51E-02	1.04E-02	1.18E-03	1.00E-02	1.02E-02	1
Nitroaniline[2-]	18	1.10E-01	1.12E-01	1.11E-01	4.16E-04	1.10E-01	1.12E-01	0
Nitroaniline[3-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Nitroaniline[4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Nitrobenzene	34	1.00E-01	1.50E-01	1.23E-01	2.42E-02	1.00E-01	1.50E-01	0
Nitrophenol[2-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Nitrophenol[4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Nitrosodimethylamine[N-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Nitroso-di-n-propylamine[N-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Nitrotoluene[2-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Nitrotoluene[3-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Nitrotoluene[4-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	16	4.56E-06	9.20E-04	1.39E-04	2.40E-04	3.31E-06	3.36E-06	16
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	16	9.93E-07	1.63E-05	4.50E-06	5.06E-06	3.31E-06	3.36E-06	9
Oxybis(1-chloropropane)[2,2'-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.66E-06	1.68E-06	0
Pentachlorodibenzodioxins (Total)	16	0.00E+00	6.85E-07	4.28E-08	1.71E-07			1
Pentachlorodibenzofuran[1,2,3,7,8-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.66E-06	1.68E-06	0
Pentachlorodibenzofuran[2,3,4,7,8-]	16	4.97E-07	5.03E-07	4.99E-07	1.67E-09	1.75E-06	1.77E-06	0
Pentachlorodibenzofurans (Totals)	16	0.00E+00	1.17E-06	1.63E-07	3.63E-07			3
Pentachlorophenol	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
PETN	16	2.46E-01	2.50E-01	2.48E-01	1.69E-03	2.46E-01	2.50E-01	0
Phenanthrene	18	1.00E-02	2.78E-02	1.17E-02	4.34E-03	1.00E-02	1.02E-02	4
Phenol	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Propylbenzene[1-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Pyrene	18	1.00E-02	5.57E-02	1.50E-02	1.18E-02	1.00E-02	1.02E-02	4
Pyridine	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
RDX	16	1.48E-01	4.76E+00	7.88E-01	1.33E+00	1.48E-01	1.50E-01	7
Styrene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
TATB	16	3.33E+00	2.22E+01	1.22E+01	4.73E+00	2.96E-01	1.50E+00	16
Tetrachlorodibenzodioxin[2,3,7,8-]	16	9.94E-08	1.12E-07	1.01E-07	3.28E-09	3.31E-07	3.36E-07	0
Tetrachlorodibenzodioxins (Total)	16	0.00E+00	2.42E-07	1.51E-08	6.05E-08			1
Tetrachlorodibenzofuran[2,3,7,8-]	16	1.10E-07	2.51E-07	1.83E-07	3.86E-08	3.31E-07	3.36E-07	8
Tetrachlorodibenzofurans (Totals)	16	0.00E+00	4.42E-07	1.50E-07	1.43E-07			10
Tetrachloroethane[1,1,1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Tetrachloroethane[1,1,2,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Tetrachloroethene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Tetryl	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Toluene	16	3.10E-04	2.23E-03	5.75E-04	6.22E-04	3.10E-04	3.37E-04	4
Trichloro-1,2,2-trifluoroethane[1,1,2-]	16	1.55E-03	1.69E-03	1.63E-03	3.54E-05	1.55E-03	1.69E-03	0
Trichlorobenzene[1,2,4-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Trichloroethane[1,1,1-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trichloroethane[1,1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trichloroethene	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trichlorofluoromethane	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trichlorophenol[2,4,5-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Trichlorophenol[2,4,6-]	18	1.00E-01	1.02E-01	1.01E-01	4.16E-04	1.00E-01	1.02E-01	0
Trichloropropane[1,2,3-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trimethylbenzene[1,2,4-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trimethylbenzene[1,3,5-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Trinitrobenzene[1,3,5-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Trinitrotoluene[2,4,6-]	16	1.48E-01	1.50E-01	1.49E-01	7.75E-04	1.48E-01	1.50E-01	0
Tris (o-cresyl) phosphate	16	2.96E-01	3.00E-01	2.98E-01	1.71E-03	2.96E-01	3.00E-01	0
Vinyl Chloride	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Xylene[1,2-]	16	3.10E-04	3.37E-04	3.26E-04	7.01E-06	3.10E-04	3.37E-04	0
Xylene[1,3-]+Xylene[1,4-]	16	6.21E-04	6.75E-04	6.53E-04	1.41E-05	6.21E-04	6.75E-04	0

Notes: Sample size (n) includes duplicate of WST39-18-162834 (WST39-18-162985) and multiple analytical methods.
Abbreviations:
MDL – Method detection limit

mg/kg – milligram per kilogram
SD – Standard deviation

Table 2-2. Human Health Screening Results for Comparison of Maximum Detected Exposure Point Concentrations Greater than Background

			Background		Cancer				Noncancer			
Parameter Name	**Maximum (mg/kg)**	**Number of Detected Values**	**BV (mg/kg)**	**Maximum /BV Ratio**	**Res Cancer NMSSL (mg/kg)**	**Worker Cancer NMSSL (mg/kg)**	**Maximum/ Res Cancer Ratio**	**Maximum/ Worker Cancer Ratio**	**Res Noncancer NMSSL (mg/kg)**	**Worker Noncancer NMSSL (mg/kg)**	**Maximum/ Res Noncancer Ratio**	**Maximum/ Worker Noncancer Ratio**
INORGANICS												
Aluminum	4.14E+03	16	29200	0.1								
Antimony	4.32E-01	0	0.83	0.5								
Arsenic	2.28E+00	16	8.17	0.3								
Barium	1.15E+02	16	295	0.4								
Beryllium	5.88E-01	16	1.83	0.3								
Cadmium	4.67E-01	3	0.4	1.2	8.6E+04	4.2E+05	5E-06	1E-06	7.1E+01	1.1E+03	7E-03	4E-04
Calcium	5.74E+03	16	6120	0.9								
Chromium	4.92E+01	16	19.3	2.5	0.0E+00	0.0E+00	NA	NA	1.2E+05	1.9E+06	4E-04	3E-05
Cobalt	8.44E+00	16	8.64	1.0								
Copper	5.97E+02	16	14.7	41	0.0E+00	0.0E+00	NA	NA	3.1E+03	5.2E+04	2E-01	1E-02
Iron	1.29E+04	16	21500	0.6								
Lead	3.52E+01	16	22.3	1.6	0.0E+00	0.0E+00	NA	NA	4.0E+02	8.0E+02	9E-02	4E-02
Magnesium	2.58E+03	16	4610	0.6								
Manganese	2.99E+02	16	671	0.4								
Mercury	7.75E-01	6	0.1	7.8	0.0E+00	0.0E+00	NA	NA	2.3E+01	3.9E+02	3E-02	2E-03
Nickel	8.01E+00	16	15.4	0.5								
Perchlorate	2.96E-02	11	0	NA								
Potassium	1.26E+03	16	3460	0.4								
Selenium	9.37E-01	16	1.52	0.6								
Silver	2.19E+00	16	1	2.2	0.0E+00	0.0E+00	NA	NA	3.9E+02	6.5E+03	6E-03	3E-04
Sodium	9.85E+01	16	915	0.1								
Thallium	2.22E+00	3	0.73	3.0	0.0E+00	0.0E+00	NA	NA	7.8E-01	1.3E+01	3E+00	2E-01
Vanadium	2.90E+01	16	39.6	0.7								
Zinc	5.32E+01	16	48.8	1.1	0.0E+00	0.0E+00	NA	NA	2.3E+04	3.9E+05	2E-03	1E-04
ORGANICS												
Benzo(a)anthracene	2.95E-02	5	NA	NA	1.5E+00	3.2E+01	2E-02	9E-04	0.0E+00	0.0E+00	NA	NA
Benzo(a)pyrene	2.72E-02	4	NA	NA	NA	NA	2E-02	1E-03	NA	NA	2E-03	1E-04
Benzo(b)fluoranthene	3.25E-02	4	NA	NA	1.5E+00	3.2E+01	2E-02	1E-03	0.0E+00	0.0E+00	NA	NA
Benzo(g,h,i)perylene	2.21E-02	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1.48E-02	2	NA	NA	1.5E+01	3.2E+02	1E-03	5E-05	0.0E+00	0.0E+00	NA	NA
Benzoic Acid	4.97E-01	2	NA	NA	NA	NA	NA	NA	NA	NA	2E-06	2E-07

Table 2-2. Human Health Screening Results for Comparison of Maximum Detected Exposure Point Concentrations Greater than Background

Parameter Name	Maximum (mg/kg)	Number of Detected Values	Background		Cancer				Noncancer			
			BV (mg/kg)	Maximum /BV Ratio	Res Cancer NMSSL (mg/kg)	Worker Cancer NMSSL (mg/kg)	Maximum/ Res Cancer Ratio	Maximum/ Worker Cancer Ratio	Res Noncancer NMSSL (mg/kg)	Worker Noncancer NMSSL (mg/kg)	Maximum/ Res Noncancer Ratio	Maximum/ Worker Noncancer Ratio
Benzyl Alcohol	4.98E-01	4	NA	NA	NA	NA	NA	NA	NA	NA	8E-05	6E-06
Bis(2-ethylhexyl)phthalate	1.32E+00	6	NA	NA	3.8E+02	1.8E+03	3E-03	7E-04	1.2E+03	1.8E+04	1E-03	7E-05
Chrysene	2.95E-02	3	NA	NA	1.5E+02	3.2E+03	2E-04	9E-06	0.0E+00	0.0E+00	NA	NA
Diethylphthalate	1.44E-02	1	NA	NA	0.0E+00	0.0E+00	NA	NA	4.9E+04	7.3E+05	3E-07	2E-08
Di-n-butylphthalate	7.44E-01	4	NA	NA	0.0E+00	0.0E+00	NA	NA	6.2E+03	9.2E+04	1E-04	8E-06
Fluoranthene	5.33E-02	4	NA	NA	0.0E+00	0.0E+00	NA	NA	2.3E+03	3.4E+04	2E-05	2E-06
HMX	3.87E+00	11	NA	NA	0.0E+00	0.0E+00	NA	NA	3.8E+03	6.3E+04	1E-03	6E-05
Indeno(1,2,3-cd)pyrene	2.05E-02	2	NA	NA	1.5E+00	3.2E+01	1E-02	6E-04	0.0E+00	0.0E+00	NA	NA
Isophorone	3.24E-01	1	NA	NA	5.6E+03	2.7E+04	6E-05	1E-05	1.2E+04	1.8E+05	3E-05	2E-06
Methylene Chloride	5.73E-03	5	NA	NA	7.7E+02	1.4E+04	7E-06	4E-07	4.1E+02	5.1E+03	1E-05	1E-06
Naphthalene	1.51E-02	1	NA	NA	5.0E+01	2.4E+02	3E-04	6E-05	1.6E+02	8.4E+02	9E-05	2E-05
Phenanthrene	2.78E-02	4	NA	NA	0.0E+00	0.0E+00	NA	NA	1.7E+03	2.5E+04	2E-05	1E-06
Pyrene	5.57E-02	4	NA	NA	0.0E+00	0.0E+00	NA	NA	1.7E+03	2.5E+04	3E-05	2E-06
RDX	4.76E+00	7	NA	NA	8.31E+01	4.28E+02	6E-02	1E-02	3.0E+02	4.9E+03	2E-02	1E-03
TATB	2.22E+01	16	NA	NA	NA	NA	NA	NA	NA	NA	1E-02	7E-04
Toluene	2.23E-03	4	NA	NA	0.0E+00	0.0E+00	NA	NA	5.2E+03	6.1E+04	4E-07	4E-08
INORGANIC HI							**5E-06**	**1E-06**			**3E+00**	**2E-01**
ORGANIC HI							**1E-01**	**2E-02**			**3E-02**	**2E-03**

Notes:
All data in mg/kg
Shaded Max/BV cells indicate the maximum>BV
Bolded NMSSL cells indicate the EPA RSL for an HQ of 1 is used because a NMSSL is not available
Italics – a surrogate is applied. See Section 1.2.3
If the maximum <BV, no further evaluation is performed
Cancer ratio = Maximum/Cancer-based NMSSL
HQ = Maximum/Noncancer-based NMSSL

Abbreviations:
BV – Background value
EPA – U.S. Environmental Protection Agency
HQ – Noncancer hazard quotient
Max – Maximum reported result
NA – Not available
NC – Noncancer
NMSSL – New Mexico soil screening level
Res - Residential
RSL – Regional Screening level

Table 2-2. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Parameter Name	WST36-18-162834		WST36-18-162985		WST36-18-162986		WST36-18-162987		WST36-18-162988		WST36-18-162989	
	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	8.40E-07	1	6.82E-07	1	3.68E-06	1		1	1.74E-06	1	1.06E-06	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.00E-07	0	4.97E-07	0	8.20E-07	1	1.49E-06	1	4.97E-07	0	4.97E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	5.61E-06	1	4.56E-06	1	3.41E-05	1	7.74E-05	1	1.40E-05	1	1.02E-05	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.99E-07	0	9.94E-07	0	2.54E-06	1	5.55E-06	1	9.94E-07	0	9.94E-07	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	5.00E-07	0	4.97E-07	0	4.98E-07	0	5.03E-07	0	4.97E-07	0	4.97E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	9.99E-08	0	9.94E-08	0	9.95E-08	0	1.01E-07	0	9.94E-08	0	9.94E-08	0
Tetrachlorodibenzofuran[2,3,7,8-]	1.10E-07	1	1.75E-07	1	1.31E-07	1	2.27E-07	1	1.79E-07	1	1.87E-07	1

Notes:
DC- Detect code (1 = detected, 0 = not detected)

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Congener Name	CAS	TEF	WST36-18-162834	WST36-18-162985	WST36-18-162986	WST36-18-162987	WST36-18-162988	WST36-18-162989
			TECi	TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	8.40E-09	6.82E-09	3.68E-08	7.96E-08	1.74E-08	1.06E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	ND	ND	8.20E-09	1.49E-08	ND	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	1.68E-09	1.37E-09	1.02E-08	2.32E-08	4.20E-09	3.06E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	ND	ND	7.62E-10	1.67E-09	ND	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	1.10E-08	1.75E-08	1.31E-08	2.27E-08	1.79E-08	1.87E-08
TEQ			2.11E-08	2.57E-08	6.91E-08	1.42E-07	3.95E-08	3.24E-08
NMED SL Residential (mg/kg) = 4.90E-05		**Risk Ratio =**	4E-04	5E-04	1E-03	3E-03	8E-04	7E-04
NMED SL Industrial (mg/kg) = 8.47E-03		**Risk Ratio =**	2E-06	3E-06	8E-06	2E-05	5E-06	4E-06

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Parameter Name	WST36-18-162990		WST36-18-162991		WST36-18-162992		WST36-18-162993		WST36-18-162994	
	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.11E-06	1	4.67E-06	1	2.20E-05	1	8.35E-06	1	4.84E-05	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.98E-07	0	4.99E-07	0	3.44E-06	1	1.29E-06	1	4.02E-06	1
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	5.85E-07	1
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	0	4.99E-07	0	6.27E-07	1	4.98E-07	0	1.09E-06	1
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	1.11E-06	1
Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.01E-05	1	4.30E-05	1	1.82E-04	1	6.93E-05	1	3.90E-04	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.95E-07	0	1.33E-06	1	1.01E-05	1	3.95E-06	1	1.39E-05	1
Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	0	4.99E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	9.95E-08	0	9.99E-08	0	9.96E-08	0	9.97E-08	0	1.05E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	1.71E-07	1	1.44E-07	1	1.73E-07	0	1.67E-07	0	2.19E-07	0

Notes:
DC- Detect code (1 = detected, 0 = not detected)

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Congener Name	CAS	TEF	WST36-18-162990	WST36-18-162991	WST36-18-162992	WST36-18-162993	WST36-18-162994
			TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	1.11E-08	4.67E-08	2.20E-07	8.35E-08	4.84E-07
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	ND	ND	3.44E-08	1.29E-08	4.02E-08
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	ND	ND	ND	ND	5.85E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	ND	ND	6.27E-08	ND	1.09E-07
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	ND	ND	ND	ND	1.11E-07
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	3.03E-09	1.29E-08	5.46E-08	2.08E-08	1.17E-07
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	ND	3.99E-10	3.03E-09	1.19E-09	4.17E-09
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	1.71E-08	1.44E-08	ND	ND	ND
TEQ			3.12E-08	7.44E-08	3.75E-07	1.18E-07	9.24E-07
NMED SL Residential (mg/kg) =	**5E-05**		6E-04	2E-03	8E-03	2E-03	2E-02
NMED SL Industrial (mg/kg) =	**8E-03**		4E-06	9E-06	4E-05	1E-05	1E-04

Parameter Name	WST36-18-162995		WST36-18-162996		WST36-18-162997		WST36-18-162998		WST36-18-162999	
	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.13E-04	1	4.70E-05	1	1.59E-05	1	7.51E-07	1	8.19E-07	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	3.66E-06	1	2.48E-06	1	9.11E-07	1	4.97E-07	0	5.01E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	6.79E-07	1	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	1.45E-06	1	8.22E-07	1	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	9.91E-07	1	6.55E-07	1	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	9.20E-04	1	3.40E-04	1	1.14E-04	1	5.49E-06	1	8.29E-06	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.63E-05	1	8.97E-06	1	2.47E-06	1	9.93E-07	0	1.00E-06	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	0	4.98E-07	0	5.00E-07	0	4.97E-07	0	5.01E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	9.95E-08	0	9.95E-08	0	9.99E-08	0	1.12E-07	0	1.00E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	1.59E-07	0	2.51E-07	0	1.78E-07	0	2.13E-07	0	2.36E-07	0

Notes:
DC- Detect code (1 = detected, 0 = not detected)

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Congener Name	CAS	TEF	WST36-18-162995	WST36-18-162996	WST36-18-162997	WST36-18-162998	WST36-18-162999
			TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	1.13E-06	4.70E-07	1.59E-07	7.51E-09	8.19E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	3.66E-08	2.48E-08	9.11E-09	ND	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	6.79E-08	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	1.45E-07	8.22E-08	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	9.91E-08	6.55E-08	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	2.76E-07	1.02E-07	3.42E-08	1.65E-09	2.49E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	4.89E-09	2.69E-09	7.41E-10	ND	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	ND	ND	ND	ND	ND
TEQ			1.76E-06	7.47E-07	2.03E-07	9.16E-09	1.07E-08
NMED SL Residential (mg/kg)	**5E-05**		4E-02	2E-02	4E-03	2E-04	2E-04
NMED SL Industrial (mg/kg)	**8E-03**		2E-04	9E-05	2E-05	1E-06	1E-06

Notes: The TECi are summed in each column to obtain the TEQ. The TEQ is divided by the residential or the industrial SL for TCDD to obtain a risk ratio, shown directly under the TEQ. None of the TEQs exceeded the SLs.

All data in mg/kg

Table 3-1. Ecological Screening Evaluation

Parameter Name	Maximum (mg/kg)	Number of Detects	Background		ESL and Risk Ratios			
			BV (mg/kg)	Max/ BV Ratio	Minimum NE ESL (mg/kg)	Max/ NE ESL Ratio	Minimum LE ESL (mg/kg)	Max/ LE ESL Ratio
INORGANICS								
Cadmium	4.67E-01	3	0.4	1.2	2.70E-01	2E+00	1.60E+00	3E-01
Chromium	4.92E+01	16	19.3	2.5	2.30E+01	2E+00	7.30E+01	7E-01
Copper	5.97E+02	16	14.7	41	1.40E+01	4E+01	4.30E+01	1E+01
Lead	3.52E+01	16	22.3	1.6	1.10E+01	3E+00	2.30E+01	2E+00
Mercury	7.75E-01	6	0.1	7.8	1.30E-02	6E+01	1.30E-01	6E+00
Perchlorate	2.96E-02	11	0	NA	1.20E-01	2E-01	2.40E-01	1E-01
Silver	2.19E+00	16	1	2	2.60E+00	8E-01	2.60E+01	8E-02
Thallium	2.22E+00	3	0.73	3.0	5.00E-02	4E+01	5.00E-01	4E+00
Zinc	5.32E+01	16	48,8	1.1	4.70E+01	1E+00	1.20E+02	4E-01
ORGANICS								
Benzo(a)anthracene	2.95E-02	5	NA	NA	7.30E-01	4E-02	7.30E+00	4E-03
Benzo(a)pyrene	2.72E-02	4	NA	NA	6.20E+01	4E-04	1.90E+02	1E-04
Benzo(b)fluoranthene	3.25E-02	4	NA	NA	1.80E+01	2E-03	1.80E+02	2E-04
Benzo(g,h,i)perylene	2.21E-02	2	NA	NA	2.50E+01	9E-04	2.50E+02	9E-05
Benzo(k)fluoranthene	1.48E-02	2	NA	NA	7.10E+01	2E-04	7.10E+02	2E-05
Benzoic Acid	4.97E-01	2	NA	NA	1.00E+00	5E-01	1.00E+01	5E-02
Benzyl Alcohol	4.98E-01	4	NA	NA	1.20E+02	4E-03	1.20E+03	4E-04
Bis(2-ethylhexyl)phthalate	1.32E+00	6	NA	NA	2.00E-02	7E+01	2.00E-01	7E+00
Chrysene	2.95E-02	3	NA	NA	3.10E+00	1E-02	3.10E+01	1E-03
Diethylphthalate	1.44E-02	1	NA	NA	1.00E+02	1E-04	1.00E+03	1E-05
Di-n-butylphthalate	7.44E-01	4	NA	NA	1.10E-02	7E+01	1.10E-01	7E+00
Fluoranthene	5.33E-02	4	NA	NA	1.00E+01	5E-03	2.30E+01	2E-03
HMX	3.87E+00	11	NA	NA	1.60E+01	2E-01	1.60E+02	2E-02
Indeno(1,2,3-cd)pyrene	2.05E-02	2	NA	NA	7.10E+01	3E-04	7.10E+02	3E-05
Isophorone	3.24E-01	1	NA	NA	NA	NA	NA	NA
Methylene Chloride	5.73E-03	5	NA	NA	2.60E+00	2E-03	2.20E+01	3E-04
Naphthalene	1.51E-02	1	NA	NA	1.00E+00	2E-02	1.00E+01	2E-03
Phenanthrene	2.78E-02	4	NA	NA	5.50E+00	5E-03	1.20E+01	2E-03
Pyrene	5.57E-02	4	NA	NA	1.00E+01	6E-03	2.00E+01	3E-03
RDX	4.76E+00	7	NA	NA	2.30E+00	2E+00	4.30E+00	1E+00
TATB	2.22E+01	16	NA	NA	*1.20E+00*	2E+01	*1.20E+01*	2E+00
INORGANIC HI						2E+02		3E+01
ORGANIC HI						2E+02		2E+01

Notes:
Table 2-2 presents the comparison of maximum inorganic concentrations to BV. Only inorganics that exceeded BVs are shown in this table.
Shaded cells indicate the ratio > 0.3 for initial screening evaluation
Italics – a surrogate is used. See Section 1.2.3.
Only detected data and inorganics above background are reported and evaluated in this table.

Abbreviations:

BV – Background Value	mg/kg – Milligram per kilogram
ESL – Ecological Screening Value	LE – Low Effect
Max– Maximum Exposure Point Concentration	NE – No Effect

Table 3-2. Ecological Risk Evaluation Using UCL95 EPCs for COPCs.

Name	UCL95 (mg/kg)	UCL Type	Distribution	Minimum NE ESL (mg/kg)	UCL/ NE ESL Ratio	Minimum LE ESL (mg/kg)	UCL/ LE ESL Ratio
Cadmium	0.096	Median all data	NA - 3 detect	2.70E-01	4E-01	1.60E+00	6E-02
Chromium	21.78	95% Chebyshev (Mean, Sd) UCL	None	2.30E+01	9E-01	7.30E+01	3E-01
Copper	237.10	95% Chebyshev (Mean, Sd) UCL	Lognormal	1.40E+01	2E+01	4.30E+01	6E+00
Lead	13.1	95% Adjusted Gamma UCL	Approx Gamma	1.10E+01	1E+00	2.30E+01	6E-01
Mercury	0.598	99% KM (Chebyshev) UCL	None	1.30E-02	5E+01	1.30E-01	5E+00
Silver	0.678	95% H-UCL	Lognormal	2.60E+00	3E-01	2.60E+01	3E-02
Thallium	0.137	Median all data	NA - 3 detect	5.00E-02	3E+00	5.00E-01	3E-01
Zinc	35.81	95% Adjusted Gamma UCL	Adjusted Gamma	4.7E+01	8E-01	1.2E+02	3E-01
Benzoic Acid	0.168	Median all data	NA - 2 detects	1.00E+00	2E-01	1.00E+01	2E-02
Bis(2-ethylhexyl)phthalate	0.493	95% KM (t) UCL	Normal	2.00E-02	2E+01	2.00E-01	2E+00
Di-n-butylphthalate	0.010	Median all data	NA - 4 detects	1.10E-02	9E-01	1.10E-01	9E-02
RDX	1.48	95% KM (t) UCL	Normal	2.30E+00	6E-01	4.30E+00	3E-01
TATB	14.48	95% Student's-t UCL	Normal	1.20E+00	1E+01	1.20E+01	1E+00
Hazard Index					1E+02		2E+01

Notes:
Median - median of detects and MDLs once duplicates are averaged
Shaded cells represent HQs>1
HI is the sum of all HQs

Abbreviations:
ESL – Ecological Screening Level
HI – Hazard Index
LE – Low Effect
mg/kg – milligram per kilogram
NE – No Effect
UCL – Upper Confidence Limit

Table 3-3. Toxic Equivalency Factors (TEFs) Used for Calculating Ecological TCDD Equivalent Concentrations

Name	CAS	Mammalian TEF[a]	Avian TEF[b]
Chlorinated dibenzo-p-dioxins			
2,3,7,8-TCDD	1746-01-6	1	1
1,2,3,7,8-PeCDD	40321-76-4	1	1
1,2,3,4,7,8-HxCDD	39227-28-6	0.1	0.05
1,2,3,6,7,8-HxCDD	57653-85-7	0.1	0.01
1,2,3,7,8,9-HxCDD	19408-74-3	0.1	0.1
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.01	0.001
OCDD	3268-87-9	0.0003	0.0001
Chlorinated dibenzofurans			
2,3,7,8-TCDF	51207-31-9	0.1	1
1,2,3,7,8-PeCDF	57117-41-6	0.03	0.1
2,3,4,7,8-PeCDF	57117-31-4	0.3	0.1
1,2,3,4,7,8-HxCDF	70648-26-9	0.1	1
1,2,3,6,7,8-HxCDF	57117-44-9	0.1	0.1
1,2,3,7,8,9-HxCDF	72918-21-9	0.1	0.1
2,3,4,6,7,8-HxCDF	60851-34-5	0.1	0.1
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.01	0.01
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.01	0.01
OCDF	39001-02-0	0.0003	0.0001

[a] EPA (2010a,b); WHO (2009)
[b] Van den Berg et al. (1998)

Table 3-4. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Mammalian Risk Estimates by Sample

Parameter Name	CAS	Point 1 (WST36-18-162834)		Point 1 Dup (WST36-18-162985)		Point 2 (WST36-18-162986)		Point 3 (WST36-18-162987)		Point 4 (WST36-18-162988)		Point 6 (WST36-18-162989)	
		Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	8.40E-07	8.40E-09	6.82E-07	6.82E-09	3.68E-06	3.68E-08	7.96E-06	7.96E-08	1.74E-06	1.74E-08	1.06E-06	1.06E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	5.00E-07	ND	4.97E-07	ND	8.20E-07	8.20E-09	1.49E-06	1.49E-08	4.97E-07	ND	4.97E-07	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	5.61E-06	1.68E-09	4.56E-06	1.37E-09	3.41E-05	1.02E-08	7.74E-05	2.32E-08	1.40E-05	4.20E-09	1.02E-05	3.06E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	9.99E-07	ND	9.94E-07	ND	2.54E-06	7.62E-10	5.55E-06	1.67E-09	9.94E-07	ND	9.94E-07	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.99E-08	ND	9.94E-08	ND	9.95E-08	ND	1.01E-07	ND	9.94E-08	ND	9.94E-08	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.10E-07	1.10E-08	1.75E-07	1.75E-08	1.31E-07	1.31E-08	2.27E-07	2.27E-08	1.79E-07	1.79E-08	1.87E-07	1.87E-08
TEQ (mg/kg)			2.11E-08		2.57E-08		6.91E-08		1.42E-07		3.95E-08		3.24E-08
Mammalian NE ESL (mg/kg) =5.80E-07	HQ =	4E-02		4E-02		1E-01		2E-01		7E-02		6E-02	
Mammalian LE ESL (mg/kg) = 3.80E-06	HQ =	6E-03		7E-03		2E-02		4E-02		1E-02		9E-03	

Table 3-4. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Mammalian Risk Estimates by Sample

Parameter Name	CAS	Point 7 (WST36-18-162990)		Point 8 (WST36-18-162991)		Point 9 (WST36-18-162992)		Point 10 (WST36-18-162993)		Point 11 (WST36-18-162994)	
		Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	1.11E-06	1.11E-08	4.67E-06	4.67E-08	2.20E-05	2.20E-07	8.35E-06	8.35E-08	4.84E-05	4.84E-07
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	4.98E-07	ND	4.99E-07	ND	3.44E-06	3.44E-08	1.29E-06	1.29E-08	4.02E-06	4.02E-08
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	5.85E-07	5.85E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.98E-07	ND	4.99E-07	ND	6.27E-07	6.27E-08	4.98E-07	ND	1.09E-06	1.09E-07
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	1.11E-06	1.11E-07
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	1.01E-05	3.03E-09	4.30E-05	1.29E-08	1.82E-04	5.46E-08	6.93E-05	2.08E-08	3.90E-04	1.17E-07
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	9.95E-07	ND	1.33E-06	3.99E-10	1.01E-05	3.03E-09	3.95E-06	1.19E-09	1.39E-05	4.17E-09
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.95E-08	ND	9.99E-08	ND	9.96E-08	ND	9.97E-08	ND	1.05E-07	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.71E-07	1.71E-08	1.44E-07	1.44E-08	1.73E-07	ND	1.67E-07	ND	2.19E-07	ND
TEQ (mg/kg)			3.12E-08		7.44E-08		3.75E-07		1.18E-07		9.24E-07
Mammalian NE ESL (mg/kg) = 5.80E-07	HQ =	5E-02		1E-01		6E-01		2E-01		2E+00	
Mammalian LE ESL (mg/kg) = 3.80E-06	HQ =	8E-03		2E-02		1E-01		3E-02		2E-01	

Table 3-4. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Mammalian Risk Estimates by Sample

Parameter Name	CAS	Point 12 (WST36-18-162995)		Point 13 (WST36-18-162996)		Point 14 (WST36-18-162997)		Point 15 (WST36-18-162998)		Point 5 (WST36-18-162999)	
		Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	1.13E-04	1.13E-06	4.70E-05	4.70E-07	1.59E-05	1.59E-07	7.51E-07	7.51E-09	8.19E-07	8.19E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	3.66E-06	3.66E-08	2.48E-06	2.48E-08	9.11E-07	9.11E-09	4.97E-07	ND	5.01E-07	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	6.79E-07	6.79E-08	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	1.45E-06	1.45E-07	8.22E-07	8.22E-08	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	9.91E-07	9.91E-08	6.55E-07	6.55E-08	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	9.20E-04	2.76E-07	3.40E-04	1.02E-07	1.14E-04	3.42E-08	5.49E-06	1.65E-09	8.29E-06	2.49E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	1.63E-05	4.89E-09	8.97E-06	2.69E-09	2.47E-06	7.41E-10	9.93E-07	ND	1.00E-06	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.95E-08	ND	9.95E-08	ND	9.99E-08	ND	1.12E-07	ND	1.00E-07	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.59E-07	1.59E-08	2.51E-07	2.51E-08	1.78E-07	1.78E-08	2.13E-07	2.13E-08	2.36E-07	2.36E-08
TEQ		1.78E-06		7.72E-07		2.21E-07		3.05E-08		3.43E-08	
Mammalian NE ESL = 5.80E-07	HQ=	3E+00		1E+00		4E-01		5E-02		6E-02	
Mammalian LE ESL = 3.80E-06	HQ =	5E-01		2E-01		6E-02		8E-03		9E-03	

Notes: Sample locations are shown in Figure 1-1.
The result multiplied by the TEF (Table 3-3) is the TECi. The sum of the TECi values provides the TEQ. HQs are the TEQ divided by the NE or LE ESL. Shaded cells indicate the HQ is greater than 0.3
The deer mouse ESLs are used in lieu of shrew ESLs as this area is not preferred shrew habitat.
All data in mg/kg

Abbreviations:
Ci – Measured Sample Concentration of Congener i; TECi – Toxicity Equivalent Concentration for Congener i; TEF – Toxicity Equivalency Factor; TEQ – Toxicity Equivalent Quotient; ND – Not detected

Table 3-5. Dioxin-Furan TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Parameter Name	CAS	Point 1 (WST36-18-162834)		Point 1 Dup (WST36-18-162985)		Point 2 (WST36-18-162986)		Point 3 (WST36-18-162987)		Point 4 (WST36-18-162988)		Point 6 (WST36-18-162989)	
		Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	8.40E-07	8.40E-10	6.82E-07	6.82E-10	3.68E-06	3.68E-09	7.96E-06	7.96E-09	1.74E-06	1.74E-09	1.06E-06	1.06E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	5.00E-07	ND	4.97E-07	ND	8.20E-07	8.20E-09	1.49E-06	1.49E-08	4.97E-07	ND	4.97E-07	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	5.61E-06	1.68E-10	4.56E-06	4.56E-10	3.41E-05	3.41E-09	7.74E-05	7.74E-09	1.40E-05	1.40E-09	1.02E-05	1.02E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	9.99E-07	ND	9.94E-07	ND	2.54E-06	2.54E-10	5.55E-06	5.55E-10	9.94E-07	ND	9.94E-07	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	5.00E-07	ND	4.97E-07	ND	4.98E-07	ND	5.03E-07	ND	4.97E-07	ND	4.97E-07	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.99E-08	ND	9.94E-08	ND	9.95E-08	ND	1.01E-07	ND	9.94E-08	ND	9.94E-08	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.10E-07	1.10E-07	1.75E-07	1.75E-07	1.31E-07	1.31E-07	2.27E-07	2.27E-07	1.79E-07	1.79E-07	1.87E-07	1.87E-07
TEQ (mg/kg)			1.11E-07		1.76E-07		1.47E-07		2.58E-07		1.82E-07		1.89E-07
Avian NE ESL (mg/kg) =4.1E-06	HQ =	3E-02		4E-02		4E-02		6E-02		4E-02		5E-02	
Avian LE ESL (mg/kg) = 4.1E-05	HQ =	3E-03		4E-03		4E-03		6E-03		4E-03		5E-03	

Table 3-5. Dioxin-Furan TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Parameter Name	CAS	Point 7 (WST36-18-162990)		Point 8 (WST36-18-162991)		Point 9 (WST36-18-162992)		Point 10 (WST36-18-162993)		Point 11 (WST36-18-162994)	
		Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	1.11E-06	1.11E-09	4.67E-06	4.67E-09	2.20E-05	2.20E-08	8.35E-06	8.35E-09	4.84E-05	4.84E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	4.98E-07	ND	4.99E-07	ND	3.44E-06	3.44E-08	1.29E-06	1.29E-08	4.02E-06	4.02E-08
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	5.85E-07	2.93E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.98E-07	ND	4.99E-07	ND	6.27E-07	6.27E-09	4.98E-07	ND	1.09E-06	1.09E-08
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	1.11E-06	1.11E-07
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	1.01E-05	1.01E-09	4.30E-05	4.30E-09	1.82E-04	1.82E-08	6.93E-05	6.93E-09	3.90E-04	3.90E-08
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	9.95E-07	ND	1.33E-06	1.33E-10	1.01E-05	1.01E-09	3.95E-06	3.95E-10	1.39E-05	1.39E-09
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.98E-07	ND	4.99E-07	ND	4.98E-07	ND	4.98E-07	ND	4.98E-07	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.95E-08	ND	9.99E-08	ND	9.96E-08	ND	9.97E-08	ND	1.05E-07	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.71E-07	1.71E-07	1.44E-07	1.44E-07	1.73E-07	ND	1.67E-07	ND	2.19E-07	ND
TEQ (mg/kg)			1.73E-07		1.53E-07		8.19E-08		2.86E-08		2.80E-07
Avian NE ESL (mg/kg) = 4.1E-06	HQ=	4E-02		4E-02		2E-02		7E-03		7E-02	
Avian LE ESL (mg/kg) = 4.1E-05	HQ=	4E-03		4E-03		2E-03		7E-04		7E-03	

Table 3-5. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Parameter Name	CAS	Point 12 (WST36-18-162995)		Point 13 (WST36-18-162996)		Point 14 (WST36-18-162997)		Point 15 (WST36-18-162998)		Point 5 (WST36-18-162999)	
		Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi	Result (mg/kg)	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	1.13E-04	1.13E-07	4.70E-05	4.70E-08	1.59E-05	1.59E-08	7.51E-07	7.51E-10	8.19E-07	8.19E-10
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	3.66E-06	3.66E-08	2.48E-06	2.48E-08	9.11E-07	9.11E-09	4.97E-07	ND	5.01E-07	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	6.79E-07	3.40E-08	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	1.45E-06	1.45E-08	8.22E-07	8.22E-09	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	9.91E-07	9.91E-08	6.55E-07	6.55E-08	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	9.20E-04	9.20E-08	3.40E-04	3.40E-08	1.14E-04	1.14E-08	5.49E-06	5.49E-10	8.29E-06	8.29E-10
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	1.63E-05	1.63E-09	8.97E-06	8.97E-10	2.47E-06	2.47E-10	9.93E-07	ND	1.00E-06	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.98E-07	ND	4.98E-07	ND	5.00E-07	ND	4.97E-07	ND	5.01E-07	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.95E-08	ND	9.95E-08	ND	9.99E-08	ND	1.12E-07	ND	1.00E-07	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.59E-07	ND	2.51E-07	ND	1.78E-07	ND	2.13E-07	ND	2.36E-07	ND
TEQ		3.91E-07		1.80E-07		3.67E-08		1.30E-09		1.65E-09	
Avian NE ESL (mg/kg) = 4.1E-06	HQ =	1E-01		4E-02		9E-03		3E-04		4E-04	
Avian LE ESL (mg/kg) = 4.1E-05	HQ =	1E-02		4E-03		9E-04		3E-05		4E-05	

Notes: Sample locations are shown in Figure 1-1.
The result multiplied by the TEF (Table 3-3) is the TECi. The sum of the TECi values provides the TEQ. HQs are the TEQ divided by the NE or LE ESL. Shaded cells indicate the HQ is greater than 0.3
All data in mg/kg

Abbreviations:
Ci – Measured Sample Concentration of Congener i; TECi – Toxicity Equivalent Concentration for Congener i; TEF – Toxicity Equivalency Factor; TEQ – Toxicity Equivalent Quotient; ND – Not detected

Table 3-6. UCL95 Calculations for Dioxin/Furans for Mammals

Congener Name	CAS	UCL	UCL Type	Distribution
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	4.40E-05	95% Adjusted Gamma UCL	Gamma
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	2.05E-06	95% KM (t) UCL	Normal
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7		NA- all ND	NA - all ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.98E-07	Median - all data	NA - 2 detects
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.99E-07	Median - all data	NA - 4 detects
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.99E-07	Median - all data	NA - 3 detects
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9		NA- all ND	NA - all ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9		NA- all ND	NA - all ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9		NA- all ND	NA - all ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5		NA- all ND	NA - all ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	3.48E-04	95% Adjusted Gamma UCL	Gamma
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	7.14E-06	95% KM (t) UCL	Normal
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4		NA- all ND	NA - all ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6		NA- all ND	NA - all ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4		NA- all ND	NA - all ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6		NA- all ND	NA - all ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.74E-07	95% KM (t) UCL	Normal

Congener Name	CAS	TEF	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	4.40E-07
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	2.05E-08
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	4.98E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	4.99E-08
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	4.99E-08
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	1.04E-07
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	2.14E-09
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	1.74E-08
TEQ			**7.34E-07**
NMED SSL Residential	**5E-05**	**HQ =**	1E-02
NMED SSL Industrial	**8E-03**	**HQ =**	9E-05

Note: the UCL is multiplied by the mammalian TEF to obtain the TECi. The TECi are summed to obtain the TEQ. The TEQ is divided by the ESL for TCDD to obtain An HQ. The HQs are less than 1, indicating no risk to mammals.

Table 3-7. Area Use Factor and Site-Specific Hazard Analysis for TA 36 Based on NE ESLs

COPC Name	CAS	No Effect Ecological Screening Levels (ESLs) for Terrestrial Receptors (mg/kg)									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
Copper	Cu	80	34	14	20	63	260	80	70	42	4000
Mercury	Hg	0.058	0.067	0.013	0.022	3	23	0.05	34	1.7	76
Thallium	Tl	48	6.9	4.5	5.5	0.72	1.2	0	0.05	0.42	5
Bis(2-ethylhexyl)phthalate	117-81-7	0.096	16	0.02	0.04	1.1	1900	0	0	0.6	500
TATB		0	0	0	0	110	150	10	0	720	10000

Note: The TATB toxicity values are based on 1,3,5-trinitrobenzene as a surrogate

	Kestrel	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
HR (ha)[a]	106	0.42	0.42	0.42	0.077	3.1	NA	NA	0.39	1038
Population Area[b]	4240	16.8	16.8	16.8	3.08	124	NA	NA	15.6	41520
PAUF[c]	0.00014	0.035	0.035	0.035	0.19	0.005	NA	NA	0.037	0.000014
AUF[d]	0.0055	1.00	1.00	1.00	1.00	0.19	NA	NA	1.00	0.0006

COPC Name	UCL95 EPC (mg/kg)	Population Area Use Adjusted NE ESL Hazard Quotients									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Inorganics											
Copper	237.10	4E-04	2E-01	6E-01	4E-01	7E-01	4E-03	3E+00	3E+00	2E-01	8E-07
Mercury	0.60	1E-03	3E-01	2E+00	9E-01	4E-02	1E-04	1E+01	2E-02	1E-02	1E-07
Thallium	0.14	4E-07	7E-04	1E-03	9E-04	4E-02	5E-04	NA, No ESL	3E+00	1E-02	4E-07
Organics											
Bis(2-ethylhexyl)phthalate	0.49	7E-04	1E-03	9E-01	4E-01	8E-02	1E-06	NA, No ESL	NA, No ESL	3E-02	1E-08
TATB	14.48	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	2E-02	5E-04	1E+00	NA, No ESL	7E-04	2E-08

Notes:
Area of Site (ha): 0.08

NA - Not applicable
ESLs - Ecological screening level
PAUF - Population area use factor
AUF - Area use factor
HR - Home range

a - Values from USEPA (1993)
b - Derived as 40*HR
c - PAUF is the area of site divided by the Population Area
d - AUF is the area of the site divided by the HR; AUF cannot exceed 1 and value is set to 1 if calculation results in a higher value

Table 3-8. Area Use Factors and Site-Specific Hazard Analysis for TA 36 Based on LE ESLs.

COPC Name	CAS	Low Effect Ecological Screening Levels (ESLs) for Terrestrial Receptors (mg/kg)									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
Copper	Cu	240	100.0	43	60	100	430	530	490	70	6700
Mercury	Hg	0.58	0.7	0.13	0.22	30	230	0.5	64	17	760
Thallium	Tl	480	69.0	45	55	7.2	12	0	0.5	4.2	50
Bis(2-ethylhexyl)phthalate	117-81-7	0.96	160.0	0.2	0.4	11	19000	0	0	6	5000
TATB		0	0	0	0	1100	1500	28	0	7200	100000

Note: The TATB toxicity values are based on 1,3,5-trinitrobenzene as a surrogate

HR (ha)[a]	106	0.42	0.42	0.42	0.077	3.1	NA	NA	0.39	1038
Population Area[b]	4240	16.8	16.8	16.8	3.08	124	NA	NA	15.6	41520
PAUF[c]	0.00014	0.035	0.035	0.035	0.19	0.005	NA	NA	0.037	0.000014
AUF[d]	0.0055	1.00	1.00	1.00	1.00	0.19	NA	NA	1.00	0.0006

COPC Name	UCL95 EPC (mg/kg)	Population Area Use Adjusted LE ESL Hazard Quotients									
		Kestrel (carnivore/ insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Inorganics											
Copper	237.10	1E-04	8E-02	2E-01	1E-01	4E-01	3E-03	4E-01	5E-01	1E-01	5E-07
Mercury	0.60	1E-04	3E-02	2E-01	9E-02	4E-03	1E-05	1E+00	9E-03	1E-03	1E-08
Thallium	0.14	4E-08	7E-05	1E-04	9E-05	4E-03	5E-05	NA, No ESL	3E-01	1E-03	4E-08
Organics											
Bis(2-ethylhexyl)phthalate	0.49	7E-05	1E-04	9E-02	4E-02	8E-03	1E-07	NA, No ESL	NA, No ESL	3E-03	1E-09
TATB	14.48	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	2E-03	5E-05	5E-01	NA, No ESL	7E-05	2E-09

Notes:

Area of Site (ha): 0.015

NA - Not applicable
PAUF - Population area use factor
HR - Home range
ESLs - Ecological screening level
AUF - Area use factor

a - Values from USEPA (1993)
b - Derived as 40*HR
c - PAUF is the area of site divided by the Population Area
d - AUF is the area of the site divided by the HR; AUF cannot exceed 1 and value is set to 1 if calculation results in a higher value

Table 3-9. Hazard Index Analysis by Receptor for Exposure Adjusted with Area Use Factors

Hazard Index	**Kestrel (carnivore/insectivore)**	**Robin (herbivore)**	**Robin (insectivore)**	**Robin (omnivore)**	**Deer mouse**	**Desert cottontail**	**Earthworm**	**Plant**	**Montane shrew**	**Red fox**
Hazard Index for NE ESL	3E-03	6E-01	3E+00	2E+00	9E-01	5E-03	2E+01	6E+00	3E-01	1E-06
Hazard Index for LE ESL	3E-04	1E-01	4E-01	3E-01	5E-01	3E-03	2E+00	8E-01	1E-01	5E-07

Figures

Figure 1-1. Sample Location Map for TA-36 OD Area

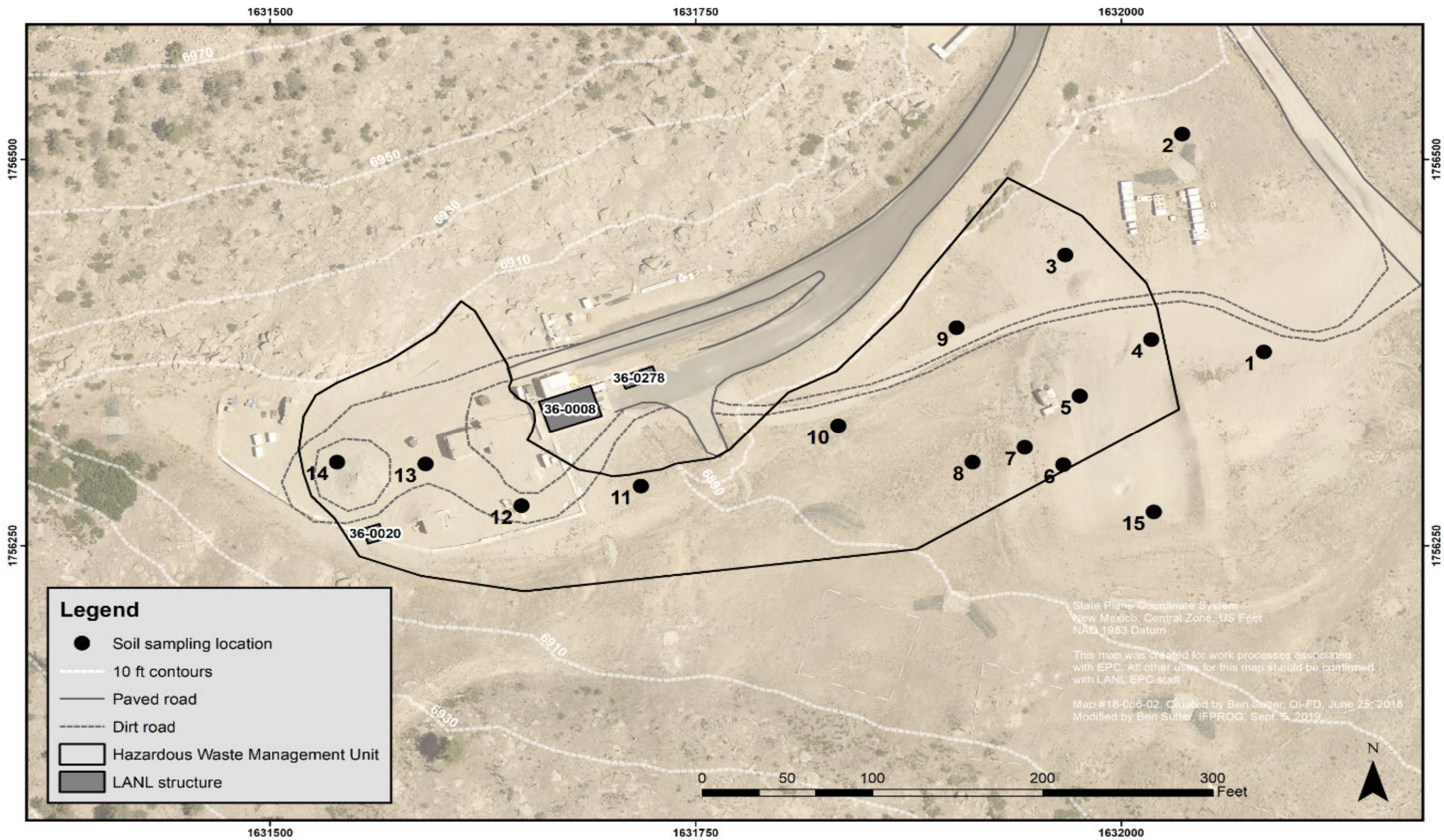
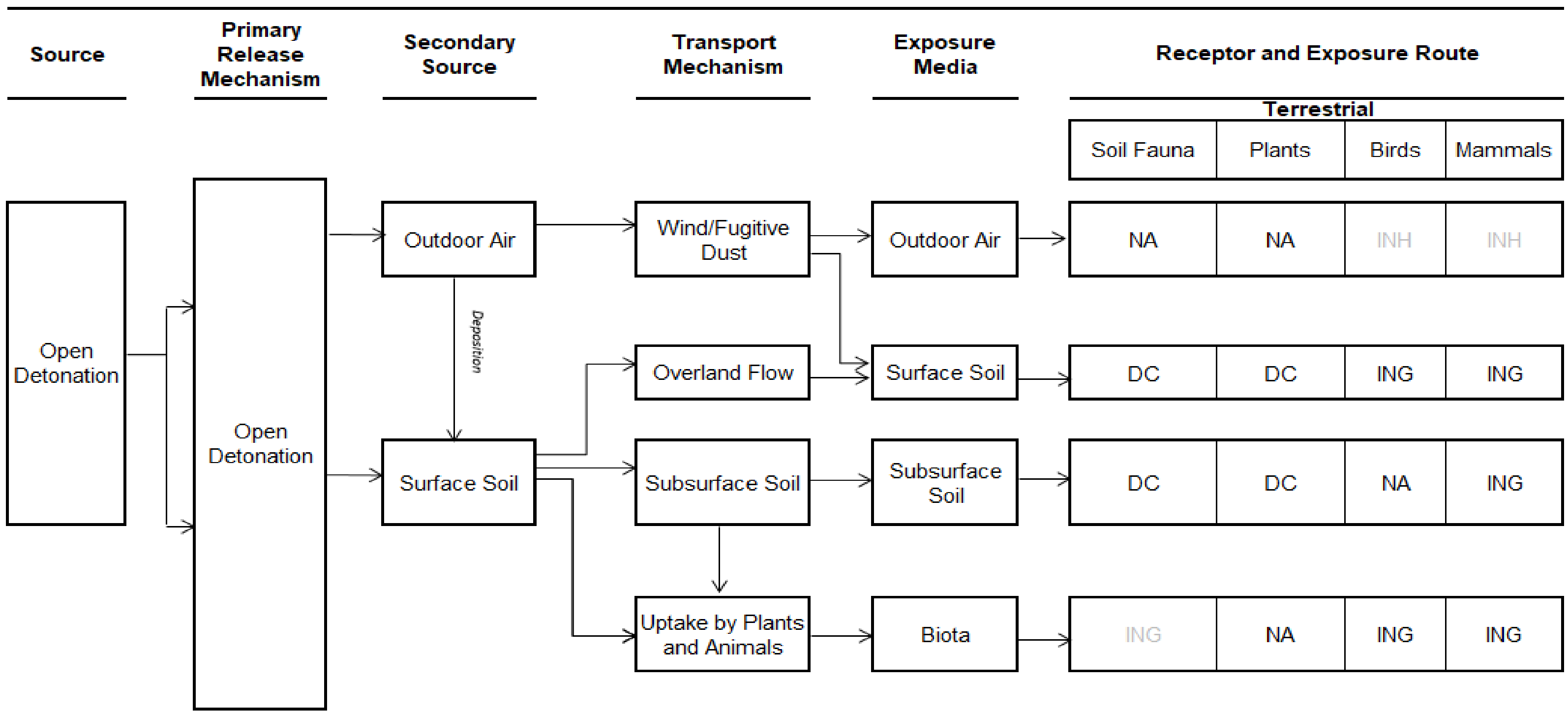


Figure 3-1. Conceptual Site Exposure Model (CSEM) for the Ecological Risk Assessment



Abbreviations

DC Direct contact; applies to receptors for which toxic effects are addressed by exposure concentration and not dose
ING Ingestion; typically quantified as dose for birds and mammals only
INH Inhalation; recognized to occur, but not typically quantified as standard practice with the exception of evaluating burrow air exposure by burrowing mammals
NA Pathway considered incomplete; not applicable

Notes:

Grayed text indicates pathways are recognized to potentially exist but are not quantified. Inhalation is considered minimal relative to dietary exposure. Ingestion by invertebrates is not typically quantified due to absence of accurate exposure parameters.

Attachment A. ProUCL Output for Upper Confidence Limit Calculations

UCL Statistics for Data Sets with Non-Detects

User Selected Options			
Date/Time of Computation		**ProUCL 5.19/27/2019 3:01:10 PM**	
From File		**UCL Data TA 36.xls**	
Full Precision		**OFF**	
Confidence Coefficient		**95%**	
Number of Bootstrap Operations		**2000**	

TL

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	10
Number of Detects	3	Number of Non-Detects	12
Number of Distinct Detects	3	Number of Distinct Non-Detects	7
Minimum Detect	0.158	Minimum Non-Detect	0.129
Maximum Detect	2.22	Maximum Non-Detect	0.141
Variance Detects	1.337	Percent Non-Detects	80%
Mean Detects	0.887	SD Detects	1.156
Median Detects	0.282	CV Detects	1.304
Skewness Detects	1.71	Kurtosis Detects	N/A
Mean of Logged Detects	-0.771	SD of Logged Detects	1.389

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Cd

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
Number of Detects	3	Number of Non-Detects	12
Number of Distinct Detects	3	Number of Distinct Non-Detects	12
Minimum Detect	0.252	Minimum Non-Detect	0.0918
Maximum Detect	0.467	Maximum Non-Detect	0.101
Variance Detects	0.0137	Percent Non-Detects	80%
Mean Detects	0.333	SD Detects	0.117
Median Detects	0.28	CV Detects	0.351
Skewness Detects	1.621	Kurtosis Detects	N/A
Mean of Logged Detects	-1.138	SD of Logged Detects	0.33

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Cr

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	3.82	Mean	9.194
Maximum	49.2	Median	6.67
SD	11.19	Std. Error of Mean	2.888
Coefficient of Variation	1.217	Skewness	3.735

Normal GOF Test			
Shapiro Wilk Test Statistic	0.415	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.401	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	14.28	95% Adjusted-CLT UCL (Chen-1995)	16.92

		95% Modified-t UCL (Johnson-1978)	14.74
Gamma GOF Test			
A-D Test Statistic	2.378	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.747	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.328	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.224	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.033	k star (bias corrected MLE)	1.671
Theta hat (MLE)	4.523	Theta star (bias corrected MLE)	5.503
nu hat (MLE)	60.98	nu star (bias corrected)	50.12
MLE Mean (bias corrected)	9.194	MLE Sd (bias corrected)	7.113
		Approximate Chi Square Value (0.05)	34.86
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	33.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	13.22	95% Adjusted Gamma UCL (use when n<50)	13.84
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.701	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.274	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.34	Mean of logged Data	1.953
Maximum of Logged Data	3.896	SD of logged Data	0.595
Assuming Lognormal Distribution			
95% H-UCL	11.89	90% Chebyshev (MVUE) UCL	12.28
95% Chebyshev (MVUE) UCL	14.08	97.5% Chebyshev (MVUE) UCL	16.58
99% Chebyshev (MVUE) UCL	21.5		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	13.94	95% Jackknife UCL	14.28
95% Standard Bootstrap UCL	13.89	95% Bootstrap-t UCL	38.36
95% Hall's Bootstrap UCL	36.75	95% Percentile Bootstrap UCL	14.83
95% BCA Bootstrap UCL	18.15		
90% Chebyshev(Mean, Sd) UCL	17.86	95% Chebyshev(Mean, Sd) UCL	21.78
97.5% Chebyshev(Mean, Sd) UCL	27.23	99% Chebyshev(Mean, Sd) UCL	37.93
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	21.78		

Cu

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	8.21	Mean	71.46
Maximum	597	Median	27.7
SD	147.1	Std. Error of Mean	37.99
Coefficient of Variation	2.059	Skewness	3.721
Normal GOF Test			
Shapiro Wilk Test Statistic	0.414	Shapiro Wilk GOF Test	

5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.383	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	138.4	95% Adjusted-CLT UCL (Chen-1995)	172.9
		95% Modified-t UCL (Johnson-1978)	144.5
Gamma GOF Test			
A-D Test Statistic	1.652	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.773	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.239	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.23	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.795	k star (bias corrected MLE)	0.68
Theta hat (MLE)	89.9	Theta star (bias corrected MLE)	105
nu hat (MLE)	23.85	nu star (bias corrected)	20.41
MLE Mean (bias corrected)	71.46	MLE Sd (bias corrected)	86.63
		Approximate Chi Square Value (0.05)	11.16
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	10.32
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	130.8	95% Adjusted Gamma UCL (use when n<50)	141.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.175	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.105	Mean of logged Data	3.522
Maximum of Logged Data	6.392	SD of logged Data	1.024
Assuming Lognormal Distribution			
95% H-UCL	122.4	90% Chebyshev (MVUE) UCL	101.7
95% Chebyshev (MVUE) UCL	123.1	97.5% Chebyshev (MVUE) UCL	152.9
99% Chebyshev (MVUE) UCL	211.3		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	133.9	95% Jackknife UCL	138.4
95% Standard Bootstrap UCL	132.5	95% Bootstrap-t UCL	463.5
95% Hall's Bootstrap UCL	371.6	95% Percentile Bootstrap UCL	145.7
95% BCA Bootstrap UCL	186.5		
90% Chebyshev(Mean, Sd) UCL	185.4	95% Chebyshev(Mean, Sd) UCL	237.1
97.5% Chebyshev(Mean, Sd) UCL	308.7	99% Chebyshev(Mean, Sd) UCL	449.5
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	237.1		
Pb			
General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15

		Number of Missing Observations	0
Minimum	4.085	Mean	9.414
Maximum	35.2	Median	6.52
SD	7.706	Std. Error of Mean	1.99
Coefficient of Variation	0.819	Skewness	3.017
Normal GOF Test			
Shapiro Wilk Test Statistic	0.615	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	12.92	95% Adjusted-CLT UCL (Chen-1995)	14.34
		95% Modified-t UCL (Johnson-1978)	13.18
Gamma GOF Test			
A-D Test Statistic	1.049	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.745	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.216	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.223	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.968	k star (bias corrected MLE)	2.419
Theta hat (MLE)	3.172	Theta star (bias corrected MLE)	3.892
nu hat (MLE)	89.04	nu star (bias corrected)	72.57
MLE Mean (bias corrected)	9.414	MLE Sd (bias corrected)	6.053
		Approximate Chi Square Value (0.05)	53.95
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	51.98
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	12.66	95% Adjusted Gamma UCL (use when n<50)	13.14
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.876	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.19	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.407	Mean of logged Data	2.064
Maximum of Logged Data	3.561	SD of logged Data	0.548
Assuming Lognormal Distribution			
95% H-UCL	12.5	90% Chebyshev (MVUE) UCL	13.04
95% Chebyshev (MVUE) UCL	14.85	97.5% Chebyshev (MVUE) UCL	17.35
99% Chebyshev (MVUE) UCL	22.27		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	12.69	95% Jackknife UCL	12.92
95% Standard Bootstrap UCL	12.69	95% Bootstrap-t UCL	18.14
95% Hall's Bootstrap UCL	25.22	95% Percentile Bootstrap UCL	13
95% BCA Bootstrap UCL	14.56		
90% Chebyshev(Mean, Sd) UCL	15.38	95% Chebyshev(Mean, Sd) UCL	18.09

97.5% Chebyshev(Mean, Sd) UCL	21.84	99% Chebyshev(Mean, Sd) UCL	29.21

Suggested UCL to Use
95% Adjusted Gamma UCL 13.14

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Hg

General Statistics

Total Number of Observations	15	Number of Distinct Observations	14
Number of Detects	6	Number of Non-Detects	9
Number of Distinct Detects	6	Number of Distinct Non-Detects	8
Minimum Detect	0.00476	Minimum Non-Detect	0.00343
Maximum Detect	0.775	Maximum Non-Detect	0.00396
Variance Detects	0.0968	Percent Non-Detects	60%
Mean Detects	0.141	SD Detects	0.311
Median Detects	0.0062	CV Detects	2.211
Skewness Detects	2.434	Kurtosis Detects	5.94
Mean of Logged Detects	-4.006	SD of Logged Detects	2.026

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.531	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.452	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0583	KM Standard Error of Mean	0.0543
KM SD	0.192	95% KM (BCA) UCL	0.162
95% KM (t) UCL	0.154	95% KM (Percentile Bootstrap) UCL	0.161
95% KM (z) UCL	0.148	95% KM Bootstrap t UCL	9.206
90% KM Chebyshev UCL	0.221	95% KM Chebyshev UCL	0.295
97.5% KM Chebyshev UCL	0.397	99% KM Chebyshev UCL	0.598

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.083	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.388	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.355	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.332	k star (bias corrected MLE)	0.277
Theta hat (MLE)	0.424	Theta star (bias corrected MLE)	0.508
nu hat (MLE)	3.98	nu star (bias corrected)	3.324
Mean (detects)	0.141		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00476	Mean	0.0623
Maximum	0.775	Median	0.01
SD	0.197	CV	3.169
k hat (MLE)	0.412	k star (bias corrected MLE)	0.374

Theta hat (MLE)	0.151	Theta star (bias corrected MLE)	0.167
nu hat (MLE)	12.36	nu star (bias corrected)	11.22
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (11.22, α)	4.719	Adjusted Chi Square Value (11.22, β)	4.211
95% Gamma Approximate UCL (use when n>=50)	0.148	95% Gamma Adjusted UCL (use when n<50)	0.166

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0583	SD (KM)	0.192
Variance (KM)	0.0368	SE of Mean (KM)	0.0543
k hat (KM)	0.0925	k star (KM)	0.118
nu hat (KM)	2.776	nu star (KM)	3.554
theta hat (KM)	0.631	theta star (KM)	0.493
80% gamma percentile (KM)	0.0504	90% gamma percentile (KM)	0.165
95% gamma percentile (KM)	0.333	99% gamma percentile (KM)	0.85

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.55, α)	0.554	Adjusted Chi Square Value (3.55, β)	0.432
95% Gamma Approximate KM-UCL (use when n>=50)	0.374	95% Gamma Adjusted KM-UCL (use when n<50)	0.48

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.735	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.361	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0563	Mean in Log Scale	-7.708
SD in Original Scale	0.199	SD in Log Scale	3.389
95% t UCL (assumes normality of ROS data)	0.147	95% Percentile Bootstrap UCL	0.159
95% BCA Bootstrap UCL	0.214	95% Bootstrap t UCL	4.154
95% H-UCL (Log ROS)	108.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.008	KM Geo Mean	0.00669
KM SD (logged)	1.427	95% Critical H Value (KM-Log)	3.478
KM Standard Error of Mean (logged)	0.404	95% H-UCL (KM -Log)	0.0697
KM SD (logged)	1.427	95% Critical H Value (KM-Log)	3.478
KM Standard Error of Mean (logged)	0.404		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0574	Mean in Log Scale	-5.383
SD in Original Scale	0.199	SD in Log Scale	1.68
95% t UCL (Assumes normality)	0.148	95% H-Stat UCL	0.111

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	0.598

Ag

General Statistics

Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	0.125	Mean	0.436

Maximum	2.19	Median	0.266
SD	0.536	Std. Error of Mean	0.138
Coefficient of Variation	1.231	Skewness	2.924
Normal GOF Test			
Shapiro Wilk Test Statistic	0.582	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.323	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.679	95% Adjusted-CLT UCL (Chen-1995)	0.775
		95% Modified-t UCL (Johnson-1978)	0.697
Gamma GOF Test			
A-D Test Statistic	1.204	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.755	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.247	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.226	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.461	k star (bias corrected MLE)	1.214
Theta hat (MLE)	0.298	Theta star (bias corrected MLE)	0.359
nu hat (MLE)	43.84	nu star (bias corrected)	36.41
MLE Mean (bias corrected)	0.436	MLE Sd (bias corrected)	0.395
		Approximate Chi Square Value (0.05)	23.6
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	22.33
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.672	95% Adjusted Gamma UCL (use when n<50)	0.71
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.079	Mean of logged Data	-1.211
Maximum of Logged Data	0.784	SD of logged Data	0.788
Assuming Lognormal Distribution			
95% H-UCL	0.678	90% Chebyshev (MVUE) UCL	0.654
95% Chebyshev (MVUE) UCL	0.771	97.5% Chebyshev (MVUE) UCL	0.933
99% Chebyshev (MVUE) UCL	1.251		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.663	95% Jackknife UCL	0.679
95% Standard Bootstrap UCL	0.656	95% Bootstrap-t UCL	1.322
95% Hall's Bootstrap UCL	1.69	95% Percentile Bootstrap UCL	0.693
95% BCA Bootstrap UCL	0.852		
90% Chebyshev(Mean, Sd) UCL	0.851	95% Chebyshev(Mean, Sd) UCL	1.039
97.5% Chebyshev(Mean, Sd) UCL	1.3	99% Chebyshev(Mean, Sd) UCL	1.813

Suggested UCL to Use

95% H-UCL	0.678

ProUCL computes and outputs H-statistic based UCLs for
historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic
based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

BenzAc

General Statistics

Total Number of Observations	15	Number of Distinct Observations	6
Number of Detects	2	Number of Non-Detects	13
Number of Distinct Detects	2	Number of Distinct Non-Detects	4
Minimum Detect	0.458	Minimum Non-Detect	0.167
Maximum Detect	0.497	Maximum Non-Detect	0.17
Variance Detects	7.61E-04	Percent Non-Detects	86.67%
Mean Detects	0.478	SD Detects	0.0276
Median Detects	0.478	CV Detects	0.0578
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-0.74	SD of Logged Detects	0.0578

Warning: Data set has only 2 Detected
Values.
This is not enough to compute meaningful or reliable
statistics and estimates.

B2EHP

General Statistics

Total Number of Observations	15	Number of Distinct Observations	9
Number of Detects	6	Number of Non-Detects	9
Number of Distinct Detects	6	Number of Distinct Non-Detects	3
Minimum Detect	0.0255	Minimum Non-Detect	0.01
Maximum Detect	1.32	Maximum Non-Detect	0.0102
Variance Detects	0.315	Percent Non-Detects	60%
Mean Detects	0.655	SD Detects	0.561
Median Detects	0.616	CV Detects	0.858
Skewness Detects	0.0747	Kurtosis Detects	-2.718
Mean of Logged Detects	-1.05	SD of Logged Detects	1.523

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.866	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.263	Lilliefors GOF Test
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5%
Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.268	KM Standard Error of Mean	0.128
KM SD	0.453	95% KM (BCA) UCL	0.497
95% KM (t) UCL	0.493	95% KM (Percentile Bootstrap) UCL	0.484
95% KM (z) UCL	0.478	95% KM Bootstrap t UCL	0.521
90% KM Chebyshev UCL	0.652	95% KM Chebyshev UCL	0.826
97.5% KM Chebyshev UCL	1.067	99% KM Chebyshev UCL	1.541

Gamma GOF Tests on Detected Observations
Only

A-D Test Statistic	0.417	Anderson-Darling GOF Test
5% A-D Critical Value	0.717	Detected data appear Gamma Distributed at 5% Significance Level

K-S Test Statistic	0.275	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.342	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.93	k star (bias corrected MLE)	0.576
Theta hat (MLE)	0.704	Theta star (bias corrected MLE)	1.136
nu hat (MLE)	11.16	nu star (bias corrected)	6.915
Gamma ROS Statistics using Imputed Non-Detects			
Minimum	0.01	Mean	0.268
Maximum	1.32	Median	0.01
SD	0.468	CV	1.749
k hat (MLE)	0.359	k star (bias corrected MLE)	0.332
Theta hat (MLE)	0.746	Theta star (bias corrected MLE)	0.808
nu hat (MLE)	10.77	nu star (bias corrected)	9.948
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (9.95, α)	3.91	Adjusted Chi Square Value (9.95, β)	3.456
95% Gamma Approximate UCL (use when n>=50)	0.682	95% Gamma Adjusted UCL (use when n<50)	0.771
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.268	SD (KM)	0.453
Variance (KM)	0.205	SE of Mean (KM)	0.128
k hat (KM)	0.35	k star (KM)	0.325
nu hat (KM)	10.51	nu star (KM)	9.74
theta hat (KM)	0.765	theta star (KM)	0.825
80% gamma percentile (KM)	0.418	90% gamma percentile (KM)	0.782
95% gamma percentile (KM)	1.194	99% gamma percentile (KM)	2.255
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (9.74, α)	3.78	Adjusted Chi Square Value (9.74, β)	3.335
95% Gamma Approximate KM-UCL (use when n>=50)	0.69	95% Gamma Adjusted KM-UCL (use when n<50)	0.782
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.863	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.266	Mean in Log Scale	-3.773
SD in Original Scale	0.469	SD in Log Scale	2.692
95% t UCL (assumes normality of ROS data)	0.48	95% Percentile Bootstrap UCL	0.466
95% BCA Bootstrap UCL	0.517	95% Bootstrap t UCL	0.599
95% H-UCL (Log ROS)	61.91		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-3.183	KM Geo Mean	0.0415
KM SD (logged)	1.951	95% Critical H Value (KM-Log)	4.468
KM Standard Error of Mean (logged)	0.552	95% H-UCL (KM -Log)	2.859
KM SD (logged)	1.951	95% Critical H Value (KM-Log)	4.468
KM Standard Error of Mean (logged)	0.552		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.265	Mean in Log Scale	-3.593
SD in Original Scale	0.47	SD in Log Scale	2.334
95% t UCL (Assumes normality)	0.479	95% H-Stat UCL	10.91
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.493		
DNBP			
General Statistics			
Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	4	Number of Non-Detects	11
Number of Distinct Detects	4	Number of Distinct Non-Detects	3
Minimum Detect	0.0131	Minimum Non-Detect	0.01
Maximum Detect	0.744	Maximum Non-Detect	0.0102
Variance Detects	0.118	Percent Non-Detects	73.33%
Mean Detects	0.239	SD Detects	0.343
Median Detects	0.1	CV Detects	1.435
Skewness Detects	1.776	Kurtosis Detects	3.132
Mean of Logged Detects	-2.459	SD of Logged Detects	1.785
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.779	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.333	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.0711	KM Standard Error of Mean	0.0549
KM SD	0.184	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.168	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.161	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.236	95% KM Chebyshev UCL	0.31
97.5% KM Chebyshev UCL	0.414	99% KM Chebyshev UCL	0.617
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.292	Anderson-Darling GOF Test	
5% A-D Critical Value	0.677	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.257	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.408	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.601	k star (bias corrected MLE)	0.317
Theta hat (MLE)	0.398	Theta star (bias corrected MLE)	0.755
nu hat (MLE)	4.805	nu star (bias corrected)	2.535
Mean (detects)	0.239		
Minimum	0.01	Mean	0.0711
Maximum	0.744	Median	0.01
SD	0.19	CV	2.678
k hat (MLE)	0.463	k star (bias corrected MLE)	0.415
Theta hat (MLE)	0.154	Theta star (bias corrected MLE)	0.172
nu hat (MLE)	13.88	nu star (bias corrected)	12.44
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (12.44, α)	5.517	Adjusted Chi Square Value (12.44, β)	4.96
95% Gamma Approximate UCL (use when n>=50)	0.16	95% Gamma Adjusted UCL (use when n<50)	N/A
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.0711	SD (KM)	0.184
Variance (KM)	0.0339	SE of Mean (KM)	0.0549
k hat (KM)	0.149	k star (KM)	0.164

nu hat (KM)	4.483	nu star (KM)	4.92
theta hat (KM)	0.476	theta star (KM)	0.434
80% gamma percentile (KM)	0.0829	90% gamma percentile (KM)	0.213
95% gamma percentile (KM)	0.384	99% gamma percentile (KM)	0.873
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.92, α)	1.115	Adjusted Chi Square Value (4.92, β)	0.912
95% Gamma Approximate KM-UCL (use when n>=50)	0.314	95% Gamma Adjusted KM-UCL (use when n<50)	0.384
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.972	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.064	Mean in Log Scale	-8.202
SD in Original Scale	0.193	SD in Log Scale	4.354
95% t UCL (assumes normality of ROS data)	0.152	95% Percentile Bootstrap UCL	0.16
95% BCA Bootstrap UCL	0.211	95% Bootstrap t UCL	1.471
95% H-UCL (Log ROS)	193999		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-4.033	KM Geo Mean	0.0177
KM SD (logged)	1.24	95% Critical H Value (KM-Log)	3.146
KM Standard Error of Mean (logged)	0.37	95% H-UCL (KM -Log)	0.109
KM SD (logged)	1.24	95% Critical H Value (KM-Log)	3.146
KM Standard Error of Mean (logged)	0.37		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0675	Mean in Log Scale	-4.534
SD in Original Scale	0.192	SD in Log Scale	1.536
95% t UCL (Assumes normality)	0.155	95% H-Stat UCL	0.158
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.168		

RDX

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	9
Number of Distinct Detects	6	Number of Distinct Non-Detects	4
Minimum Detect	0.196	Minimum Non-Detect	0.148
Maximum Detect	4.76	Maximum Non-Detect	0.189
Variance Detects	3.142	Percent Non-Detects	60%
Mean Detects	1.841	SD Detects	1.773
Median Detects	1.549	CV Detects	0.963
Skewness Detects	0.881	Kurtosis Detects	-0.101
Mean of Logged Detects	0.0715	SD of Logged Detects	1.247

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.872	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.257	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.825	KM Standard Error of Mean	0.373
KM SD	1.317	95% KM (BCA) UCL	1.437
95% KM (t) UCL	1.482	95% KM (Percentile Bootstrap) UCL	1.443
95% KM (z) UCL	1.438	95% KM Bootstrap t UCL	1.793
90% KM Chebyshev UCL	1.943	95% KM Chebyshev UCL	2.449
97.5% KM Chebyshev UCL	3.152	99% KM Chebyshev UCL	4.533

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.357	Anderson-Darling GOF Test	
5% A-D Critical Value	0.714	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.241	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.34	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.063	k star (bias corrected MLE)	0.643
Theta hat (MLE)	1.731	Theta star (bias corrected MLE)	2.864
nu hat (MLE)	12.76	nu star (bias corrected)	7.714
Mean (detects)	1.841		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.742
Maximum	4.76	Median	0.01
SD	1.409	CV	1.897
k hat (MLE)	0.285	k star (bias corrected MLE)	0.273
Theta hat (MLE)	2.602	Theta star (bias corrected MLE)	2.723
nu hat (MLE)	8.559	nu star (bias corrected)	8.181
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (8.18, α)	2.84	Adjusted Chi Square Value (8.18, β)	2.467
95% Gamma Approximate UCL (use when n>=50)	2.139	95% Gamma Adjusted UCL (use when n<50)	2.462

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.825	SD (KM)	1.317
Variance (KM)	1.735	SE of Mean (KM)	0.373
k hat (KM)	0.392	k star (KM)	0.358
nu hat (KM)	11.77	nu star (KM)	10.75
theta hat (KM)	2.103	theta star (KM)	2.303
80% gamma percentile (KM)	1.312	90% gamma percentile (KM)	2.374
95% gamma percentile (KM)	3.56	99% gamma percentile (KM)	6.578

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.75, α)	4.417	Adjusted Chi Square Value (10.75, β)	3.929
95% Gamma Approximate KM-UCL (use when n>=50)	2.009	95% Gamma Adjusted KM-UCL (use when n<50)	2.258

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.925	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.754	Mean in Log Scale	-2.331
SD in Original Scale	1.402	SD in Log Scale	2.297
95% t UCL (assumes normality of ROS data)	1.392	95% Percentile Bootstrap UCL	1.384
95% BCA Bootstrap UCL	1.651	95% Bootstrap t UCL	1.884
95% H-UCL (Log ROS)	32.06		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.118	KM Geo Mean	0.327
KM SD (logged)	1.209	95% Critical H Value (KM-Log)	3.091
KM Standard Error of Mean (logged)	0.342	95% H-UCL (KM -Log)	1.842
KM SD (logged)	1.209	95% Critical H Value (KM-Log)	3.091
KM Standard Error of Mean (logged)	0.342		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.782	Mean in Log Scale	-1.515
SD in Original Scale	1.387	SD in Log Scale	1.535
95% t UCL (Assumes normality)	1.413	95% H-Stat UCL	3.228
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.482		

TATB

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
Number of Detects	15	Number of Missing Observations	0
Minimum	3.33	Mean	12.25
Maximum	22.2	Median	12.6
SD	4.896	Std. Error of Mean	1.264
Coefficient of Variation	0.4	Skewness	-0.177
Normal GOF Test			
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	14.48	95% Adjusted-CLT UCL (Chen-1995)	14.27
		95% Modified-t UCL (Johnson-1978)	14.47
Gamma GOF Test			
A-D Test Statistic	0.737	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.207	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.222	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.989	k star (bias corrected MLE)	4.036
Theta hat (MLE)	2.456	Theta star (bias corrected MLE)	3.036

nu hat (MLE)	149.7	nu star (bias corrected)	121.1
MLE Mean (bias corrected)	12.25	MLE Sd (bias corrected)	6.098
		Approximate Chi Square Value (0.05)	96.67
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	93.98
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	15.34	95% Adjusted Gamma UCL (use when n<50)	15.78
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.847	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.237	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.203	Mean of logged Data	2.402
Maximum of Logged Data	3.1	SD of logged Data	0.522
Assuming Lognormal Distribution			
95% H-UCL	16.95	90% Chebyshev (MVUE) UCL	17.76
95% Chebyshev (MVUE) UCL	20.13	97.5% Chebyshev (MVUE) UCL	23.42
99% Chebyshev (MVUE) UCL	29.88		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	14.33	95% Jackknife UCL	14.48
95% Standard Bootstrap UCL	14.22	95% Bootstrap-t UCL	14.24
95% Hall's Bootstrap UCL	14.47	95% Percentile Bootstrap UCL	14.28
95% BCA Bootstrap UCL	14.26		
90% Chebyshev(Mean, Sd) UCL	16.04	95% Chebyshev(Mean, Sd) UCL	17.76
97.5% Chebyshev(Mean, Sd) UCL	20.15	99% Chebyshev(Mean, Sd) UCL	24.83
Suggested UCL to Use			
95% Student's-t UCL	14.48		

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	**ProUCL 5.19/27/2019 4:28:00 PM**
From File	**UCL Data TA 36.xls**
Full Precision	**OFF**
Confidence Coefficient	**95%**
Number of Bootstrap Operations	**2000**

Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	7.51E-07	Mean	1.85E-05
Maximum	1.13E-04	Median	4.67E-06
SD	3.06E-05	Std. Error of Mean	7.90E-06
Coefficient of Variation	N/A	Skewness	2.458
Normal GOF Test			
Shapiro Wilk Test Statistic	0.643	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.296	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	

95% Student's-t UCL	3.24E-05	95% Adjusted-CLT UCL (Chen-1995)	3.68E-05
		95% Modified-t UCL (Johnson-1978)	3.32E-05
Gamma GOF Test			
A-D Test Statistic	0.701	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.792	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.174	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.234	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.514	k star (bias corrected MLE)	0.456
Theta hat (MLE)	3.59E-05	Theta star (bias corrected MLE)	4.05E-05
nu hat (MLE)	15.43	nu star (bias corrected)	13.68
MLE Mean (bias corrected)	1.85E-05	MLE Sd (bias corrected)	2.74E-05
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	5.749
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	3.98E-05	95% Adjusted Gamma UCL (use when n<50)	4.40E-05
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.159	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-14.1	Mean of logged Data	-12.13
Maximum of Logged Data	-9.088	SD of logged Data	1.693
Assuming Lognormal Distribution			
95% H-UCL	1.37E-04	90% Chebyshev (MVUE) UCL	4.70E-05
95% Chebyshev (MVUE) UCL	5.98E-05	97.5% Chebyshev (MVUE) UCL	7.75E-05
99% Chebyshev (MVUE) UCL	1.12E-04		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	3.15E-05	95% Jackknife UCL	3.24E-05
95% Standard Bootstrap UCL	3.14E-05	95% Bootstrap-t UCL	4.67E-05
95% Hall's Bootstrap UCL	6.32E-05	95% Percentile Bootstrap UCL	3.20E-05
95% BCA Bootstrap UCL	3.72E-05		
90% Chebyshev(Mean, Sd) UCL	4.22E-05	95% Chebyshev(Mean, Sd) UCL	5.29E-05
97.5% Chebyshev(Mean, Sd) UCL	6.78E-05	99% Chebyshev(Mean, Sd) UCL	9.71E-05

Suggested UCL to Use	
95% Adjusted Gamma UCL	4.40E-05

Heptachlorodibenzofuran[1,2,3,4,6,7,8-]

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	13
Number of Detects	8	Number of Non-Detects	7
Number of Distinct Detects	8	Number of Distinct Non-Detects	5
Minimum Detect	8.20E-07	Minimum Non-Detect	4.97E-07
Maximum Detect	4.02E-06	Maximum Non-Detect	5.01E-07
Variance Detects	1.70E-12	Percent Non-Detects	46.67%
Mean Detects	2.26E-06	SD Detects	1.31E-06
Median Detects	1.99E-06	CV Detects	N/A
Skewness Detects	0.248	Kurtosis Detects	-2.044
Mean of Logged Detects	-13.17	SD of Logged Detects	0.64

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.878	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.223	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.44E-06	KM Standard Error of Mean	3.46E-07
KM SD	1.25E-06	95% KM (BCA) UCL	2.01E-06
95% KM (t) UCL	2.05E-06	95% KM (Percentile Bootstrap) UCL	2.00E-06
95% KM (z) UCL	2.01E-06	95% KM Bootstrap t UCL	2.24E-06
90% KM Chebyshev UCL	2.48E-06	95% KM Chebyshev UCL	2.95E-06
97.5% KM Chebyshev UCL	3.60E-06	99% KM Chebyshev UCL	4.88E-06

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.442	Anderson-Darling GOF Test
5% A-D Critical Value	0.721	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.211	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.296	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.137	k star (bias corrected MLE)	2.044
Theta hat (MLE)	7.22E-07	Theta star (bias corrected MLE)	1.11E-06
nu hat (MLE)	50.18	nu star (bias corrected)	32.7
Mean (detects)	2.26E-06		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	8.20E-07	Mean	0.00467
Maximum	0.01	Median	4.02E-06
SD	0.00516	CV	1.106
k hat (MLE)	0.194	k star (bias corrected MLE)	0.2
Theta hat (MLE)	0.024	Theta star (bias corrected MLE)	0.0234
nu hat (MLE)	5.83	nu star (bias corrected)	5.997
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (6.00, α)	1.638	Adjusted Chi Square Value (6.00, β)	1.375
95% Gamma Approximate UCL (use when n>=50)	0.0171	95% Gamma Adjusted UCL (use when n<50)	0.0204

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.44E-06	SD (KM)	1.25E-06
Variance (KM)	1.57E-12	SE of Mean (KM)	3.46E-07
k hat (KM)	1.318	k star (KM)	1.099
nu hat (KM)	39.54	nu star (KM)	32.96
theta hat (KM)	1.09E-06	theta star (KM)	1.31E-06
80% gamma percentile (KM)	2.30E-06	90% gamma percentile (KM)	3.24E-06
95% gamma percentile (KM)	4.17E-06	99% gamma percentile (KM)	6.32E-06

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (32.96, α)	20.84	Adjusted Chi Square Value (32.96, β)	19.65
95% Gamma Approximate KM-UCL (use when n>=50)	2.28E-06	95% Gamma Adjusted KM-UCL (use when n<50)	2.41E-06

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.894	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.195	Lilliefors GOF Test
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.37E-06	Mean in Log Scale	-13.97
SD in Original Scale	1.35E-06	SD in Log Scale	1.018
95% t UCL (assumes normality of ROS data)	1.99E-06	95% Percentile Bootstrap UCL	1.95E-06
95% BCA Bootstrap UCL	2.06E-06	95% Bootstrap t UCL	2.18E-06
95% H-UCL (Log ROS)	3.05E-06		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-13.8	KM Geo Mean	1.02E-06

KM SD (logged)	0.802	95% Critical H Value (KM-Log)	2.446
KM Standard Error of Mean (logged)	0.221	95% H-UCL (KM -Log)	2.38E-06
KM SD (logged)	0.802	95% Critical H Value (KM-Log)	2.446
KM Standard Error of Mean (logged)	0.221		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.32E-06	Mean in Log Scale	-14.12
SD in Original Scale	1.39E-06	SD in Log Scale	1.146
95% t UCL (Assumes normality)	1.96E-06	95% H-Stat UCL	3.56E-06

DL/2 is not a recommended method, provided for comparisons and historical reasons
Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL 2.05E-06

Heptachlorodibenzofuran[1,2,3,4,7,8,9-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Heptachlorodibenzofuran[1,2,3,4,7,8,9-] was not processed!

Hexachlorodibenzodioxin[1,2,3,4,7,8-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	9
Number of Detects	2	Number of Non-Detects	13
Number of Distinct Detects	2	Number of Distinct Non-Detects	7
Minimum Detect	5.85E-07	Minimum Non-Detect	4.97E-07
Maximum Detect	6.79E-07	Maximum Non-Detect	5.03E-07
Variance Detects	4.42E-15	Percent Non-Detects	86.67%
Mean Detects	6.32E-07	SD Detects	6.65E-08
Median Detects	6.32E-07	CV Detects	N/A
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-14.28	SD of Logged Detects	0.105

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.
Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Hexachlorodibenzodioxin[1,2,3,6,7,8-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	11
Number of Detects	4	Number of Non-Detects	11
Number of Distinct Detects	4	Number of Distinct Non-Detects	7
Minimum Detect	6.27E-07	Minimum Non-Detect	4.97E-07
Maximum Detect	1.45E-06	Maximum Non-Detect	5.03E-07
Variance Detects	1.27E-13	Percent Non-Detects	73.33%
Mean Detects	9.97E-07	SD Detects	3.57E-07
Median Detects	9.56E-07	CV Detects	N/A
Skewness Detects	0.551	Kurtosis Detects	-0.748
Mean of Logged Detects	-13.87	SD of Logged Detects	0.361

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.977	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	6.30E-07	KM Standard Error of Mean	8.13E-08
KM SD	2.73E-07	95% KM (BCA) UCL	N/A
95% KM (t) UCL	7.74E-07	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	7.64E-07	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	8.74E-07	95% KM Chebyshev UCL	9.85E-07
97.5% KM Chebyshev UCL	1.14E-06	99% KM Chebyshev UCL	1.44E-06

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.206	Anderson-Darling GOF Test	
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.192	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	10.47	k star (bias corrected MLE)	2.784
Theta hat (MLE)	9.53E-08	Theta star (bias corrected MLE)	3.58E-07
nu hat (MLE)	83.76	nu star (bias corrected)	22.27
Mean (detects)	9.97E-07		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	6.27E-07	Mean	0.00733
Maximum	0.01	Median	0.01
SD	0.00458	CV	0.624
k hat (MLE)	0.317	k star (bias corrected MLE)	0.298
Theta hat (MLE)	0.0232	Theta star (bias corrected MLE)	0.0246
nu hat (MLE)	9.495	nu star (bias corrected)	8.93
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (8.93, α)	3.285	Adjusted Chi Square Value (8.93, β)	2.876
95% Gamma Approximate UCL (use when n>=50)	0.0199	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	6.30E-07	SD (KM)	2.73E-07
Variance (KM)	7.44E-14	SE of Mean (KM)	8.13E-08
k hat (KM)	5.344	k star (KM)	4.32
nu hat (KM)	160.3	nu star (KM)	129.6
theta hat (KM)	1.18E-07	theta star (KM)	1.46E-07
80% gamma percentile (KM)	8.62E-07	90% gamma percentile (KM)	1.04E-06
95% gamma percentile (KM)	1.20E-06	99% gamma percentile (KM)	1.54E-06

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (129.59, α)	104.3	Adjusted Chi Square Value (129.59, β)	101.5
95% Gamma Approximate KM-UCL (use when n>=50)	7.83E-07	95% Gamma Adjusted KM-UCL (use when n<50)	8.05E-07

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.993	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.156	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.22E-07	Mean in Log Scale	-15
SD in Original Scale	3.99E-07	SD in Log Scale	0.778
95% t UCL (assumes normality of ROS data)	6.04E-07	95% Percentile Bootstrap UCL	6.09E-07
* 95% BCA Bootstrap UCL	6.37E-07	95% Bootstrap t UCL	7.91E-07
95% H-UCL (Log ROS)	6.85E-07		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-14.34	KM Geo Mean	5.91E-07
KM SD (logged)	0.329	95% Critical H Value (KM-Log)	1.906
KM Standard Error of Mean (logged)	0.0981	95% H-UCL (KM -Log)	7.37E-07
KM SD (logged)	0.329	95% Critical H Value (KM-Log)	1.906
KM Standard Error of Mean (logged)	0.0981		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.49E-07	Mean in Log Scale	-14.85
SD in Original Scale	3.80E-07	SD in Log Scale	0.635
95% t UCL (Assumes normality)	6.22E-07	95% H-Stat UCL	6.35E-07

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (t) UCL	7.74E-07

Hexachlorodibenzodioxin[1,2,3,7,8,9-]

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	10
Number of Detects	3	Number of Non-Detects	12
Number of Distinct Detects	3	Number of Distinct Non-Detects	7
Minimum Detect	6.55E-07	Minimum Non-Detect	4.97E-07
Maximum Detect	1.11E-06	Maximum Non-Detect	5.03E-07
Variance Detects	5.57E-14	Percent Non-Detects	80%
Mean Detects	9.19E-07	SD Detects	2.36E-07
Median Detects	9.91E-07	CV Detects	N/A
Skewness Detects	-1.25	Kurtosis Detects	N/A
Mean of Logged Detects	-13.92	SD of Logged Detects	0.278

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.287	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	5.81E-07	KM Standard Error of Mean	5.99E-08
KM SD	1.89E-07	95% KM (BCA) UCL	N/A
95% KM (t) UCL	6.87E-07	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	6.80E-07	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	7.61E-07	95% KM Chebyshev UCL	8.42E-07
97.5% KM Chebyshev UCL	9.55E-07	99% KM Chebyshev UCL	1.18E-06

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only			
k hat (MLE)	20.63	k star (bias corrected MLE)	N/A
Theta hat (MLE)	4.45E-08	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	123.8	nu star (bias corrected)	N/A
Mean (detects)	9.19E-07		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	6.55E-07	Mean	0.008
Maximum	0.01	Median	0.01
SD	0.00414	CV	0.517
k hat (MLE)	0.401	k star (bias corrected MLE)	0.365
Theta hat (MLE)	0.02	Theta star (bias corrected MLE)	0.0219
nu hat (MLE)	12.03	nu star (bias corrected)	10.95
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (10.95, α)	4.547	Adjusted Chi Square Value (10.95, β)	4.05
95% Gamma Approximate UCL (use when n>=50)	0.0193	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	5.81E-07	SD (KM)	1.89E-07
Variance (KM)	3.59E-14	SE of Mean (KM)	5.99E-08
k hat (KM)	9.421	k star (KM)	7.581
nu hat (KM)	282.6	nu star (KM)	227.4
theta hat (KM)	6.17E-08	theta star (KM)	7.67E-08
80% gamma percentile (KM)	7.48E-07	90% gamma percentile (KM)	8.63E-07
95% gamma percentile (KM)	9.66E-07	99% gamma percentile (KM)	1.18E-06

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (227.43, α)	193.5	Adjusted Chi Square Value (227.43, β)	189.7
95% Gamma Approximate KM-UCL (use when n>=50)	6.83E-07	95% Gamma Adjusted KM-UCL (use when n<50)	6.97E-07

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.902	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level
Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.85E-07	Mean in Log Scale	-14.98
SD in Original Scale	2.98E-07	SD in Log Scale	0.62
95% t UCL (assumes normality of ROS data)	5.21E-07	95% Percentile Bootstrap UCL	5.10E-07
95% BCA Bootstrap UCL	5.45E-07	95% Bootstrap t UCL	6.34E-07
95% H-UCL (Log ROS)	5.48E-07		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-14.4	KM Geo Mean	5.59E-07
KM SD (logged)	0.257	95% Critical H Value (KM-Log)	1.849
KM Standard Error of Mean (logged)	0.0812	95% H-UCL (KM -Log)	6.56E-07
KM SD (logged)	0.257	95% Critical H Value (KM-Log)	1.849
KM Standard Error of Mean (logged)	0.0812		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.83E-07	Mean in Log Scale	-14.95
SD in Original Scale	2.91E-07	SD in Log Scale	0.54
95% t UCL (Assumes normality)	5.16E-07	95% H-Stat UCL	5.05E-07

DL/2 is not a recommended method, provided for comparisons and historical reasons
Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	6.87E-07

Hexachlorodibenzofuran[1,2,3,4,7,8-]
General Statistics

Total Number of Observations	15	Number of Distinct Observations	7

Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzofuran[1,2,3,4,7,8-] was not processed!

Hexachlorodibenzofuran[1,2,3,6,7,8-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzofuran[1,2,3,6,7,8-] was not processed!

Hexachlorodibenzofuran[1,2,3,7,8,9-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzofuran[1,2,3,7,8,9-] was not processed!

Hexachlorodibenzofuran[2,3,4,6,7,8-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzofuran[2,3,4,6,7,8-] was not processed!

Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]

General Statistics

Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	5.09E-06	Mean	1.48E-04
Maximum	9.20E-04	Median	4.30E-05
SD	2.46E-04	Std. Error of Mean	6.34E-05
Coefficient of Variation	1.658	Skewness	2.563

Normal GOF Test

Shapiro Wilk Test Statistic	0.638	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.60E-04	95% Adjusted-CLT UCL (Chen-1995)	2.97E-04
		95% Modified-t UCL (Johnson-1978)	2.67E-04

Gamma GOF Test			
A-D Test Statistic	0.591	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.791	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.173	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.233	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.53	k star (bias corrected MLE)	0.468
Theta hat (MLE)	2.80E-04	Theta star (bias corrected MLE)	3.16E-04
nu hat (MLE)	15.9	nu star (bias corrected)	14.05
MLE Mean (bias corrected)	1.48E-04	MLE Sd (bias corrected)	2.17E-04
		Approximate Chi Square Value (0.05)	6.605
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	5.987
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	3.15E-04	95% Adjusted Gamma UCL (use when n<50)	3.48E-04
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.158	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.22	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-12.19	Mean of logged Data	-10.01
Maximum of Logged Data	-6.991	SD of logged Data	1.671
Assuming Lognormal Distribution			
95% H-UCL	0.00105	90% Chebyshev (MVUE) UCL	3.78E-04
95% Chebyshev (MVUE) UCL	4.80E-04	97.5% Chebyshev (MVUE) UCL	6.22E-04
99% Chebyshev (MVUE) UCL	9.01E-04		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2.53E-04	95% Jackknife UCL	2.60E-04
95% Standard Bootstrap UCL	2.50E-04	95% Bootstrap-t UCL	4.08E-04
95% Hall's Bootstrap UCL	6.05E-04	95% Percentile Bootstrap UCL	2.56E-04
95% BCA Bootstrap UCL	3.18E-04		
90% Chebyshev(Mean, Sd) UCL	3.39E-04	95% Chebyshev(Mean, Sd) UCL	4.25E-04
97.5% Chebyshev(Mean, Sd) UCL	5.44E-04	99% Chebyshev(Mean, Sd) UCL	7.79E-04
Suggested UCL to Use			
95% Adjusted Gamma UCL	3.48E-04		

Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	14
Number of Detects	9	Number of Non-Detects	6
Number of Distinct Detects	9	Number of Distinct Non-Detects	5
Minimum Detect	1.33E-06	Minimum Non-Detect	9.93E-07
Maximum Detect	1.63E-05	Maximum Non-Detect	1.00E-06
Variance Detects	2.89E-11	Percent Non-Detects	40%
Mean Detects	7.23E-06	SD Detects	5.37E-06
Median Detects	5.55E-06	CV Detects	N/A
Skewness Detects	0.634	Kurtosis Detects	-0.993
Mean of Logged Detects	-12.13	SD of Logged Detects	0.866
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.179	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			

KM Mean	4.74E-06	KM Standard Error of Mean	1.36E-06
KM SD	4.98E-06	95% KM (BCA) UCL	7.08E-06
95% KM (t) UCL	7.14E-06	95% KM (Percentile Bootstrap) UCL	6.86E-06
95% KM (z) UCL	6.98E-06	95% KM Bootstrap t UCL	7.89E-06
90% KM Chebyshev UCL	8.83E-06	95% KM Chebyshev UCL	1.07E-05
97.5% KM Chebyshev UCL	1.32E-05	99% KM Chebyshev UCL	1.83E-05
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.266	Anderson-Darling GOF Test	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.283	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.834	k star (bias corrected MLE)	1.297
Theta hat (MLE)	3.95E-06	Theta star (bias corrected MLE)	5.58E-06
nu hat (MLE)	33.01	nu star (bias corrected)	23.34
Mean (detects)	7.23E-06		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.33E-06	Mean	0.004
Maximum	0.01	Median	1.39E-05
SD	0.00507	CV	1.265
k hat (MLE)	0.204	k star (bias corrected MLE)	0.207
Theta hat (MLE)	0.0197	Theta star (bias corrected MLE)	0.0193
nu hat (MLE)	6.112	nu star (bias corrected)	6.223
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (6.22, α)	1.755	Adjusted Chi Square Value (6.22, β)	1.48
95% Gamma Approximate UCL (use when n>=50)	0.0142	95% Gamma Adjusted UCL (use when n<50)	0.0168
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	4.74E-06	SD (KM)	4.98E-06
Variance (KM)	2.48E-11	SE of Mean (KM)	1.36E-06
k hat (KM)	0.907	k star (KM)	0.77
nu hat (KM)	27.21	nu star (KM)	23.1
theta hat (KM)	5.22E-06	theta star (KM)	6.15E-06
80% gamma percentile (KM)	7.76E-06	90% gamma percentile (KM)	1.16E-05
95% gamma percentile (KM)	1.56E-05	99% gamma percentile (KM)	2.50E-05
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (23.10, α)	13.16	Adjusted Chi Square Value (23.10, β)	12.25
95% Gamma Approximate KM-UCL (use when n>=50)	8.31E-06	95% Gamma Adjusted KM-UCL (use when n<50)	8.93E-06
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.167	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.58E-06	Mean in Log Scale	-13.02
SD in Original Scale	5.28E-06	SD in Log Scale	1.312
95% t UCL (assumes normality of ROS data)	6.98E-06	95% Percentile Bootstrap UCL	6.90E-06
95% BCA Bootstrap UCL	7.30E-06	95% Bootstrap t UCL	7.86E-06
95% H-UCL (Log ROS)	1.64E-05		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			

KM Mean (logged)	-12.81	KM Geo Mean	2.74E-06
KM SD (logged)	1.042	95% Critical H Value (KM-Log)	2.811
KM Standard Error of Mean (logged)	0.285	95% H-UCL (KM -Log)	1.03E-05
KM SD (logged)	1.042	95% Critical H Value (KM-Log)	2.811
KM Standard Error of Mean (logged)	0.285		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.54E-06	Mean in Log Scale	-13.09
SD in Original Scale	5.31E-06	SD in Log Scale	1.373
95% t UCL (Assumes normality)	6.95E-06	95% H-Stat UCL	1.84E-05

DL/2 is not a recommended method, provided for comparisons and historical reasons
Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL 7.14E-06

Pentachlorodibenzodioxin[1,2,3,7,8-]
General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Pentachlorodibenzodioxin[1,2,3,7,8-] was not processed!

Pentachlorodibenzofuran[1,2,3,7,8-]
General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Pentachlorodibenzofuran[1,2,3,7,8-] was not processed!

Pentachlorodibenzofuran[2,3,4,7,8-]
General Statistics

Total Number of Observations	15	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Pentachlorodibenzofuran[2,3,4,7,8-] was not processed!

Tetrachlorodibenzodioxin[2,3,7,8-]
General Statistics

Total Number of Observations	15	Number of Distinct Observations	10
Number of Detects	0	Number of Non-Detects	15
Number of Distinct Detects	0	Number of Distinct Non-Detects	10

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Tetrachlorodibenzodioxin[2,3,7,8-] was not processed!

Tetrachlorodibenzofuran[2,3,7,8-]
General Statistics

Total Number of Observations	15	Number of Distinct Observations	15
Number of Detects	7	Number of Non-Detects	8
Number of Distinct Detects	7	Number of Distinct Non-Detects	8
Minimum Detect	1.31E-07	Minimum Non-Detect	1.59E-07
Maximum Detect	2.27E-07	Maximum Non-Detect	2.51E-07
Variance Detects	1.09E-15	Percent Non-Detects	53.33%
Mean Detects	1.69E-07	SD Detects	3.31E-08
Median Detects	1.71E-07	CV Detects	N/A
Skewness Detects	0.755	Kurtosis Detects	0.255
Mean of Logged Detects	-15.61	SD of Logged Detects	0.191

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.932	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.58E-07	KM Standard Error of Mean	8.92E-09
KM SD	2.73E-08	95% KM (BCA) UCL	1.72E-07
95% KM (t) UCL	1.74E-07	95% KM (Percentile Bootstrap) UCL	1.74E-07
95% KM (z) UCL	1.73E-07	95% KM Bootstrap t UCL	1.75E-07
90% KM Chebyshev UCL	1.85E-07	95% KM Chebyshev UCL	1.97E-07
97.5% KM Chebyshev UCL	2.14E-07	99% KM Chebyshev UCL	2.47E-07

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.281	Anderson-Darling GOF Test	
5% A-D Critical Value	0.707	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.22	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.311	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	31.71	k star (bias corrected MLE)	18.22
Theta hat (MLE)	5.32E-09	Theta star (bias corrected MLE)	9.27E-09
nu hat (MLE)	444	nu star (bias corrected)	255
Mean (detects)	1.69E-07		

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.31E-07	Mean	0.00533
Maximum	0.01	Median	0.01
SD	0.00516	CV	0.968
k hat (MLE)	0.168	k star (bias corrected MLE)	0.179
Theta hat (MLE)	0.0318	Theta star (bias corrected MLE)	0.0299
nu hat (MLE)	5.032	nu star (bias corrected)	5.359
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (5.36, α)	1.322	Adjusted Chi Square Value (5.36, β)	1.093
95% Gamma Approximate UCL (use when n>=50)	0.0216	95% Gamma Adjusted UCL (use when n<50)	0.0261

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.58E-07	SD (KM)	2.73E-08
Variance (KM)	7.44E-16	SE of Mean (KM)	8.92E-09
k hat (KM)	33.51	k star (KM)	26.85
nu hat (KM)	1005	nu star (KM)	805.5
theta hat (KM)	4.71E-09	theta star (KM)	5.88E-09
80% gamma percentile (KM)	1.83E-07	90% gamma percentile (KM)	1.98E-07
95% gamma percentile (KM)	2.11E-07	99% gamma percentile (KM)	2.37E-07

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (805.52, α)	740.7	Adjusted Chi Square Value (805.52, β)	733
95% Gamma Approximate KM-UCL (use when n>=50)	1.72E-07	95% Gamma Adjusted KM-UCL (use when n<50)	1.74E-07

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.951	Shapiro Wilk GOF Test	

5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.58E-07	Mean in Log Scale	-15.67
SD in Original Scale	2.45E-08	SD in Log Scale	0.141
95% t UCL (assumes normality of ROS data)	1.69E-07	95% Percentile Bootstrap UCL	1.68E-07
95% BCA Bootstrap UCL	1.71E-07	95% Bootstrap t UCL	1.76E-07
95% H-UCL (Log ROS)	1.69E-07		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-15.67	KM Geo Mean	1.56E-07
KM SD (logged)	0.161	95% Critical H Value (KM-Log)	1.784
KM Standard Error of Mean (logged)	0.0537	95% H-UCL (KM -Log)	1.70E-07
KM SD (logged)	0.161	95% Critical H Value (KM-Log)	1.784
KM Standard Error of Mean (logged)	0.0537		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.32E-07	Mean in Log Scale	-15.89
SD in Original Scale	4.35E-08	SD in Log Scale	0.322
95% t UCL (Assumes normality)	1.52E-07	95% H-Stat UCL	1.56E-07
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.74E-07		

ATTACHMENT B. LANL ECORISK DATABASE FOR INORGANICS AND ORGANICS (MG/KG)

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Tetrachlorodibenzodioxin[2,3,7,8-]	Deer mouse (Mammalian omnivore)	0.00000058	0.0000038	
Tetrachlorodibenzodioxin[2,3,7,8-]	Earthworm (Soil-dwelling invertebrate)	5	10	
Tetrachlorodibenzodioxin[2,3,7,8-]	Gray fox (Mammalian top carnivore)	0.0001	0.00068	
Tetrachlorodibenzodioxin[2,3,7,8-]	Montane shrew (Mammalian insectivore)	0.00000029	0.0000019	MINIMUM
Tetrachlorodibenzodioxin[2,3,7,8-]	Mountain cottontail (Mammalian herbivore)	0.00004	0.00027	
Amino-2,6-dinitrotoluene[4-]	Deer mouse (Mammalian omnivore)	23	230	
Amino-2,6-dinitrotoluene[4-]	Earthworm (Soil-dwelling invertebrate)	18	180	
Amino-2,6-dinitrotoluene[4-]	Generic plant (Terrestrial autotroph - producer)	33	330	
Amino-2,6-dinitrotoluene[4-]	Gray fox (Mammalian top carnivore)	6700	67000	
Amino-2,6-dinitrotoluene[4-]	Montane shrew (Mammalian insectivore)	12	120	MINIMUM
Amino-2,6-dinitrotoluene[4-]	Mountain cottontail (Mammalian herbivore)	320	3200	
Amino-4,6-dinitrotoluene[2-]	Deer mouse (Mammalian omnivore)	23	230	
Amino-4,6-dinitrotoluene[2-]	Earthworm (Soil-dwelling invertebrate)	43	430	
Amino-4,6-dinitrotoluene[2-]	Generic plant (Terrestrial autotroph - producer)	14	140	MINIMUM
Amino-4,6-dinitrotoluene[2-]	Gray fox (Mammalian top carnivore)	9700	97000	
Amino-4,6-dinitrotoluene[2-]	Montane shrew (Mammalian insectivore)	16	160	
Amino-4,6-dinitrotoluene[2-]	Mountain cottontail (Mammalian herbivore)	110	1100	
Dinitrobenzene[1,3-]	American kestrel (Avian top carnivore)	120	1200	
Dinitrobenzene[1,3-]	American kestrel (insectivore / carnivore)	9.3	93	
Dinitrobenzene[1,3-]	American robin (Avian herbivore)	0.079	0.79	
Dinitrobenzene[1,3-]	American robin (Avian insectivore)	1.6	16	
Dinitrobenzene[1,3-]	American robin (Avian omnivore)	0.15	1.5	
Dinitrobenzene[1,3-]	Deer mouse (Mammalian omnivore)	0.072	0.16	MINIMUM
Dinitrobenzene[1,3-]	Gray fox (Mammalian top carnivore)	82	190	
Dinitrobenzene[1,3-]	Montane shrew (Mammalian insectivore)	0.95	2.2	
Dinitrobenzene[1,3-]	Mountain cottontail (Mammalian herbivore)	0.091	0.21	
Dinitrotoluene[2,4-]	Deer mouse (Mammalian omnivore)	20	200	
Dinitrotoluene[2,4-]	Earthworm (Soil-dwelling invertebrate)	18	180	
Dinitrotoluene[2,4-]	Generic plant (Terrestrial autotroph - producer)	6	60	MINIMUM
Dinitrotoluene[2,4-]	Gray fox (Mammalian top carnivore)	2000	20000	
Dinitrotoluene[2,4-]	Montane shrew (Mammalian insectivore)	14	140	
Dinitrotoluene[2,4-]	Mountain cottontail (Mammalian herbivore)	74	740	
Dinitrotoluene[2,6-]	American kestrel (Avian top carnivore)	18000	180000	
Dinitrotoluene[2,6-]	American kestrel (insectivore / carnivore)	680	6800	
Dinitrotoluene[2,6-]	American robin (Avian herbivore)	52	520	
Dinitrotoluene[2,6-]	American robin (Avian insectivore)	130	1300	
Dinitrotoluene[2,6-]	American robin (Avian omnivore)	74	740	
Dinitrotoluene[2,6-]	Deer mouse (Mammalian omnivore)	4	40	MINIMUM
Dinitrotoluene[2,6-]	Earthworm (Soil-dwelling invertebrate)	30	44	
Dinitrotoluene[2,6-]	Gray fox (Mammalian top carnivore)	1300	13000	
Dinitrotoluene[2,6-]	Montane shrew (Mammalian insectivore)	7.6	76	
Dinitrotoluene[2,6-]	Mountain cottontail (Mammalian herbivore)	6.7	67	
HMX	Deer mouse (Mammalian omnivore)	290	790	
HMX	Earthworm (Soil-dwelling invertebrate)	16	160	MINIMUM
HMX	Generic plant (Terrestrial autotroph - producer)	2700	3500	
HMX	Gray fox (Mammalian top carnivore)	59000	150000	
HMX	Montane shrew (Mammalian insectivore)	1100	2900	
HMX	Mountain cottontail (Mammalian herbivore)	410	1100	
Nitroglycerine	Deer mouse (Mammalian omnivore)	70	740	
Nitroglycerine	Earthworm (Soil-dwelling invertebrate)	13	130	MINIMUM
Nitroglycerine	Generic plant (Terrestrial autotroph - producer)	21	210	
Nitroglycerine	Gray fox (Mammalian top carnivore)	69000	730000	
Nitroglycerine	Montane shrew (Mammalian insectivore)	1200	13000	
Nitroglycerine	Mountain cottontail (Mammalian herbivore)	88	930	
Nitrotoluene[2-]	Deer mouse (Mammalian omnivore)	9.8	98	MINIMUM
Nitrotoluene[2-]	Gray fox (Mammalian top carnivore)	6000	60000	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Nitrotoluene[2-]	Montane shrew (Mammalian insectivore)	22	220	
Nitrotoluene[2-]	Mountain cottontail (Mammalian herbivore)	15	150	
Nitrotoluene[3-]	Deer mouse (Mammalian omnivore)	12	120	MINIMUM
Nitrotoluene[3-]	Gray fox (Mammalian top carnivore)	7000	70000	
Nitrotoluene[3-]	Montane shrew (Mammalian insectivore)	19	190	
Nitrotoluene[3-]	Mountain cottontail (Mammalian herbivore)	21	210	
Nitrotoluene[4-]	Deer mouse (Mammalian omnivore)	21	210	MINIMUM
Nitrotoluene[4-]	Gray fox (Mammalian top carnivore)	13000	130000	
Nitrotoluene[4-]	Montane shrew (Mammalian insectivore)	41	410	
Nitrotoluene[4-]	Mountain cottontail (Mammalian herbivore)	36	360	
PETN	Deer mouse (Mammalian omnivore)	100	1000	MINIMUM
PETN	Gray fox (Mammalian top carnivore)	47000	470000	
PETN	Montane shrew (Mammalian insectivore)	1000	10000	
PETN	Mountain cottontail (Mammalian herbivore)	120	1200	
RDX	American kestrel (Avian top carnivore)	780	1400	
RDX	American kestrel (insectivore / carnivore)	11	22	
RDX	American robin (Avian herbivore)	2.3	4.3	MINIMUM
RDX	American robin (Avian insectivore)	2.4	4.5	
RDX	American robin (Avian omnivore)	2.3	4.4	MINIMUM
RDX	Deer mouse (Mammalian omnivore)	16	51	
RDX	Earthworm (Soil-dwelling invertebrate)	8.4	15	
RDX	Gray fox (Mammalian top carnivore)	7000	22000	
RDX	Montane shrew (Mammalian insectivore)	16	53	
RDX	Mountain cottontail (Mammalian herbivore)	38	120	
Tetryl	Deer mouse (Mammalian omnivore)	1.5	7.2	MINIMUM
Tetryl	Gray fox (Mammalian top carnivore)	960	4600	
Tetryl	Montane shrew (Mammalian insectivore)	60	280	
Tetryl	Mountain cottontail (Mammalian herbivore)	1.8	8.9	
Trinitrobenzene[1,3,5-]	Deer mouse (Mammalian omnivore)	110	1100	
Trinitrobenzene[1,3,5-]	Earthworm (Soil-dwelling invertebrate)	10	28	MINIMUM
Trinitrobenzene[1,3,5-]	Gray fox (Mammalian top carnivore)	10000	100000	
Trinitrobenzene[1,3,5-]	Montane shrew (Mammalian insectivore)	720	7200	
Trinitrobenzene[1,3,5-]	Mountain cottontail (Mammalian herbivore)	150	1500	
Trinitrotoluene[2,4,6-]	American kestrel (Avian top carnivore)	3100	5700	
Trinitrotoluene[2,4,6-]	American kestrel (insectivore / carnivore)	1300	2400	
Trinitrotoluene[2,4,6-]	American robin (Avian herbivore)	7.5	13	MINIMUM
Trinitrotoluene[2,4,6-]	American robin (Avian insectivore)	120	220	
Trinitrotoluene[2,4,6-]	American robin (Avian omnivore)	14	26	
Trinitrotoluene[2,4,6-]	Deer mouse (Mammalian omnivore)	95	440	
Trinitrotoluene[2,4,6-]	Earthworm (Soil-dwelling invertebrate)	32	58	
Trinitrotoluene[2,4,6-]	Generic plant (Terrestrial autotroph - producer)	62	120	
Trinitrotoluene[2,4,6-]	Gray fox (Mammalian top carnivore)	26000	120000	
Trinitrotoluene[2,4,6-]	Montane shrew (Mammalian insectivore)	1900	9100	
Trinitrotoluene[2,4,6-]	Mountain cottontail (Mammalian herbivore)	110	540	
Aluminum	American kestrel (Avian top carnivore)			
Aluminum	American kestrel (insectivore / carnivore)			
Aluminum	American robin (Avian herbivore)			
Aluminum	American robin (Avian insectivore)			
Aluminum	American robin (Avian omnivore)			
Aluminum	Deer mouse (Mammalian omnivore)			
Aluminum	Earthworm (Soil-dwelling invertebrate)			
Aluminum	Generic plant (Terrestrial autotroph - producer)			
Aluminum	Gray fox (Mammalian top carnivore)			
Aluminum	Montane shrew (Mammalian insectivore)			
Aluminum	Mountain cottontail (Mammalian herbivore)			
Antimony	Deer mouse (Mammalian omnivore)	2.3	23	MINIMUM
Antimony	Earthworm (Soil-dwelling invertebrate)	78	780	
Antimony	Generic plant (Terrestrial autotroph - producer)	11	58	
Antimony	Gray fox (Mammalian top carnivore)	46	460	
Antimony	Montane shrew (Mammalian insectivore)	7.9	79	
Antimony	Mountain cottontail (Mammalian herbivore)	2.7	27	
Arsenic	American kestrel (Avian top carnivore)	740	7400	
Arsenic	American kestrel (insectivore / carnivore)	100	1000	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Arsenic	American robin (Avian herbivore)	34	340	
Arsenic	American robin (Avian insectivore)	15	150	
Arsenic	American robin (Avian omnivore)	21	210	
Arsenic	Deer mouse (Mammalian omnivore)	32	51	
Arsenic	Earthworm (Soil-dwelling invertebrate)	6.8	68	MINIMUM
Arsenic	Generic plant (Terrestrial autotroph - producer)	18	91	
Arsenic	Gray fox (Mammalian top carnivore)	820	1300	
Arsenic	Montane shrew (Mammalian insectivore)	19	31	
Arsenic	Mountain cottontail (Mammalian herbivore)	110	180	
Barium	American kestrel (Avian top carnivore)	24000	44000	
Barium	American kestrel (insectivore / carnivore)	7500	13000	
Barium	American robin (Avian herbivore)	720	1200	
Barium	American robin (Avian insectivore)	820	1400	
Barium	American robin (Avian omnivore)	770	1300	
Barium	Deer mouse (Mammalian omnivore)	1800	8700	
Barium	Earthworm (Soil-dwelling invertebrate)	330	3200	
Barium	Generic plant (Terrestrial autotroph - producer)	110	260	MINIMUM
Barium	Gray fox (Mammalian top carnivore)	41000	190000	
Barium	Montane shrew (Mammalian insectivore)	2100	10000	
Barium	Mountain cottontail (Mammalian herbivore)	2900	14000	
Beryllium	Deer mouse (Mammalian omnivore)	56	560	
Beryllium	Earthworm (Soil-dwelling invertebrate)	40	400	
Beryllium	Generic plant (Terrestrial autotroph - producer)	2.5	25	MINIMUM
Beryllium	Gray fox (Mammalian top carnivore)	420	4200	
Beryllium	Montane shrew (Mammalian insectivore)	35	350	
Beryllium	Mountain cottontail (Mammalian herbivore)	89	890	
Boron	American kestrel (Avian top carnivore)	960	4700	
Boron	American kestrel (insectivore / carnivore)	37	180	
Boron	American robin (Avian herbivore)	2	10	MINIMUM
Boron	American robin (Avian insectivore)	7.1	35	
Boron	American robin (Avian omnivore)	3.1	15	
Boron	Deer mouse (Mammalian omnivore)	55	550	
Boron	Generic plant (Terrestrial autotroph - producer)	36	86	
Boron	Gray fox (Mammalian top carnivore)	21000	210000	
Boron	Montane shrew (Mammalian insectivore)	130	1300	
Boron	Mountain cottontail (Mammalian herbivore)	84	840	
Cadmium	American kestrel (Avian top carnivore)	430	2300	
Cadmium	American kestrel (insectivore / carnivore)	1.3	7.7	
Cadmium	American robin (Avian herbivore)	4.3	23	
Cadmium	American robin (Avian insectivore)	0.29	1.6	
Cadmium	American robin (Avian omnivore)	0.54	3	
Cadmium	Deer mouse (Mammalian omnivore)	0.5	6.8	
Cadmium	Earthworm (Soil-dwelling invertebrate)	140	760	
Cadmium	Generic plant (Terrestrial autotroph - producer)	32	160	
Cadmium	Gray fox (Mammalian top carnivore)	550	7400	
Cadmium	Montane shrew (Mammalian insectivore)	0.27	3.6	MINIMUM
Cadmium	Mountain cottontail (Mammalian herbivore)	10	140	
Chromium (total)	American kestrel (Avian top carnivore)	860	2700	
Chromium (total)	American kestrel (insectivore / carnivore)	170	560	
Chromium (total)	American robin (Avian herbivore)	51	160	
Chromium (total)	American robin (Avian insectivore)	23	73	MINIMUM
Chromium (total)	American robin (Avian omnivore)	32	100	
Chromium (total)	Deer mouse (Mammalian omnivore)	110	11000	
Chromium (total)	Gray fox (Mammalian top carnivore)	1800	180000	
Chromium (total)	Montane shrew (Mammalian insectivore)	63	6300	
Chromium (total)	Mountain cottontail (Mammalian herbivore)	410	41000	
Chromium(+6)	American kestrel (Avian top carnivore)	3600	36000	
Chromium(+6)	American kestrel (insectivore / carnivore)	1400	14000	
Chromium(+6)	American robin (Avian herbivore)	210	2100	
Chromium(+6)	American robin (Avian insectivore)	140	1400	
Chromium(+6)	American robin (Avian omnivore)	160	1600	
Chromium(+6)	Deer mouse (Mammalian omnivore)	850	5500	
Chromium(+6)	Earthworm (Soil-dwelling invertebrate)	0.34	3.4	MINIMUM

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Chromium(+6)	Generic plant (Terrestrial autotroph - producer)	0.35	4	
Chromium(+6)	Gray fox (Mammalian top carnivore)	7200	46000	
Chromium(+6)	Montane shrew (Mammalian insectivore)	510	3300	
Chromium(+6)	Mountain cottontail (Mammalian herbivore)	1600	10000	
Cobalt	American kestrel (Avian top carnivore)	2300	5200	
Cobalt	American kestrel (insectivore / carnivore)	620	1400	
Cobalt	American robin (Avian herbivore)	130	300	
Cobalt	American robin (Avian insectivore)	76	170	
Cobalt	American robin (Avian omnivore)	97	210	
Cobalt	Deer mouse (Mammalian omnivore)	400	1000	
Cobalt	Generic plant (Terrestrial autotroph - producer)	13	130	MINIMUM
Cobalt	Gray fox (Mammalian top carnivore)	5400	14000	
Cobalt	Montane shrew (Mammalian insectivore)	240	640	
Cobalt	Mountain cottontail (Mammalian herbivore)	1000	2800	
Copper	American kestrel (Avian top carnivore)	1100	3500	
Copper	American kestrel (insectivore / carnivore)	80	240	
Copper	American robin (Avian herbivore)	34	100	
Copper	American robin (Avian insectivore)	14	43	MINIMUM
Copper	American robin (Avian omnivore)	20	60	
Copper	Deer mouse (Mammalian omnivore)	63	100	
Copper	Earthworm (Soil-dwelling invertebrate)	80	530	
Copper	Generic plant (Terrestrial autotroph - producer)	70	490	
Copper	Gray fox (Mammalian top carnivore)	4000	6700	
Copper	Montane shrew (Mammalian insectivore)	42	70	
Copper	Mountain cottontail (Mammalian herbivore)	260	430	
Cyanide (total)	American kestrel (Avian top carnivore)	0.59	5.9	
Cyanide (total)	American kestrel (insectivore / carnivore)	0.36	3.6	
Cyanide (total)	American robin (Avian herbivore)	0.1	1	
Cyanide (total)	American robin (Avian insectivore)	0.098	0.98	MINIMUM
Cyanide (total)	American robin (Avian omnivore)	0.099	0.99	
Cyanide (total)	Deer mouse (Mammalian omnivore)	330	3300	
Cyanide (total)	Gray fox (Mammalian top carnivore)	3300	33000	
Cyanide (total)	Montane shrew (Mammalian insectivore)	330	3300	
Cyanide (total)	Mountain cottontail (Mammalian herbivore)	790	7900	
Lead	American kestrel (Avian top carnivore)	540	1000	
Lead	American kestrel (insectivore / carnivore)	83	160	
Lead	American robin (Avian herbivore)	18	36	
Lead	American robin (Avian insectivore)	11	23	MINIMUM
Lead	American robin (Avian omnivore)	14	28	
Lead	Deer mouse (Mammalian omnivore)	120	230	
Lead	Earthworm (Soil-dwelling invertebrate)	1700	8400	
Lead	Generic plant (Terrestrial autotroph - producer)	120	570	
Lead	Gray fox (Mammalian top carnivore)	3700	7000	
Lead	Montane shrew (Mammalian insectivore)	93	170	
Lead	Mountain cottontail (Mammalian herbivore)	310	600	
Manganese	American kestrel (Avian top carnivore)	60000	120000	
Manganese	American kestrel (insectivore / carnivore)	24000	50000	
Manganese	American robin (Avian herbivore)	1300	2700	
Manganese	American robin (Avian insectivore)	2200	4700	
Manganese	American robin (Avian omnivore)	1600	3500	
Manganese	Deer mouse (Mammalian omnivore)	1400	5400	
Manganese	Earthworm (Soil-dwelling invertebrate)	450	4500	
Manganese	Generic plant (Terrestrial autotroph - producer)	220	1100	MINIMUM
Manganese	Gray fox (Mammalian top carnivore)	40000	150000	
Manganese	Montane shrew (Mammalian insectivore)	2800	10000	
Manganese	Mountain cottontail (Mammalian herbivore)	2000	7500	
Mercury (inorganic)	American kestrel (Avian top carnivore)	0.32	3.2	
Mercury (inorganic)	American kestrel (insectivore / carnivore)	0.058	0.58	
Mercury (inorganic)	American robin (Avian herbivore)	0.067	0.67	
Mercury (inorganic)	American robin (Avian insectivore)	0.013	0.13	MINIMUM
Mercury (inorganic)	American robin (Avian omnivore)	0.022	0.22	
Mercury (inorganic)	Deer mouse (Mammalian omnivore)	3	30	
Mercury (inorganic)	Earthworm (Soil-dwelling invertebrate)	0.05	0.5	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Mercury (inorganic)	Generic plant (Terrestrial autotroph - producer)	34	64	
Mercury (inorganic)	Gray fox (Mammalian top carnivore)	76	760	
Mercury (inorganic)	Montane shrew (Mammalian insectivore)	1.7	17	
Mercury (inorganic)	Mountain cottontail (Mammalian herbivore)	23	230	
Mercury (methyl)	American kestrel (Avian top carnivore)	0.009	0.09	
Mercury (methyl)	American kestrel (insectivore / carnivore)	0.0015	0.015	
Mercury (methyl)	American robin (Avian herbivore)	0.066	0.66	
Mercury (methyl)	American robin (Avian insectivore)	0.00035	0.0035	MINIMUM
Mercury (methyl)	American robin (Avian omnivore)	0.00071	0.0071	
Mercury (methyl)	Deer mouse (Mammalian omnivore)	0.0062	0.031	
Mercury (methyl)	Earthworm (Soil-dwelling invertebrate)	2.5	12	
Mercury (methyl)	Gray fox (Mammalian top carnivore)	0.14	0.74	
Mercury (methyl)	Montane shrew (Mammalian insectivore)	0.0031	0.015	
Mercury (methyl)	Mountain cottontail (Mammalian herbivore)	1.9	9.8	
Molybdenum	American kestrel (Avian top carnivore)	1100	11000	
Molybdenum	American kestrel (insectivore / carnivore)	90	900	
Molybdenum	American robin (Avian herbivore)	18	180	
Molybdenum	American robin (Avian insectivore)	15	150	MINIMUM
Molybdenum	American robin (Avian omnivore)	16	160	
Nickel	American kestrel (Avian top carnivore)	2000	8100	
Nickel	American kestrel (insectivore / carnivore)	110	440	
Nickel	American robin (Avian herbivore)	120	500	
Nickel	American robin (Avian insectivore)	20	81	
Nickel	American robin (Avian omnivore)	35	130	
Nickel	Deer mouse (Mammalian omnivore)	20	40	
Nickel	Earthworm (Soil-dwelling invertebrate)	280	1300	
Nickel	Generic plant (Terrestrial autotroph - producer)	38	270	
Nickel	Gray fox (Mammalian top carnivore)	1200	2500	
Nickel	Montane shrew (Mammalian insectivore)	10	21	MINIMUM
Nickel	Mountain cottontail (Mammalian herbivore)	270	540	
Perchlorate Ion	American kestrel (Avian top carnivore)	2	4	
Perchlorate Ion	American kestrel (insectivore / carnivore)	3.9	8	
Perchlorate Ion	American robin (Avian herbivore)	0.12	0.24	MINIMUM
Perchlorate Ion	American robin (Avian insectivore)	31	64	
Perchlorate Ion	American robin (Avian omnivore)	0.24	0.49	
Perchlorate Ion	Deer mouse (Mammalian omnivore)	0.21	1	
Perchlorate Ion	Earthworm (Soil-dwelling invertebrate)	3.5	35	
Perchlorate Ion	Generic plant (Terrestrial autotroph - producer)	40	80	
Perchlorate Ion	Gray fox (Mammalian top carnivore)	3.3	16	
Perchlorate Ion	Montane shrew (Mammalian insectivore)	31	150	
Perchlorate Ion	Mountain cottontail (Mammalian herbivore)	0.26	1.3	
Selenium	American kestrel (Avian top carnivore)	74	140	
Selenium	American kestrel (insectivore / carnivore)	3.7	7.5	
Selenium	American robin (Avian herbivore)	0.98	1.9	
Selenium	American robin (Avian insectivore)	0.71	1.4	
Selenium	American robin (Avian omnivore)	0.83	1.6	
Selenium	Deer mouse (Mammalian omnivore)	0.82	1.2	
Selenium	Earthworm (Soil-dwelling invertebrate)	4.1	41	
Selenium	Generic plant (Terrestrial autotroph - producer)	0.52	3	MINIMUM
Selenium	Gray fox (Mammalian top carnivore)	92	130	
Selenium	Montane shrew (Mammalian insectivore)	0.7	1	
Selenium	Mountain cottontail (Mammalian herbivore)	2.2	3.4	
Silver	American kestrel (Avian top carnivore)	600	6000	
Silver	American kestrel (insectivore / carnivore)	13	130	
Silver	American robin (Avian herbivore)	10	100	
Silver	American robin (Avian insectivore)	2.6	26	MINIMUM
Silver	American robin (Avian omnivore)	4.1	41	
Silver	Deer mouse (Mammalian omnivore)	24	240	
Silver	Generic plant (Terrestrial autotroph - producer)	560	2800	
Silver	Gray fox (Mammalian top carnivore)	4400	44000	
Silver	Montane shrew (Mammalian insectivore)	14	140	
Silver	Mountain cottontail (Mammalian herbivore)	150	1500	
Thallium	American kestrel (Avian top carnivore)	100	1000	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Thallium	American kestrel (insectivore / carnivore)	48	480	
Thallium	American robin (Avian herbivore)	6.9	69	
Thallium	American robin (Avian insectivore)	4.5	45	
Thallium	American robin (Avian omnivore)	5.5	55	
Thallium	Deer mouse (Mammalian omnivore)	0.72	7.2	
Thallium	Generic plant (Terrestrial autotroph - producer)	0.05	0.5	MINIMUM
Thallium	Gray fox (Mammalian top carnivore)	5	50	
Thallium	Montane shrew (Mammalian insectivore)	0.42	4.2	
Thallium	Mountain cottontail (Mammalian herbivore)	1.2	12	
Vanadium	American kestrel (Avian top carnivore)	110	230	
Vanadium	American kestrel (insectivore / carnivore)	56	110	
Vanadium	American robin (Avian herbivore)	6.8	13	
Vanadium	American robin (Avian insectivore)	4.7	9.5	MINIMUM
Vanadium	American robin (Avian omnivore)	5.5	11	
Vanadium	Deer mouse (Mammalian omnivore)	470	1000	
Vanadium	Generic plant (Terrestrial autotroph - producer)	60	80	
Vanadium	Gray fox (Mammalian top carnivore)	3200	6900	
Vanadium	Montane shrew (Mammalian insectivore)	290	610	
Vanadium	Mountain cottontail (Mammalian herbivore)	740	1500	
Zinc	American kestrel (Avian top carnivore)	2600	7000	
Zinc	American kestrel (insectivore / carnivore)	220	590	
Zinc	American robin (Avian herbivore)	330	120	
Zinc	American robin (Avian insectivore)	47	120	MINIMUM
Zinc	American robin (Avian omnivore)	83	220	
Zinc	Deer mouse (Mammalian omnivore)	170	1700	
Zinc	Earthworm (Soil-dwelling invertebrate)	120	930	
Zinc	Generic plant (Terrestrial autotroph - producer)	160	810	
Zinc	Gray fox (Mammalian top carnivore)	9600	94000	
Zinc	Montane shrew (Mammalian insectivore)	99	980	
Zinc	Mountain cottontail (Mammalian herbivore)	1800	18000	
Acenaphthene	Deer mouse (Mammalian omnivore)	160	1600	
Acenaphthene	Generic plant (Terrestrial autotroph - producer)	0.25	2	MINIMUM
Acenaphthene	Gray fox (Mammalian top carnivore)	29000	290000	
Acenaphthene	Montane shrew (Mammalian insectivore)	130	1300	
Acenaphthene	Mountain cottontail (Mammalian herbivore)	530	5300	
Acenaphthylene	Deer mouse (Mammalian omnivore)	160	1600	
Acenaphthylene	Gray fox (Mammalian top carnivore)	28000	280000	
Acenaphthylene	Montane shrew (Mammalian insectivore)	120	1200	MINIMUM
Acenaphthylene	Mountain cottontail (Mammalian herbivore)	540	5400	
Anthracene	Deer mouse (Mammalian omnivore)	300	3000	
Anthracene	Generic plant (Terrestrial autotroph - producer)	6.8	9	MINIMUM
Anthracene	Gray fox (Mammalian top carnivore)	38000	380000	
Anthracene	Montane shrew (Mammalian insectivore)	210	2100	
Anthracene	Mountain cottontail (Mammalian herbivore)	1200	12000	
Benzo(a)anthracene	American kestrel (Avian top carnivore)	28	280	
Benzo(a)anthracene	American kestrel (insectivore / carnivore)	6.4	64	
Benzo(a)anthracene	American robin (Avian herbivore)	0.73	7.3	MINIMUM
Benzo(a)anthracene	American robin (Avian insectivore)	0.88	8.8	
Benzo(a)anthracene	American robin (Avian omnivore)	0.8	8	
Benzo(a)anthracene	Deer mouse (Mammalian omnivore)	3.4	34	
Benzo(a)anthracene	Generic plant (Terrestrial autotroph - producer)	18	180	
Benzo(a)anthracene	Gray fox (Mammalian top carnivore)	110	1100	
Benzo(a)anthracene	Montane shrew (Mammalian insectivore)	4	40	
Benzo(a)anthracene	Mountain cottontail (Mammalian herbivore)	6.1	61	
Benzo(a)pyrene	Deer mouse (Mammalian omnivore)	84	260	
Benzo(a)pyrene	Gray fox (Mammalian top carnivore)	3400	11000	
Benzo(a)pyrene	Montane shrew (Mammalian insectivore)	62	190	MINIMUM
Benzo(a)pyrene	Mountain cottontail (Mammalian herbivore)	260	830	
Benzo(b)fluoranthene	Deer mouse (Mammalian omnivore)	51	510	
Benzo(b)fluoranthene	Generic plant (Terrestrial autotroph - producer)	18	180	MINIMUM
Benzo(b)fluoranthene	Gray fox (Mammalian top carnivore)	2400	24000	
Benzo(b)fluoranthene	Montane shrew (Mammalian insectivore)	44	440	
Benzo(b)fluoranthene	Mountain cottontail (Mammalian herbivore)	130	1300	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Benzo(g,h,i)perylene	Deer mouse (Mammalian omnivore)	46	460	
Benzo(g,h,i)perylene	Gray fox (Mammalian top carnivore)	3600	36000	
Benzo(g,h,i)perylene	Montane shrew (Mammalian insectivore)	25	250	MINIMUM
Benzo(g,h,i)perylene	Mountain cottontail (Mammalian herbivore)	470	4700	
Benzo(k)fluoranthene	Deer mouse (Mammalian omnivore)	99	990	
Benzo(k)fluoranthene	Gray fox (Mammalian top carnivore)	4300	43000	
Benzo(k)fluoranthene	Montane shrew (Mammalian insectivore)	71	710	MINIMUM
Benzo(k)fluoranthene	Mountain cottontail (Mammalian herbivore)	330	3300	
Chrysene	Deer mouse (Mammalian omnivore)	3.1	31	
Chrysene	Gray fox (Mammalian top carnivore)	110	1100	
Chrysene	Montane shrew (Mammalian insectivore)	3.1	31	MINIMUM
Chrysene	Mountain cottontail (Mammalian herbivore)	6.3	63	
Dibenzo(a,h)anthracene	Deer mouse (Mammalian omnivore)	22	220	
Dibenzo(a,h)anthracene	Gray fox (Mammalian top carnivore)	850	8500	
Dibenzo(a,h)anthracene	Montane shrew (Mammalian insectivore)	14	140	MINIMUM
Dibenzo(a,h)anthracene	Mountain cottontail (Mammalian herbivore)	84	840	
Fluoranthene	Deer mouse (Mammalian omnivore)	38	380	
Fluoranthene	Earthworm (Soil-dwelling invertebrate)	10	23	MINIMUM
Fluoranthene	Gray fox (Mammalian top carnivore)	3900	39000	
Fluoranthene	Montane shrew (Mammalian insectivore)	22	220	
Fluoranthene	Mountain cottontail (Mammalian herbivore)	270	2700	
Fluorene	Deer mouse (Mammalian omnivore)	340	680	
Fluorene	Earthworm (Soil-dwelling invertebrate)	3.7	19	MINIMUM
Fluorene	Gray fox (Mammalian top carnivore)	50000	100000	
Fluorene	Montane shrew (Mammalian insectivore)	250	510	
Fluorene	Mountain cottontail (Mammalian herbivore)	1100	2300	
Indeno(1,2,3-cd)pyrene	Deer mouse (Mammalian omnivore)	110	1100	
Indeno(1,2,3-cd)pyrene	Gray fox (Mammalian top carnivore)	4600	46000	
Indeno(1,2,3-cd)pyrene	Montane shrew (Mammalian insectivore)	71	710	MINIMUM
Indeno(1,2,3-cd)pyrene	Mountain cottontail (Mammalian herbivore)	510	5100	
Methylnaphthalene[2-]	Deer mouse (Mammalian omnivore)	24	240	
Methylnaphthalene[2-]	Gray fox (Mammalian top carnivore)	4900	49000	
Methylnaphthalene[2-]	Montane shrew (Mammalian insectivore)	16	160	MINIMUM
Methylnaphthalene[2-]	Mountain cottontail (Mammalian herbivore)	110	1100	
Naphthalene	American kestrel (Avian top carnivore)	2100	21000	
Naphthalene	American kestrel (insectivore / carnivore)	78	780	
Naphthalene	American robin (Avian herbivore)	3.4	34	
Naphthalene	American robin (Avian insectivore)	15	150	
Naphthalene	American robin (Avian omnivore)	5.7	57	
Naphthalene	Deer mouse (Mammalian omnivore)	9.6	27	
Naphthalene	Generic plant (Terrestrial autotroph - producer)	1	10	MINIMUM
Naphthalene	Gray fox (Mammalian top carnivore)	5800	16000	
Naphthalene	Montane shrew (Mammalian insectivore)	28	79	
Naphthalene	Mountain cottontail (Mammalian herbivore)	14	40	
Phenanthrene	Deer mouse (Mammalian omnivore)	15	150	
Phenanthrene	Earthworm (Soil-dwelling invertebrate)	5.5	12	MINIMUM
Phenanthrene	Gray fox (Mammalian top carnivore)	1900	19000	
Phenanthrene	Montane shrew (Mammalian insectivore)	11	110	
Phenanthrene	Mountain cottontail (Mammalian herbivore)	62	620	
Pyrene	American kestrel (Avian top carnivore)	3000	30000	
Pyrene	American kestrel (insectivore / carnivore)	160	1600	
Pyrene	American robin (Avian herbivore)	68	680	
Pyrene	American robin (Avian insectivore)	33	330	
Pyrene	American robin (Avian omnivore)	44	440	
Pyrene	Deer mouse (Mammalian omnivore)	31	310	
Pyrene	Earthworm (Soil-dwelling invertebrate)	10	20	MINIMUM
Pyrene	Gray fox (Mammalian top carnivore)	3100	31000	
Pyrene	Montane shrew (Mammalian insectivore)	23	230	
Pyrene	Mountain cottontail (Mammalian herbivore)	110	1100	
Aroclor-1016	Deer mouse (Mammalian omnivore)	2	5.9	
Aroclor-1016	Gray fox (Mammalian top carnivore)	250	720	
Aroclor-1016	Montane shrew (Mammalian insectivore)	1.1	3.1	MINIMUM
Aroclor-1016	Mountain cottontail (Mammalian herbivore)	48	130	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Aroclor-1242	American kestrel (Avian top carnivore)	6.2	62	
Aroclor-1242	American kestrel (insectivore / carnivore)	0.19	1.9	
Aroclor-1242	American robin (Avian herbivore)	0.92	9.2	
Aroclor-1242	American robin (Avian insectivore)	0.041	0.41	MINIMUM
Aroclor-1242	American robin (Avian omnivore)	0.078	0.78	
Aroclor-1242	Deer mouse (Mammalian omnivore)	0.75	3	
Aroclor-1242	Gray fox (Mammalian top carnivore)	100	400	
Aroclor-1242	Montane shrew (Mammalian insectivore)	0.39	1.5	
Aroclor-1242	Mountain cottontail (Mammalian herbivore)	27	110	
Aroclor-1248	American kestrel (Avian top carnivore)	6.3	63	
Aroclor-1248	American kestrel (insectivore / carnivore)	0.19	1.9	
Aroclor-1248	American robin (Avian herbivore)	0.94	9.4	
Aroclor-1248	American robin (Avian insectivore)	0.041	0.41	
Aroclor-1248	American robin (Avian omnivore)	0.078	0.78	
Aroclor-1248	Deer mouse (Mammalian omnivore)	0.014	0.14	
Aroclor-1248	Gray fox (Mammalian top carnivore)	1.9	19	
Aroclor-1248	Montane shrew (Mammalian insectivore)	0.0073	0.073	MINIMUM
Aroclor-1248	Mountain cottontail (Mammalian herbivore)	0.53	5.3	
Aroclor-1254	American kestrel (Avian top carnivore)	7.6	76	
Aroclor-1254	American kestrel (insectivore / carnivore)	0.19	1.9	
Aroclor-1254	American robin (Avian herbivore)	1.1	11	
Aroclor-1254	American robin (Avian insectivore)	0.041	0.41	MINIMUM
Aroclor-1254	American robin (Avian omnivore)	0.079	0.79	
Aroclor-1254	Deer mouse (Mammalian omnivore)	0.87	4.8	
Aroclor-1254	Generic plant (Terrestrial autotroph - producer)	160	620	
Aroclor-1254	Gray fox (Mammalian top carnivore)	7.2	72	
Aroclor-1254	Montane shrew (Mammalian insectivore)	0.45	2.4	
Aroclor-1254	Mountain cottontail (Mammalian herbivore)	44	240	
Aroclor-1260	American kestrel (Avian top carnivore)	400	560	
Aroclor-1260	American kestrel (insectivore / carnivore)	4.2	5.9	
Aroclor-1260	American robin (Avian herbivore)	37	52	
Aroclor-1260	American robin (Avian insectivore)	0.88	1.2	MINIMUM
Aroclor-1260	American robin (Avian omnivore)	1.7	2.4	
Aroclor-1260	Deer mouse (Mammalian omnivore)	20	48	
Aroclor-1260	Gray fox (Mammalian top carnivore)	15	150	
Aroclor-1260	Montane shrew (Mammalian insectivore)	10	24	
Aroclor-1260	Mountain cottontail (Mammalian herbivore)	1800	4500	
Benzoic Acid	Deer mouse (Mammalian omnivore)	1.3	13	
Benzoic Acid	Gray fox (Mammalian top carnivore)	2000	20000	
Benzoic Acid	Montane shrew (Mammalian insectivore)	1	10	MINIMUM
Benzoic Acid	Mountain cottontail (Mammalian herbivore)	4.6	46	
Bis(2-ethylhexyl)phthalate	American kestrel (Avian top carnivore)	9.3	93	
Bis(2-ethylhexyl)phthalate	American kestrel (insectivore / carnivore)	0.096	0.96	
Bis(2-ethylhexyl)phthalate	American robin (Avian herbivore)	16	160	
Bis(2-ethylhexyl)phthalate	American robin (Avian insectivore)	0.02	0.2	MINIMUM
Bis(2-ethylhexyl)phthalate	American robin (Avian omnivore)	0.04	0.4	
Bis(2-ethylhexyl)phthalate	Deer mouse (Mammalian omnivore)	1.1	11	
Bis(2-ethylhexyl)phthalate	Gray fox (Mammalian top carnivore)	500	5000	
Bis(2-ethylhexyl)phthalate	Montane shrew (Mammalian insectivore)	0.6	6	
Bis(2-ethylhexyl)phthalate	Mountain cottontail (Mammalian herbivore)	1900	19000	
Butyl Benzyl Phthalate	Deer mouse (Mammalian omnivore)	160	1600	
Butyl Benzyl Phthalate	Gray fox (Mammalian top carnivore)	23000	230000	
Butyl Benzyl Phthalate	Montane shrew (Mammalian insectivore)	90	900	MINIMUM
Butyl Benzyl Phthalate	Mountain cottontail (Mammalian herbivore)	2400	24000	
Carbazole	Deer mouse (Mammalian omnivore)	79	790	MINIMUM
Carbazole	Gray fox (Mammalian top carnivore)	13000	130000	
Carbazole	Montane shrew (Mammalian insectivore)	110	1100	
Carbazole	Mountain cottontail (Mammalian herbivore)	140	1400	
Chlorobenzene	Deer mouse (Mammalian omnivore)	53	530	
Chlorobenzene	Earthworm (Soil-dwelling invertebrate)	2.4	24	MINIMUM
Chlorobenzene	Gray fox (Mammalian top carnivore)	25000	250000	
Chlorobenzene	Montane shrew (Mammalian insectivore)	43	430	
Chlorobenzene	Mountain cottontail (Mammalian herbivore)	170	1700	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Chlorophenol[2-]	American kestrel (Avian top carnivore)	310	3100	
Chlorophenol[2-]	American kestrel (insectivore / carnivore)	14	140	
Chlorophenol[2-]	American robin (Avian herbivore)	0.39	3.9	MINIMUM
Chlorophenol[2-]	American robin (Avian insectivore)	2.6	26	
Chlorophenol[2-]	American robin (Avian omnivore)	0.68	6.8	
Chlorophenol[2-]	Deer mouse (Mammalian omnivore)	0.54	5.4	
Chlorophenol[2-]	Gray fox (Mammalian top carnivore)	340	3400	
Chlorophenol[2-]	Montane shrew (Mammalian insectivore)	2.3	23	
Chlorophenol[2-]	Mountain cottontail (Mammalian herbivore)	0.74	7.4	
Dibenzofuran	Generic plant (Terrestrial autotroph - producer)	6.1	61	MINIMUM
Diethyl Phthalate	Deer mouse (Mammalian omnivore)	3600	36000	
Diethyl Phthalate	Generic plant (Terrestrial autotroph - producer)	100	1000	MINIMUM
Diethyl Phthalate	Gray fox (Mammalian top carnivore)	2500000	25000000	
Diethyl Phthalate	Montane shrew (Mammalian insectivore)	3600	36000	
Diethyl Phthalate	Mountain cottontail (Mammalian herbivore)	8800	88000	
Dimethyl Phthalate	Deer mouse (Mammalian omnivore)	38	460	
Dimethyl Phthalate	Earthworm (Soil-dwelling invertebrate)	10	100	MINIMUM
Dimethyl Phthalate	Gray fox (Mammalian top carnivore)	48000	590000	
Dimethyl Phthalate	Montane shrew (Mammalian insectivore)	80	980	
Dimethyl Phthalate	Mountain cottontail (Mammalian herbivore)	60	740	
Di-n-Butyl Phthalate	American kestrel (Avian top carnivore)	2	20	
Di-n-Butyl Phthalate	American kestrel (insectivore / carnivore)	0.052	0.52	
Di-n-Butyl Phthalate	American robin (Avian herbivore)	0.38	3.8	
Di-n-Butyl Phthalate	American robin (Avian insectivore)	0.011	0.11	MINIMUM
Di-n-Butyl Phthalate	American robin (Avian omnivore)	0.021	0.21	
Di-n-Butyl Phthalate	Deer mouse (Mammalian omnivore)	360	860	
Di-n-Butyl Phthalate	Generic plant (Terrestrial autotroph - producer)	160	600	
Di-n-Butyl Phthalate	Gray fox (Mammalian top carnivore)	62000	140000	
Di-n-Butyl Phthalate	Montane shrew (Mammalian insectivore)	180	450	
Di-n-Butyl Phthalate	Mountain cottontail (Mammalian herbivore)	17000	40000	
Di-n-octylphthalate	Deer mouse (Mammalian omnivore)	1.8	18	
Di-n-octylphthalate	Gray fox (Mammalian top carnivore)	1300	13000	
Di-n-octylphthalate	Montane shrew (Mammalian insectivore)	0.91	9.1	MINIMUM
Di-n-octylphthalate	Mountain cottontail (Mammalian herbivore)	8400	84000	
Methylphenol[2-]	Deer mouse (Mammalian omnivore)	580	5800	
Methylphenol[2-]	Generic plant (Terrestrial autotroph - producer)	0.67	7	MINIMUM
Methylphenol[2-]	Gray fox (Mammalian top carnivore)	160000	1600000	
Methylphenol[2-]	Montane shrew (Mammalian insectivore)	1500	15000	
Methylphenol[2-]	Mountain cottontail (Mammalian herbivore)	880	8800	
Methylphenol[3-]	Generic plant (Terrestrial autotroph - producer)	0.69	7	MINIMUM
Nitroaniline[2-]	Deer mouse (Mammalian omnivore)	5.3	10	MINIMUM
Nitroaniline[2-]	Gray fox (Mammalian top carnivore)	2200	4400	
Nitroaniline[2-]	Montane shrew (Mammalian insectivore)	6.5	13	
Nitroaniline[2-]	Mountain cottontail (Mammalian herbivore)	11	22	
Nitrobenzene	Deer mouse (Mammalian omnivore)	4.8	48	
Nitrobenzene	Earthworm (Soil-dwelling invertebrate)	2.2	22	MINIMUM
Nitrobenzene	Gray fox (Mammalian top carnivore)	4100	41000	
Nitrobenzene	Montane shrew (Mammalian insectivore)	21	210	
Nitrobenzene	Mountain cottontail (Mammalian herbivore)	6.7	67	
Pentachloronitrobenzene	American kestrel (Avian top carnivore)	110	1100	
Pentachloronitrobenzene	American kestrel (insectivore / carnivore)	3.3	33	
Pentachloronitrobenzene	American robin (Avian herbivore)	21	210	
Pentachloronitrobenzene	American robin (Avian insectivore)	0.7	7	MINIMUM
Pentachloronitrobenzene	American robin (Avian omnivore)	1.3	13	
Pentachloronitrobenzene	Deer mouse (Mammalian omnivore)	22	220	
Pentachloronitrobenzene	Gray fox (Mammalian top carnivore)	3500	35000	
Pentachloronitrobenzene	Montane shrew (Mammalian insectivore)	11	110	
Pentachloronitrobenzene	Mountain cottontail (Mammalian herbivore)	930	9300	
Pentachlorophenol	American kestrel (Avian top carnivore)	57	570	
Pentachlorophenol	American kestrel (insectivore / carnivore)	1.7	17	
Pentachlorophenol	American robin (Avian herbivore)	29	290	
Pentachlorophenol	American robin (Avian insectivore)	0.36	3.6	MINIMUM
Pentachlorophenol	American robin (Avian omnivore)	0.72	7.2	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Pentachlorophenol	Deer mouse (Mammalian omnivore)	1.5	15	
Pentachlorophenol	Earthworm (Soil-dwelling invertebrate)	31	150	
Pentachlorophenol	Generic plant (Terrestrial autotroph - producer)	5	50	
Pentachlorophenol	Gray fox (Mammalian top carnivore)	230	2300	
Pentachlorophenol	Montane shrew (Mammalian insectivore)	0.81	8.1	
Pentachlorophenol	Mountain cottontail (Mammalian herbivore)	180	1800	
Phenol	Deer mouse (Mammalian omnivore)	37	370	
Phenol	Earthworm (Soil-dwelling invertebrate)	1.8	18	
Phenol	Generic plant (Terrestrial autotroph - producer)	0.79	8	MINIMUM
Phenol	Gray fox (Mammalian top carnivore)	43000	430000	
Phenol	Montane shrew (Mammalian insectivore)	640	6400	
Phenol	Mountain cottontail (Mammalian herbivore)	47	470	
Acetone	American kestrel (Avian top carnivore)	66000	660000	
Acetone	American kestrel (insectivore / carnivore)	840	8400	
Acetone	American robin (Avian herbivore)	7.5	75	
Acetone	American robin (Avian insectivore)	170	1700	
Acetone	American robin (Avian omnivore)	14	140	
Acetone	Deer mouse (Mammalian omnivore)	1.2	6.3	MINIMUM
Acetone	Gray fox (Mammalian top carnivore)	7800	39000	
Acetone	Montane shrew (Mammalian insectivore)	15	79	
Acetone	Mountain cottontail (Mammalian herbivore)	1.6	8	
Benzene	Deer mouse (Mammalian omnivore)	24	240	MINIMUM
Benzene	Gray fox (Mammalian top carnivore)	18000	180000	
Benzene	Montane shrew (Mammalian insectivore)	49	490	
Benzene	Mountain cottontail (Mammalian herbivore)	38	380	
Benzyl Alcohol	Deer mouse (Mammalian omnivore)	120	1200	MINIMUM
Benzyl Alcohol	Gray fox (Mammalian top carnivore)	110000	1100000	
Benzyl Alcohol	Montane shrew (Mammalian insectivore)	270	2700	
Benzyl Alcohol	Mountain cottontail (Mammalian herbivore)	190	1900	
Butanone[2-]	Deer mouse (Mammalian omnivore)	350	920	MINIMUM
Butanone[2-]	Gray fox (Mammalian top carnivore)	1300000	3500000	
Butanone[2-]	Montane shrew (Mammalian insectivore)	2700	6900	
Butanone[2-]	Mountain cottontail (Mammalian herbivore)	470	1200	
Carbon Disulfide	Deer mouse (Mammalian omnivore)	0.81	8.1	MINIMUM
Carbon Disulfide	Gray fox (Mammalian top carnivore)	190	1900	
Carbon Disulfide	Montane shrew (Mammalian insectivore)	1.2	12	
Carbon Disulfide	Mountain cottontail (Mammalian herbivore)	1.4	14	
Chloroaniline[4-]	Earthworm (Soil-dwelling invertebrate)	1.8	18	
Chloroaniline[4-]	Generic plant (Terrestrial autotroph - producer)	1	10	MINIMUM
Chloroform	Deer mouse (Mammalian omnivore)	8	21	MINIMUM
Chloroform	Gray fox (Mammalian top carnivore)	8900	24000	
Chloroform	Montane shrew (Mammalian insectivore)	8.2	22	
Chloroform	Mountain cottontail (Mammalian herbivore)	19	52	
Dichlorobenzene[1,2-]	Deer mouse (Mammalian omnivore)	1.5	15	
Dichlorobenzene[1,2-]	Gray fox (Mammalian top carnivore)	480	4800	
Dichlorobenzene[1,2-]	Montane shrew (Mammalian insectivore)	0.92	9.2	MINIMUM
Dichlorobenzene[1,2-]	Mountain cottontail (Mammalian herbivore)	12	120	
Dichlorobenzene[1,3-]	Deer mouse (Mammalian omnivore)	1.2	12	
Dichlorobenzene[1,3-]	Gray fox (Mammalian top carnivore)	380	3800	
Dichlorobenzene[1,3-]	Montane shrew (Mammalian insectivore)	0.74	7.4	MINIMUM
Dichlorobenzene[1,3-]	Mountain cottontail (Mammalian herbivore)	13	130	
Dichlorobenzene[1,4-]	Deer mouse (Mammalian omnivore)	1.5	6	
Dichlorobenzene[1,4-]	Earthworm (Soil-dwelling invertebrate)	1.2	12	
Dichlorobenzene[1,4-]	Gray fox (Mammalian top carnivore)	470	1800	
Dichlorobenzene[1,4-]	Montane shrew (Mammalian insectivore)	0.89	3.5	MINIMUM
Dichlorobenzene[1,4-]	Mountain cottontail (Mammalian herbivore)	12	49	
Dichloroethane[1,1-]	Deer mouse (Mammalian omnivore)	210	2100	MINIMUM
Dichloroethane[1,1-]	Gray fox (Mammalian top carnivore)	250000	2500000	
Dichloroethane[1,1-]	Montane shrew (Mammalian insectivore)	290	2900	
Dichloroethane[1,1-]	Mountain cottontail (Mammalian herbivore)	410	4100	
Dichloroethane[1,2-]	American kestrel (Avian top carnivore)	1300	2700	
Dichloroethane[1,2-]	American kestrel (insectivore / carnivore)	22	44	
Dichloroethane[1,2-]	American robin (Avian herbivore)	0.85	1.6	MINIMUM

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Dichloroethane[1,2-]	American robin (Avian insectivore)	4.5	9	
Dichloroethane[1,2-]	American robin (Avian omnivore)	1.4	2.8	
Dichloroethane[1,2-]	Deer mouse (Mammalian omnivore)	27	270	
Dichloroethane[1,2-]	Gray fox (Mammalian top carnivore)	36000	360000	
Dichloroethane[1,2-]	Montane shrew (Mammalian insectivore)	91	910	
Dichloroethane[1,2-]	Mountain cottontail (Mammalian herbivore)	39	390	
Dichloroethene[1,1-]	Deer mouse (Mammalian omnivore)	14	140	
Dichloroethene[1,1-]	Gray fox (Mammalian top carnivore)	14000	140000	
Dichloroethene[1,1-]	Montane shrew (Mammalian insectivore)	11	110	MINIMUM
Dichloroethene[1,1-]	Mountain cottontail (Mammalian herbivore)	44	440	
Dichloroethene[cis/trans-1,2-]	Deer mouse (Mammalian omnivore)	25	250	
Dichloroethene[cis/trans-1,2-]	Gray fox (Mammalian top carnivore)	25000	250000	
Dichloroethene[cis/trans-1,2-]	Montane shrew (Mammalian insectivore)	24	240	MINIMUM
Dichloroethene[cis/trans-1,2-]	Mountain cottontail (Mammalian herbivore)	64	640	
Diphenylamine	American kestrel (Avian top carnivore)	3900	6500	
Diphenylamine	American kestrel (insectivore / carnivore)	49	81	
Diphenylamine	American robin (Avian herbivore)	78	130	
Diphenylamine	American robin (Avian insectivore)	10	16	MINIMUM
Diphenylamine	American robin (Avian omnivore)	17	29	
Hexachlorobenzene	American kestrel (Avian top carnivore)	12	120	
Hexachlorobenzene	American kestrel (insectivore / carnivore)	0.37	3.7	
Hexachlorobenzene	American robin (Avian herbivore)	83	830	
Hexachlorobenzene	American robin (Avian insectivore)	0.079	0.79	MINIMUM
Hexachlorobenzene	American robin (Avian omnivore)	0.15	1.5	
Hexachlorobenzene	Deer mouse (Mammalian omnivore)	0.39	3.9	
Hexachlorobenzene	Earthworm (Soil-dwelling invertebrate)	10	100	
Hexachlorobenzene	Generic plant (Terrestrial autotroph - producer)	10	100	
Hexachlorobenzene	Gray fox (Mammalian top carnivore)	59	590	
Hexachlorobenzene	Montane shrew (Mammalian insectivore)	0.2	2	
Hexachlorobenzene	Mountain cottontail (Mammalian herbivore)	910	9100	
Hexanone[2-]	American kestrel (Avian top carnivore)	290	2900	
Hexanone[2-]	American kestrel (insectivore / carnivore)	1.7	17	
Hexanone[2-]	American robin (Avian herbivore)	0.47	4.7	
Hexanone[2-]	American robin (Avian insectivore)	0.36	3.6	MINIMUM
Hexanone[2-]	American robin (Avian omnivore)	0.41	4.1	
Hexanone[2-]	Deer mouse (Mammalian omnivore)	6.1	23	
Hexanone[2-]	Gray fox (Mammalian top carnivore)	5900	22000	
Hexanone[2-]	Montane shrew (Mammalian insectivore)	5.4	20	
Hexanone[2-]	Mountain cottontail (Mammalian herbivore)	17	65	
Iodomethane	American kestrel (Avian top carnivore)	46	92	
Iodomethane	American kestrel (insectivore / carnivore)	0.29	0.59	
Iodomethane	American robin (Avian herbivore)	0.038	0.076	MINIMUM
Iodomethane	American robin (Avian insectivore)	0.062	0.12	
Iodomethane	American robin (Avian omnivore)	0.047	0.095	
Methyl-2-pentanone[4-]	Deer mouse (Mammalian omnivore)	9.7	97	MINIMUM
Methyl-2-pentanone[4-]	Gray fox (Mammalian top carnivore)	18000	180000	
Methyl-2-pentanone[4-]	Montane shrew (Mammalian insectivore)	15	150	
Methyl-2-pentanone[4-]	Mountain cottontail (Mammalian herbivore)	17	170	
Methylene Chloride	Deer mouse (Mammalian omnivore)	2.6	22	MINIMUM
Methylene Chloride	Generic plant (Terrestrial autotroph - producer)	1600	16000	
Methylene Chloride	Gray fox (Mammalian top carnivore)	4300	36000	
Methylene Chloride	Montane shrew (Mammalian insectivore)	9.2	79	
Methylene Chloride	Mountain cottontail (Mammalian herbivore)	3.8	32	
Styrene	Earthworm (Soil-dwelling invertebrate)	1.2	12	MINIMUM
Styrene	Generic plant (Terrestrial autotroph - producer)	3.2	32	
Tetrachloroethene	Deer mouse (Mammalian omnivore)	0.35	1.7	
Tetrachloroethene	Generic plant (Terrestrial autotroph - producer)	10	100	
Tetrachloroethene	Gray fox (Mammalian top carnivore)	120	630	
Tetrachloroethene	Montane shrew (Mammalian insectivore)	0.18	0.94	MINIMUM
Tetrachloroethene	Mountain cottontail (Mammalian herbivore)	9.5	47	
Toluene	Deer mouse (Mammalian omnivore)	25	250	
Toluene	Generic plant (Terrestrial autotroph - producer)	200	2000	
Toluene	Gray fox (Mammalian top carnivore)	12000	120000	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Toluene	Montane shrew (Mammalian insectivore)	23	230	MINIMUM
Toluene	Mountain cottontail (Mammalian herbivore)	66	660	
Trichlorobenzene[1,2,4-]	Deer mouse (Mammalian omnivore)	0.51	5.1	
Trichlorobenzene[1,2,4-]	Earthworm (Soil-dwelling invertebrate)	1.2	12	
Trichlorobenzene[1,2,4-]	Gray fox (Mammalian top carnivore)	110	1100	
Trichlorobenzene[1,2,4-]	Montane shrew (Mammalian insectivore)	0.27	2.7	MINIMUM
Trichlorobenzene[1,2,4-]	Mountain cottontail (Mammalian herbivore)	12	120	
Trichloroethane[1,1,1-]	Deer mouse (Mammalian omnivore)	400	4000	
Trichloroethane[1,1,1-]	Gray fox (Mammalian top carnivore)	310000	3100000	
Trichloroethane[1,1,1-]	Montane shrew (Mammalian insectivore)	260	2600	MINIMUM
Trichloroethane[1,1,1-]	Mountain cottontail (Mammalian herbivore)	2000	20000	
Trichloroethene	Deer mouse (Mammalian omnivore)	54	540	
Trichloroethene	Gray fox (Mammalian top carnivore)	42000	420000	
Trichloroethene	Montane shrew (Mammalian insectivore)	42	420	MINIMUM
Trichloroethene	Mountain cottontail (Mammalian herbivore)	190	1900	
Trichlorofluoromethane	Deer mouse (Mammalian omnivore)	97	650	
Trichlorofluoromethane	Gray fox (Mammalian top carnivore)	62000	420000	
Trichlorofluoromethane	Montane shrew (Mammalian insectivore)	52	350	MINIMUM
Trichlorofluoromethane	Mountain cottontail (Mammalian herbivore)	1800	12000	
Vinyl Chloride	Deer mouse (Mammalian omnivore)	0.13	1.3	
Vinyl Chloride	Gray fox (Mammalian top carnivore)	110	1100	
Vinyl Chloride	Montane shrew (Mammalian insectivore)	0.12	1.2	MINIMUM
Vinyl Chloride	Mountain cottontail (Mammalian herbivore)	0.34	3.4	
Xylene (Total)	American kestrel (Avian top carnivore)	13000	130000	
Xylene (Total)	American kestrel (insectivore / carnivore)	190	1900	
Xylene (Total)	American robin (Avian herbivore)	89	890	
Xylene (Total)	American robin (Avian insectivore)	41	410	
Xylene (Total)	American robin (Avian omnivore)	56	560	
Xylene (Total)	Deer mouse (Mammalian omnivore)	1.9	2.4	
Xylene (Total)	Generic plant (Terrestrial autotroph - producer)	100	1000	
Xylene (Total)	Gray fox (Mammalian top carnivore)	750	930	
Xylene (Total)	Montane shrew (Mammalian insectivore)	1.4	1.8	MINIMUM
Xylene (Total)	Mountain cottontail (Mammalian herbivore)	7.6	9.5	

Supplement 4-8

Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk Screening Assessments

LA-UR-20-24479

OPEN DETONATION UNIT AT TECHNICAL AREA 39
HUMAN HEALTH AND ECOLOGICAL RISK-SCREENING ASSESSMENTS

June 16, 2020

EXECUTIVE SUMMARY

The area around the open detonation (OD) area near Building 6 at Technical Area (TA) 39 (the TA-39-6 OD Unit) within the Los Alamos National Laboratory (LANL) was sampled as part of the application process for a Resource Conservation and Recovery Act (RCRA) permit to perform hazardous waste treatment operations. The TA-39-6 OD Unit is referred to as "the Unit" in the remainder of this risk assessment. Surface soil and tuff samples were collected in September 2018 and analyzed for inorganic and organic compounds. Data from these samples were used to conduct human health and ecological risk-screening assessments to determine whether hazardous contaminants from ongoing treatment operations are being released to soil at levels that pose an unacceptable risk to human health or the environment.

For the human health risk assessment, residential and industrial exposure scenarios were evaluated by comparing the maximum exposure point concentration for each analyte to the New Mexico Environment Department (NMED) soil screening levels (NMSSLs). The following conclusions are made:

- **Detected inorganics were compared to background values (BVs) and risk-based screening levels (NMSSLs).** Six detected inorganics exceeded background, although four of those were only 1.2 to 1.3 times higher than background. No inorganics exceeded risk-based screening levels (SLs).
- **Detected organics were compared to risk-based NMSSLs.** There are no individual constituents that exceed SLs.
- **Hazard Indices (HI) were calculated.** The sum of the cancer risk ratios or the noncancer hazard quotients (HQs) is called a HI. The HIs for inorganics or organics do not exceed a value of one.
- **The screening evaluation indicates that hypothetical future residents or workers are not at risk due to exposure to soils at the Unit.**

Potential risk to ecological receptors was evaluated by analyzing different lines of evidence that were weighed to draw a conclusion regarding potential for adverse ecological effects. This included:

- **Comparing maximum exposure point concentrations (EPC) to minimum no effect (NE) and low effect (LE) ecological screening levels (ESLs).** There were nine analytes that exceeded NE ESLs, and seven analytes that exceeded LE ESLs, to produce HQs greater than 0.3. There were no ESLs for calcium, which was detected and slightly elevated above background.
- **Comparing upper 95th percentile confidence limits (UCL95) as the EPC to minimum NE and LE ESLs.** There were three analytes for which the UCL95 EPC exceeded NE ESLs, and two that also exceeded LE ESLs.
- **Calculating HIs.** The HIs for NE ESL and LE ESL comparisons exceeded 1.
- **Application of site-specific area use factors.** Only plants and earthworms had HQs of 1 under the area use factor analysis. There were no analytes that exceeded LE ESLs once the areal extent of the Unit was taken into consideration in conjunction with typical home range for ecological receptors. The HIs for plants and earthworms were 2 and 3 respectively for NE ESLs, and less than 1 for LE ESLs. Plants and earthworms are not expected to occur in the Unit due to intended use and bare ground.
- **Avian and mammalian population and tissue data.** There was no indication that bird or mammal populations are being affected. Tissue concentrations were not elevated relative to regional statistical reference levels (RSRLs).
- **There is no apparent risk to ecological receptors at the Unit.**

Table of Contents

List of Tables

List of Figures

Acronyms and Abbreviations

AUF	Area Use Factor
BMP	Best Management Practice
BV	Background Value
COPC	Contaminant of Potential Concern
COPEC	Contaminant of Potential Ecological Concern
CSEM	Conceptual Site Exposure Model
EPC	Exposure Point Concentration
ERA	Ecological Risk Assessment
ESL	Ecological Screening Level
HHRA	Human Health Risk Assessment
HI	Hazard Index
HMX	Cyclotetramethylene-tetranitramine
HQ	Hazard Quotient
HR	Home Range
LANL	Los Alamos National Laboratory
LD50	Lethal Dose for Half of the Population
LE	Low Effect
LOAEL	Lowest Observed Adverse Effect Level
MDL	Method Detection Limit
NE	No Effect
NMED	New Mexico Environment Department
NMSSL	New Mexico Soil Screening Levels
NOAEL	No Observed Adverse Effect Level
OD	Open Detonation
PAUF	Population Area Use Factor
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RSL	Regional Screening Level
RSRL	Regional Statistical Reference Levels
SD	Standard Deviation
SF	Cancer Slope Factor
SL	Screening Level
TA	Technical Area
TATB	2,4,6-Triamino-1,3,5-trinitrobenzene
TECi	Toxicity Equivalent Concentration for congener ***i***
TEF	Toxicity Equivalency Factor
TEQ	Toxicity Equivalent Quotient
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
UCL95	95% Upper Confidence Limit of The Mean
WHO	World Health Organization

1. INTRODUCTION

The area around the open detonation (OD) area near Building 6 at Technical Area (TA) 39 (the TA-39-6 OD Unit) within the Los Alamos National Laboratory (LANL) was sampled as part of the application process for a Resource Conservation and Recovery Act (RCRA) permit to perform hazardous waste treatment operations. The TA-39-6 OD Unit is referred to as “the Unit” in the remainder of this risk assessment.

The Unit is a hazardous waste management unit located in the southern portion of LANL (Figure 1-1). The Unit consists of a relatively flat, sand covered area that measures approximately 40 feet by 40 feet, and is located directly to the west of Building 6 (the control building) (Figure 1-2). The Unit has historically been used for experimental, sanitization, and waste treatment OD activities.

Steep canyon walls that rise to heights of 100 feet or higher form a semicircle around the Unit and act to attenuate the force of the detonations. Although the Unit is used to treat both solid and liquid explosive hazardous waste, the primary use of the unit is for nontreatment-related experimental test detonations. The last hazardous waste treatment shot at the site occurred on December 9, 2014. Upgrades to the firing pad at the Unit in recent years include a concrete retaining wall and storm water best management practices (BMPs) that improve fragment capture and minimize runoff from the firing site to the surrounding areas, respectively.

One surface soil sampling event of the top 2 inches of soil and tuff at 12 discrete locations (Figure 1-2) was conducted in and around the Unit on September 27, 2018. Sample collection included soil both in and out of potential run-off areas; however, sample collection did not include rocks, debris, or vegetation. Data from these samples were used to conduct human health and ecological risk assessments to determine whether hazardous contaminants from ongoing treatment operations are being released to soil at levels that pose an unacceptable risk to human health or the environment.

The results of the risk assessments are presented in the following sections.

2. HUMAN HEALTH RISK ASSESSMENT

2.1. CONCEPTUAL SITE MODEL

The primary land use is industrial because only authorized Laboratory workers currently have access to the area around the Unit. Laboratory workers are the primary human receptors, and the industrial scenario is the defining scenario for the human health risk-screening assessment (i.e., the scenario on which decisions are based). Because the site is located within the boundaries of an operational facility (TA-39), the reasonably foreseeable future land use will continue to be industrial. A Hypothetical Future Residential exposure is also assessed and provided for comparison purposes.

The release of contaminants from open detonation operations has potentially occurred for many years. Releases are transported primarily by wind, which rapidly disperses the material in ambient air. Most material is likely deposited close to the source(s), and concentrations are expected to decrease with distance from the source. Exposure to a site worker may occur through various surface soil contact pathways. Potential exposure pathways are:

- Incidental ingestion of surface soil
- Inhalation of fugitive dust or volatiles emanating from surface soil
- Dermal contact with surface soil

2.2. IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

2.2.1. Sampling and Data Analysis

Twelve surface soil samples and one duplicate were collected September 27, 2018. Surface soil samples were collected as grab samples (independent, discrete samples) from a depth of 0 to 2 inches below ground surface. The duplicate pair was point 1 and 1 dup (field sample identification WST39-18-162832 and WST39-18-162973). Each sample set was analyzed for the following:

- Semi-Volatile Organic Compounds (SVOCs)
- Volatile Organic Compounds (VOCs)
- Total Metals
- Dioxins/Furans
- High Explosives

A staged approach was used for the risk assessment. Duplicates were handled consistent with the New Mexico Environment Department (NMED) guidance (NMED 2019) which states that in the initial screening assessment the maximum and not the average of the duplicate pair must be used. The approach was as follows:

- An attribution analysis (NMED 2019) was conducted by comparing the inorganic site data to background values (BVs). Analytes less than BVs were eliminated from further evaluation.
- The screening approach then used the maximum of all detected data for the initial screening evaluation. The maximum concentration of each analyte was divided by its screening level (SL). For the HHRA, this meant using two SLs based on toxicity endpoints, i.e., a cancer and noncancer SL were used to obtain a cancer ratio and noncancer hazard quotient (HQ).
- All analytes that exceeded the SLs were considered to have "failed" the initial screen. These are considered to be contaminants of potential concern (COPCs).
- A refinement of the exposure point concentrations (EPCs) was performed. Duplicates were averaged prior to calculating an upper 95th percent confidence limit on the mean (UCL95). The UCL95 concentrations were compared to SLs, and any analytes above the SLs would be evaluated further if necessary.

Figure 1-1 shows a map of the site location, and Figure 1-2 shows site features and the current sampling locations from which data were obtained for use in the risk assessment.

2.2.2. Evaluation of Inorganic Analytes

Inorganic analytes are first compared to BVs established for the site (LANL 1998). No further evaluation is necessary for analytes for which the maximum is less than the BV, and these data are not compared to risk-based SLs. For analytes for which the maximum exceeded the BV but did not exceed risk-based SLs known as the New Mexico Soil Screening Levels (NMSSLs) (NMED 2019), no further evaluation is necessary. If the maximum exceeded the BV and one or more risk-based SLs as indicated by a ratio of the maximum to the SL being > 1, a UCL95 was calculated with the USEPA ProUCL 5.1.002 software (EPA 2015). This UCL95 was then compared to the SLs. The toxicity of the various constituents analyzed in this investigation is incorporated into the screening levels.

Where an NMSSL was not available, the USEPA Regional Screening Level (RSL) was used. If an RSL was also not available, a suitable surrogate is proposed if toxicity and physicochemical data are sufficient to allow identifying a suitable surrogate. The following inorganic analytes required surrogates:

- Calcium, sodium, potassium, magnesium – these are macronutrient inorganic constituents that are relatively nontoxic, so unless concentrations greatly exceed background they are not evaluated for toxicity. SLs are not available.
- Chromium (Cr) - the toxicity values based on NMED CrIII were used since NMED has no SLs specifically for total Cr, and the site is unlikely to have significant CrVI because CrIII is more stable in the environment than CrVI, and CrVI is most often associated with industrial processes (ATSDR 2012).
- Mercury – the toxicity values for NMED mercuric salts was used for the SL as this is the form expected in arid soils.
- Lead – The EPA toxicity values of 400 mg/kg for residents and 800 mg/kg for workers were applied for lead.

All reporting limits were adequate for nondetected inorganics as indicated by ratios of the maximum reporting limit to minimum screening level being 1 or less. There were no rejected (R-qualified) inorganic data in the dataset.

2.2.3. Evaluation of Organic Analytes

Twelve soil samples and one duplicate were collected for analysis of organics, but some organic analytes were evaluated by more than one method, resulting in an apparently higher sample count (i.e., 2,4- and 2,6- dinitrotoluene, nitrobenzene). The maximum concentration regardless of the method was used as the EPC.

Organic analytes are not compared to background values as a matter of standard practice, although there are naturally occurring sources of organic constituents. Organics are compared to risk-based SLs. Where a SL was not available, a suitable surrogate is proposed. Surrogates were obtained for the following analytes:

- Acenapthylene – there are no NMSSLs or RSLs for this chemical. The NMSSL for naphthalene was used as a surrogate.
- Benzoic Acid – there are no NMSSLs. The EPA RSLs were used to represent noncancer health effects.
- Benzyl Alcohol – there are no NMSSLs. The EPA RSLs were used to represent noncancer health effects.
- Butylbenzylphthalate – there are no NMSSLs and the EPA RSLs were used to represent cancer and noncancer health effects
- 2,4,6-triamino-1,3,5- trinitrobenzene (TATB) – there is no NMSSL or RSL for TATB. RSLs for 1,3,5-trinitrobenzene were used as a surrogate because of structural similarity.
- 1,2 and 1,4 Xylene [m,p-xylenes] – the toxicity values for m-xylene (1,3-xylene) were used as the basis of the screening levels as it is just slightly more conservative than using values for p-xylene (1,4-xylene).

Reporting limits were adequate for all analytes with the exception of nitrosodimethylamine[N-], for which the reporting limit to residential SL ratio was 4 for every sample. This analyte was not detected in any of the samples, and all reporting limits were similar and exceeded the screening level. It is subject to photodecomposition, and degrades with heat or biological processes (EPA 2014). Therefore, it is not expected to be stable in the environment and is not expected to occur at the Unit. This chemical is not considered further. There were no rejected (R-qualified) inorganic data in the dataset used in the risk assessment.

2.3. Exposure Point Concentrations

A phased approach was used to establish the EPCs. First the maximum detected value for each analyte was used as the EPC and was compared to a screening level. Analytes for which the maximum value was less than the lowest screening level are not evaluated further. If the maximum EPC exceeded screening levels, evaluation was continued with the UCL95 used as the EPC for the comparison. If there were too few detected concentrations reported to allow calculation of a UCL95 (i.e., number of detects <6), the median of all the data for the analyte including the detected concentrations and the method detection limits (MDLs) was used.

Guidance from NMED was used to evaluate the potential toxicity of the dioxin/furans. This guidance relies on the 2005 World Health Organization (WHO) toxicity equivalency factors (TEF) (Van den berg et al. 2006) approach. The TEFs are multiplied by the measured concentration to obtain a congener-specific product called the toxicity equivalent concentration (TECi), and the product for each (TECi) is summed for each sample location. This sum is referred to as the toxicity equivalent quotient (TEQ). The TEQ is divided by the NMED screening level for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) to obtain a risk ratio.

2.4. Screening Evaluation

The following sections present the human health risk-screening assessment for the Unit. The summary statistics and maximum values used as EPCs are presented in Table 2-1.

The EPC for each detected analyte was compared with the industrial and residential soil SLs to obtain a HQ, and the hazard index (HI) was calculated by summing the HQs (NMED 2019). The chemical SLs used in the evaluations were obtained from current NMED guidance (NMED 2019) or the most recent EPA regional screening levels (RSLs) (EPA 2019) if an NMED value was not available. The NMSSLs for carcinogens are equivalent to a 1×10^{-5} cancer risk, and for noncarcinogens the NMSSLs correlate to a ratio or HQ of 1. The cancer-based EPA RSLs were multiplied by 10 to adjust them to a cancer risk level of $1 \text{x} 10^{-5}$, consistent with the NMSSLs. Any detected organic analytes that exceeded the SLs were considered COPCs. Any inorganic analytes that exceeded both background and the SL were also considered COPCs.

2.4.1. Background Data

The background data used in this evaluation were obtained from LANL "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico, September 1998. The background data are used in the RCRA corrective action process to distinguish between contaminated and uncontaminated media and have been accepted by NMED. As stated in LANL (1998) on page 4, section 3.1.1,

> Twenty-one soil profiles distributed across the Pajarito Plateau were described in the field and were sampled for inorganic chemical analyses. These samples provide information about the varied soils and geomorphic settings that occur on the Pajarito Plateau, allowing for an evaluation of the variability in soil characteristics and chemistry within several of the soil series previously described by Nyhan et al. (1978, 05702). Most sampled soils were collected from mesa tops. Other geomorphic settings sampled include hillslopes and canyon bottoms.

The locations sampled as part of the background study were not impacted by deposition from the historical operation of the OD units or other firing sites. Benchmarks termed BVs were obtained from this document to use in comparison to site data.

2.4.2. Data Analysis

Table 2-1 presents summary statistics for the 12 surface soil samples and one duplicate collected September 27, 2018. However, including data from the duplicate pair at point 1, and including analysis by different methods for certain analytes, results in an increased apparent sample size above 12 for some analytes (Table 2-1). Maximum concentrations in the soil samples analyzed for inorganics were compared to the established soil BVs (LANL 1998) (Table 2-2).

Inorganics

For detected inorganic analytes, the maximum detected reported result was used as the initial EPC (Table 2-1). Background values for the site are from the 1998 background report (LANL 1998), and soil screening levels are NMSSLs or other values as previously described in Section 2.2.2 (Table 2-2). The maximum concentration for the following detected inorganics exceeded BVs:

- Chromium – 2 times above BV
- Copper – 12 times above BV

There were four other inorganics that were approximately equivalent to or slightly elevated above BVs. These were as follows:

- Calcium – 1.2 times above BV
- Mercury – 1.3 times above BV
- Vanadium – 1.2 times above BV
- Zinc – 1.3 times above BV

All other inorganics were equal to or lower than BVs.

None of the inorganics exceeded either the residential or worker NMSSLs (NMED 2019). There was therefore no elevated cancer risk or noncancer hazard indicated for the Unit for any inorganic.

HIs were calculated for inorganics and organics separately. The noncancer-based sum of the screening level HQs for maximum detected soil concentrations of inorganics above background was 0.2 for the hypothetical future resident, and 0.01 for workers (Table 2-2).

Organics

Numerous organics were detected in the surface soil samples (Table 2-1). These include energetics or explosives (e.g., HMX [cyclotetramethylene-tetranitramine] and TATB). The SVOCs fluoranthene and pyrene were detected in one sample. Phthalates (e.g., butylbenzyl- and di-n-butylphthalate were also detected (Table 2-1), as were benzyl alcohol and benzoic acid.

No individual constituents exceeded NMSSLs (NMED 2019). The HI for the evaluation of maximum detected soil concentrations of organics for cancer-based health effects was 0.001 for hypothetical future residents, and 0.0002 for workers (Table 2-2). This is not a cancer risk estimate in terms of cancer probability, but an indication of how soil concentrations compare to screening levels based on a $1x10^{-5}$ target cancer risk. Since the HI is less than 1, the associated cancer risk is less than $1x10^{-5}$ which is NMEDs threshold. The noncancer-based sum of the screening level HQs for maximum detected soil concentrations of organics was 0.0.005 for residents, and 0.0003 for workers (Table 2-2).

Dioxin/Furans

The dioxin/furans are organics but are evaluated in the analysis differently than other organics. Dioxins/furans were detected in the surface soil samples (Table 2-3). The evaluation of the dioxin/furans is summarized in Table 2-3. The measured detected concentration or the MDL for nondetects is shown for each congener in each sample. The detection status is indicated by a zero for nondetect, and a 1 for a detected value. The TEFs are shown for each congener, and multiplying the TEF by the concentration produces the TECi. Summing the TECi yields the TEQ. Dividing the TEQ for each sample by the residential or industrial SL also shown in Table 2-3 produces a ratio which for all samples was 1 or less. Therefore, the dioxins and furans do not exceed risk-based SLs. The total HI for organics, including the dioxin/furans, was 0.006 for the hypothetical future resident and 0.0003 for the worker.

Data Analysis Conclusions

The initial risk analysis for all inorganic and organic analytes was based on comparison of the maximum detected value as the EPC. There are no individual constituents that exceed NMED or EPA residential or industrial SLs. The HIs do not exceed a value of one. The screening evaluation indicates that hypothetical future residents or workers are not at risk due to exposure to soils at the Unit.

2.5. Uncertainty Analysis

The human health risk assessment has inherent uncertainties associated with data and data evaluation, exposure assessment, and the toxicity values on which the SLs are based. Each or all of these uncertainties may affect the assessment results, biasing the risk assessment results high or low.

2.5.1. Data and Data Analysis

Uncertainties in the data or its analysis may include errors in sampling, laboratory analysis, and data analysis. Data evaluation uncertainties are expected to have little effect on the assessment results because the data have undergone validation to minimize errors, and any errors are not expected to bias the results high or low. The J-flagged (estimated) qualification of detected concentrations of some organic COPCs does not affect the assessment. The data represent deposition from more than 60 years of operation into 2019. Therefore, the data and subsequently the screening assessment results represent current baseline conditions.

The use of a judgemental sampling design biases the risk results high since samples were targeted to locations where contamination was most likely to occur or known to occur from past sampling events.

The use of the maximum or a UCL95 as the COPC EPC for each COPC is also expected to bias risk estimates high, erring towards being conservative. Use of the maximum as the EPC overestimates exposure, as by definition all other concentrations are below this value. Use of the UCL95 may also result in an overestimation of risk since by definition true mean values are nearly always going to be less than this value.

2.5.2. Exposure Assessment

The exposure assessment assumptions bias the risk results high (i.e., overestimate risk). The assumptions for the industrial SLs are that the potentially exposed individual is a Laboratory worker who is outside at the site for 8 hours per day for 225 days per year (NMED 2019), and who spends the entire 8 hours on-site within the contaminated area. Assumptions for the residential SLs are that the potentially exposed individual is a hypothetical future resident who is present 24 hours per day for 350 days per year (NMED 2019) and spends the entire 24 hours on-site within the contaminated area. Because it is unlikely the worker or resident would be within the contaminated area for the entire time, the screening assessments overestimate the exposure. As a result, risks may be overestimated.

Assumptions underlying the exposure parameters, routes of exposure, and intake rates for routes of exposure are consistent with NMED parameters and default values (NMED 2019). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that overestimate the reasonably expected risk levels.

2.5.3. Toxicity Values

The primary uncertainty associated with the screening values is related to the derivation of toxicity values used in their calculation. Toxicity values (slope factors [SFs] and reference doses [RfDs]) were used to derive the risk-based screening values used in the screening evaluation (NMED 2019). Uncertainties were identified in four areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) variability between individuals in the human population, (3) the derivation of RfDs and SFs, and (4) the chemical form of the COPC.

The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist between animals and humans in chemical absorption, metabolism, excretion, and toxic responses. Differences in body weight, surface area, and pharmacokinetic relationships between animals and humans are taken into account to address these uncertainties in the dose-response relationship. However, conservatism is usually incorporated in each of these steps, potentially biasing the estimate high and resulting in the overestimation of potential risk.

For noncarcinogenic effects, the degree of variability in human physical characteristics is important both in determining the risks that can be expected at low exposures and in defining the no observed adverse effect level (NOAEL). The NOAEL uncertainty factor approach incorporates a 10-fold factor to reflect individual variability within the human population that can contribute to uncertainty in the risk assessment. This factor of 10 is generally considered to result in a conservative estimate of risk for noncarcinogenic COPCs.

The RfDs and SFs for different chemicals are derived from experiments conducted by different laboratories that may have different accuracy and precision that could lead to an over- or underestimation of risk. The uncertainty associated with the toxicity factors for noncarcinogens is measured by the uncertainty factor, the modifying factor, and the confidence level. For carcinogens, the weight of evidence classification indicates the likelihood that a contaminant is a human carcinogen.

COPCs may be bound to the environmental matrix and not be available for absorption into the human body following ingestion. However, the exposure scenarios typically default to the assumption that the COPCs are bioavailable. This assumption can lead to an overestimation of the total exposure and overestimate risk.

2.5.4. Additive Approach

For noncarcinogens, the effects of exposure to multiple chemicals are generally unknown and possible interactions could be synergistic or antagonistic, resulting in either an underestimation or overestimation of the potential risk by assuming additivity. Additionally, RfDs used in the risk calculations typically are not based on the same endpoints with respect to severity, effects, or target organs. Therefore, the potential for noncarcinogenic effects may be overestimated by the HI considering individual COPCs act by different mechanisms and on different target organs but are addressed additively. Cancer risks are typically assumed to be additive.

2.6. Conclusions

Inorganics were compared to BVs and risk-based SLs. Six inorganics equaled or exceeded background. No inorganics exceeded risk-based SLs. The cancer and noncancer screening level HIs for inorganics for workers or hypothetical residents were less than 1.

Organics were compared to risk-based SLs. There were numerous organics detected, including some energetics, some SVOCs, and dioxin/furans. However, maximum concentrations of any of the detected analytes were below SLs for all constituents. None of the TEQs for dioxin/furans exceeded the TCDD SL. The Unit does not present an elevated cancer risk or noncancer hazard to human health due to exposure to soils. The following interpretation can be made from the analysis:

- Based on an industrial scenario, inorganics above background, and maximum detected concentrations for each analyte, the total noncancer (0.01) and cancer-based (0.0003) HIs are less than the NMED target level of 1. This means that the sum of the ratios for maximum concentrations divided by SLs correlate to a cancer risk less than $1x10^{-5}$ and a noncancer hazard less than 1.
- For the hypothetical future residential scenario, inorganics above background, and maximum detected concentrations for each analyte, the total noncancer HI (0.2) is less than the NMED target level of 1. The total cancer HI of 0.006 is also below the NMED target level of 1.
- The concentration of each dioxin/furan congener was summed to obtain a TEQ which was compared to the NMED NMSSL for TCDD. The maximum ratio was 0.004 for residential use and 0.00003 for industrial use.
- Summing the maximum dioxin/furan ratio with the other cancer risk HIs provides a total HI for residential use of 0.006 and an HI for industrial use of 0.0003.
- The maximum lead concentration of 15.6 mg/kg is less than the background value of 22.3 mg/kg, and is much less than the residential SSL (400 mg/kg).
- There are no elevated human health risks for exposure to soils based on this evaluation.

3. ECOLOGICAL SCREENING ASSESSMENT

3.1. Introduction

The ecological risk assessment (ERA) for the Unit is presented in the following sections. The ecological risk-screening evaluation identifies chemicals of potential ecological concern (COPECs) and is based on the comparison of EPCs with Ecological Screening Levels (ESLs) in accordance with Laboratory guidance (LANL 2012a) and NMED (2017) guidance. Site information including ESLs, biological studies, and historical information were reviewed and a site visit was conducted. A preliminary conceptual site exposure model (CSEM) was prepared.

The ESLs obtained from the ECORISK Database, Version 4.1 (LANL 2017; LANL 2019) are presented in Table 3-1. The ESLs are based on toxicity data for laboratory species similar to those expected to occur at the site, and are derived from experimentally determined NOAELs, lowest observed adverse effect levels (LOAELs), or doses determined to be lethal to 50% of the test population (LD50s). Information relevant to the calculation of ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values, are presented in the ECORISK Database, Versions 2.0, 3.1, and 4.1 (LANL 2003; LANL 2012b; LANL 2017).

The screening evaluation is conducted by dividing the EPCs by the ESLs to obtain a HQ calculated for each COPEC and screening receptor. As a generalization, the higher the contaminant levels relative to the ESLs, the higher the potential risk to receptors; conversely, the higher the ESLs relative to the contaminant levels, the lower the potential risk to receptors. The analysis begins with a comparison of the minimum ESL for each COPEC to the EPC. HQs greater than 0.3 are used to identify COPECs requiring additional evaluation (LANL 2012a).

Individual HQs for a receptor are summed to derive a HI. An HI greater than 1 indicates that further assessment may be needed to ensure exposure to multiple COPECs at a site will not lead to potential adverse impacts to a given receptor population. The HQ and HI analysis provide a conservative indication of potential adverse effects and are designed to minimize the potential of overlooking possible COPECs at the site.

3.2. Problem Formulation and Conceptual Site Exposure Model

The Unit is a terrestrial ecosystem. The area is disturbed with little to no vegetation present. Vegetation increases with distance from the OD area and consists of grasses and shrubs. There are likely terrestrial birds and small mammals including deer mice (*Peromyscus maniculatus*) or ground squirrels using the area, although intermittently due to the lack of food or cover. There is not enough vegetation within the Unit to support large herbivores.

Due to the site history, there is the potential for energetic compounds or their breakdown products to be present in surface soils. Terrestrial animals and plants may contact surface soils and be exposed. This possibility led to the collection of data and ecological risk assessment.

3.2.1. Data Summary

Soil samples used in this analysis were collected in September 2018. Surface soil samples were collected as grab samples (independent, discrete samples) from a depth of 0 - 2 inches below ground surface. Each sample set was analyzed for the following:

- VOCs –12 samples and one duplicate
- SVOCs –12 samples and one duplicate
- Total Metals –12 samples and one duplicate
- Dioxins/Furans –12 samples and one duplicate
- High Explosives –12 samples and one duplicate

Some organics were analyzed by more than one method, resulting in an apparently higher sample count (i.e., 2,4 and 2,6 dinitrotoluene, nitrobenzene, dichlorobenzenes). Figure 1-2 shows a map of the site including the current sampling locations from which data were obtained for use in the risk assessment, and habitat in the immediate site vicinity is also shown in Figure 1-2.

3.2.2. Receptors and Pathways

Exposure pathways are considered complete if all of the following components are present (US EPA, 1989; NMED, 2017):

•A source and mechanism for hazardous waste/constituent release into the environment;

- •An environmental transport medium or mechanism;
- •A point of contact directly between the receptor and site-related contaminated media, or indirectly via dietary ingestion of prey or forage items contaminated by contact with site related contaminants; and
- •An exposure route leading to interaction of the contaminant with target organs within the receptor.

If any of the above components are missing from the exposure pathway, it is not a complete pathway for the site.

The primary potentially complete ecological exposure pathways are based on direct or indirect contact with surface soils. These include root uptake, incidental ingestion of soil, and biotic uptake leading to food-web transport. Exposure of plants and soil invertebrates is not related to dietary pathways but is the result of direct contact with, and uptake from, the surrounding medium. For terrestrial wildlife, most exposure is through the oral pathway from the diet and incidental ingestion of soil (Sample et al. 1998). The dermal contact and inhalation pathways are not typically assessed quantitatively in ecological risk assessments, based on guidance indicating the ingestion route is most important to terrestrial animals (EPA 1997; EPA 2003). Dermal exposure to wildlife is mitigated by the fur or feathers covering the bodies of most vertebrates and the incidental consumption of soil during grooming is included in the direct soil ingestion estimates.

Although inhalation is recognized to occur, it is typically considered insignificant relative to ingestion and only quantified for burrowing animals where volatile organics are present in the subsurface. Respirable dust particles are most likely ingested rather than inhaled, and this pathway is considered negligible (EPA 1997; EPA 2003), while non-respirable dust is ingested and accounted for in incidental soil ingestion values for wildlife species (EPA 1993; EPA 2003). Therefore, the exposure pathways considered in the development of the ecological screening levels (ESLs) used in the risk-screening assessment capture the primary exposure for wildlife receptors.

A CSEM was developed for the site (Figure 3-1). The primary contaminant source is the testing of explosives and detonation of explosives for waste management at the site. Any uncombusted material, if present, could remain in soil or be released to air as fugitive dust. Materials in surface soil could potentially be carried by overland flow or percolate into the subsurface with rain, whereas material in air could be transported by wind. Receptors could contact contaminants within the immediate site area, up to the site boundary, or slightly beyond. The use of stormwater BMPs reduces the potential for migration beyond the Unit.

Terrestrial flora (i.e., plants) and fauna (e.g., invertebrates, birds, and mammals) are the general categories of ecological receptors that could be exposed.

3.2.3. Technical Decision Point and Recommendations

Because of the ecological habitat near the Unit boundaries, and because of the potential for exposure, the data were used to perform a quantitative screening level ecological evaluation.

3.3. Screening Evaluation

The summary statistics for the data are presented in Table 2-1. Maximum detected concentrations of each analyte are used as the initial EPC. The EPCs and the screening results for the ecological screening assessment are presented in Table 3-1. Any analytes for which the measured maximum detected value exceeded the minimum SL were considered COPECs and were evaluated further by calculating UCL95s and comparing the UCL95s to the SLs. The approach was as follows:

- An attribution analysis (NMED 2019) was conducted by comparing the inorganic site data to BVs. Analytes less than BVs were eliminated from further evaluation.
- The screening approach then used the maximum of all detected data for the initial screening evaluation. The maximum concentration of each analyte was divided by the minimum ESL for all receptors.
- All analytes that exceeded the ESLs were considered to have "failed" the initial screen. These are considered to be COPECs.
- A refinement of the EPCs was performed. Duplicates were averaged prior to calculating a UCL95. The UCL95 concentrations were compared to ESLs, and any analytes above the ESLs would be evaluated further if necessary.

3.3.1. Inorganics

There are two inorganics that exceed site BVs by a factor of 2 or more, and four that are slightly above background. The maximum concentration of each of these was compared to the minimum no effect (NE) ESL, if one was available, to determine if the resulting HQ >0.3. These analytes also exceeded the low effect (LE) ESL to produce an HQ >0.3. The analytes that exceed ecological SLs are as follows (Table 3-1):

- Calcium – no ESLs, and only 1.2 times above BV. Not evaluated further due to lack of ESLs and likelihood of low toxicity
- Chromium – exceeds NE and LE ESLs for ratio > 0.3; 2 times higher than BV
- Copper – exceeds NE ESLs and LE ESLs; 12 times higher than BV
- Mercury – exceeds NE ESLs and LE ESLs for ratio > 0.3; 1.3 times higher than BV
- Vanadium - exceeds NE ESLs and LE ESLs for ratio > 0.3; 1.2 times higher than BV
- Zinc– exceeds NE ESLs and LE ESLs; 1.3 times higher than BV

If the maximum exceeded the BV and the ratio of the maximum to the risk-based SL was greater than 0.3, a UCL95 was calculated with the USEPA ProUCL 5.1.002 software (EPA 2015). This UCL95 was then compared to the ESLs (Table 3-2) consistent with the NMED (2017) Tier II approach. Note that comparison to the UCL95s was made prior to incorporating area use factors (AUFs) into the analysis. Receptor-specific dietary composition is built into the receptor-specific ESLs. The concentrations for each of the samples in the duplicate pair 1 and 1 dup (Figure 1-2) were averaged and the UCL95 calculated with a sample size of 12.

UCL95 values for copper, mercury, and vanadium exceeded the NE ESL with UCL95/ESL ratios above 1, but only UCL95s for copper and vanadium exceeded the LE ESL as well. The HI for the NE ESL was 20, and the HI for the LE ESL was 7, for the sum of the HQs for inorganics. This suggests some limited potential for adverse ecological effects at the Unit, and therefore the COPECs producing HQs above 1 are evaluated in more detail in the uncertainty analysis.

3.3.2. Dioxin and Furans

Dioxins and furans are evaluated in a multi-step process that takes the concentration of each congener in each sample and multiplies it by a TEF for mammals or birds (Table 3-3). The resulting TECi values are summed to obtain a TEQ.

The TEQ is divided by the lowest mammalian and avian ESL for species that could occur on the Site. The lowest ESL is based on the montane shrew (*Sorex monticolus*). Due to lack of its preferred riparian habitat and lack of dense cover, the montane shrew is not expected to occur, and the next lowest ESL for TCDD for mammals is used in this analysis. The mammalian NE ESL and LE ESL used in this risk assessment for TCDD are based on potential toxicity to the deer mouse. The avian NE ESL is from the ECORISK Database, Version 2.0 (LANL 2003) as reported in Attachment H, Technical Area 16 Burn Ground Human Health and Ecological Risk-Screening Assessments (LA-UR-13-24177), Class 3 Permit Modification Request for Addition of an Open Burning Unit at Technical Area (TA) 16 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM0890010515. September 30, 2013. Refer To: WM-D0-13-0064, LAUR: 13-27579.

Dioxin and furans were detected in multiple samples in the September 2018 data set. The TEFs for birds and mammals were applied to calculate a TEQ for each sample. Only one of 12 samples had TEQs that exceeded the NE ESL for TCDD for mammals (Table 3-4) resulting in a HQ >0.3, and no samples exceeded the LE ESL. None of the samples exceeded the NE ESL for birds (Table 3-5) when evaluated individually.

The potential for risk to mammalian species was then investigated further. A UCL95 for each congener based on the sample-specific data was calculated with ProUCL (EPA 2015) using both the detected and nondetected data. The UCL95 sample concentrations were used with the TEFs to obtain UCL95 TECi, which were summed to obtain a UCL95 TEQ (Table 3-6). If the data for a given congener were completely nondetected, a UCL95 was not calculated. Since this TEQ is the sum of UCLs, it is expected to be highly conservative. When the UCL95 was divided by the NE ESL for TCDD for mammals, the resulting ratio or HQ was less than one, as shown below:

Mammal		
UCL TEQ (mg/kg)	NE ESL (mg/kg)	NE HQ[1]
1.27E-7	5.80E-07	0.2

[1] – the NE HQ is the ratio of the UCL TEQ/NE ESL

The dioxin/furans do not present a potential risk to mammals or birds and are not further evaluated.

3.3.3. Other Organics

For this risk assessment, the highest concentration found, regardless of the method used, or whether the sample was a primary sample or a duplicate, was used as the basis of the EPC in the initial screening-level assessment. This is considered conservative for the evaluation of potential risks.

Organic analytes are not compared to any background values, although there are naturally occurring sources of organic constituents. Organics are compared to risk-based ecological SLs. Where an SL was not available, a suitable surrogate is proposed. The following surrogates were required for the ERA:

- TATB - ESLs for 1,3,5-trinitrobenzene were used as a surrogate because of structural similarity.

- Xylenes – the toxicity values for total xylenes were used to represent each of the fractions.

Maximum concentrations of four organics exceeded the minimum ecological screening levels (Table 3-1). These were benzoic acid, di-n-butylphthalate, HMX, and TATB. UCL95 values were calculated and compared to the minimum NE ESLs and LE ESLs (Table 3-2).

There was only one detection of benzoic acid, and five detections of di-n-butylphthalate. The low detection frequency means that a robust UCL95 cannot be calculated. Therefore, a median of the detected concentrations and the reported detection limit values was calculated and used as the estimate of the EPC. This approach is consistent with ProUCL guidance (EPA 2015) that recommends use of alternative statistics when detection frequency is low.

UCL95 or median values for organics did not exceed the minimum NE ESLs or the LE ESLs and are not considered further. The highest ratio was 0.9 for di-n-butylphthalate, which while higher than the ratio of 0.3 used in the initial screening step, is not indicative of a potential ecological risk for this compound. The ratio for di-n-butylphthalate for the LE ESL was 0.1. Organics do not require further evaluation in the risk analysis and are not further evaluated.

3.4. Uncertainty Analysis

3.4.1. Chemical Form

Inorganic analytes can speciate into different forms with varying degrees of toxicity. The assumptions used in the ESL derivations are conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. These factors tend to result in conservative ESL estimates, which may lead to an overestimation of the potential risk. Toxicological data are typically based on the most toxic and bioavailable chemical species, which may or may not be found in the environment. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2012a), and the values are biased toward overestimating the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation. COPECs are generally not 100% bioavailable to receptors in the natural environment because of interference from other natural processes, such as the adsorption of chemical constituents to matrix surfaces (e.g., soil) or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes.

3.4.2. Reporting Limits

The evaluation was focused on detected values. Reporting limits were adequate (i.e., below SLs) for all analytes with three exceptions, indicating that the data were adequate for use in the risk assessment:

Bis(2-ethylhexyl)phthalate –

- This analyte was not detected in any sample. Reporting limits were less than the cancer or noncancer based NMSSL for residents or workers.
- The maximum MDL (0.0101 mg/kg) was less than the minimum NE ESL (0.02).
- The maximum nondetected value was flagged as having blank contamination, and may be biased high.

- This analyte is not considered further. This is not expected to bias the risk assessment results high or low.

Dinitrobenzene[1,3-] –

- This analyte was not detected in any sample. Reporting limits were less than the cancer or noncancer based NMSSL for residents or workers.
- The maximum reporting limit (0.15 mg/kg) was two times higher than the minimum NE ESL. All reporting limits were similar.
- No reporting limits exceeded the minimum LE ESL.
- This analyte is not considered further. This is not expected to bias the risk assessment results high or low.

Nitrosodimethylamine[N-] –

- This analyte was not detected in any sample. Reporting limits were up to 4 times higher than the cancer-based NMSSL for residents, but below the NMSSL for workers.
- The reporting limits were below the noncancer-based NMSSL, which would be more appropriate for ecological receptors.
- There were no ESLs for this analyte, and the comparison to NMSSLs was justified in the absence of other data.
- This uncertainty will not bias the risk assessment low or high.

3.4.3. Exposure Parameters and Risk Estimates

Exposure parameters including the EPC and the intakes likely bias risk estimates high because they presume no movement of receptors in and out of source areas. Sampling focused on areas of known or expected contamination, which biases the EPC high. Receptors are assumed to spend 100% of their time in the contaminated area which results in conservative estimates of exposure.

Another source of uncertainty is inherent in the calculation of exposure and risk estimates. Although the toxicity values are expressed to more than one significant figure, it is unlikely that the toxicity data are this accurate, especially given that the data are extrapolated from laboratory animal studies to wildlife receptors that are mobile in the environment. Likewise, given all the variables inherent in assessing exposure, exposure intakes by ecological receptors also should not be considered more accurate than one significant figure. This means that an HQ identified as 0.95 or 1.2 is actually 1, and an HQ identified as 1.5 is actually 2.

Calculating risk for dioxins is a multi-step process that involves multiplying the measured concentration by a toxicity factor (TEF) to obtain a value called the TECi that when summed adjusts the measured congener concentrations to that relative to TCDD, where the sum of all TECi is called the TEQ. Nondetected congeners were not included in the TEQ calculation, which biases the TEQ high, and biases dioxin risk estimates high for any given sample. When calculating the UCL95 as the EPC, the TEQs can be used directly but this provides a UCL95 EPC based only on detected data. ProUCL (EPA 2015) accommodates both detected and nondetected results, reducing bias and uncertainty by not ignoring the influence of nondetects on the EPC. Therefore, UCL95s were calculated for each congener, then adjusted with the TEFs, and then TECi for each congener summed to obtain the TEQ as opposed to averaging the TEQs directly. This procedure of calculating UCL95s for each congener was considered to be slightly more accurate.

3.4.4. Mixture Toxicity

The assumption of additive effects for multiple COPECs may result in an over- or under-estimation of the potential risk to receptors. Exposure to multiple contaminants may result in other than additive effects. Conservative assumptions made with regards to EPCs would tend to overestimate exposure to any given constituent, and this would suggest that the toxicity of multiple constituents would not be underestimated. Therefore, mixture toxicity is not likely to bias the risk results high or low.

3.4.5. COPECs without ESLs

ESLs were not available for the cations and anions generally regarded as nutrients calcium, magnesium, nitrate, potassium, and sodium. ESLs were also not available for iron, but human health risk ratios for residents were 0.4 or lower. Only calcium was above background levels established for the site with a ratio of site maximum to background of 1.2. Lack of ESLs for these inorganics is not expected to underestimate risk at the site.

Several organic chemicals do not have ESLs for any receptor in release 4.1 of the ECORISK Database (LANL 2017; LANL 2019). Predominantly, the constituents lacking ESLs are nondetected organics. In the absence of a chemical-specific ESL, concentrations can be compared with the ESLs for a surrogate chemical, if available. Comparison to surrogate ESLs provides an estimate of potential effects of a chemically related compound and a line of evidence to indicate the likelihood that ecological receptors are potentially impacted. Some chemicals without ESLs do not have chemical-specific toxicity data or surrogate chemicals to be used in the screening assessments and cannot be assessed quantitatively for potential ecological risk.

The chemical TATB was detected in six samples. TATB did not have any ESLs for use in the evaluation. The toxicity values for 1,3,5-trinitrobenzene (NE ESL = 1.2 mg/kg; LE ESL = 12 mg/kg) were used as a surrogate based on structural similarity.

Chemicals lacking ESLs are often infrequently detected across the site. In these cases, comparisons with human health SLs are presented as part of a qualitative assessment, if human health SLs are available. The comparison of concentrations to human health SLs is a viable alternative for several reasons. Animal studies are used as the basis of toxicity values for human health risk assessments, and are the basic premise of modern toxicology (EPA 1989). In addition, toxicity values derived for the calculation of human health SLs (e.g., histopathology or biochemical changes) may be based on potential adverse effects more sensitive than the ones typically used to derive ESLs (e.g., survival, growth, or reproductive effects). EPA also applies uncertainty factors or modifying factors to ensure the toxicity values are protective (i.e., toxicity values are divided by uncertainty factors resulting in values much lower than initial study results).

Since there were no predicted adverse effects on human health, chemicals lacking ESLs are unlikely to pose an ecological risk.

There is no avian ESL for TCDD in the current LANL EcoRisk database (LANL 2019). A value from the 2002 EcoRisk database (LANL 2003) was used as the NE ESL. The lowest ESL value is 4.1×10^{-6} mg/kg based on the robin feeding as an insectivore, which has previously been utilized in LANL risk assessments. A reported LOAEL-based ESL is 4.1×10^{-5} mg/kg. These values were used in the current risk assessment in the absence of more recent data.

3.4.1. Small-Mammal Field Investigations

Small mammal trapping and analysis of whole organisms were conducted in the area around the Unit in August and September, 2010 to evaluate small mammal abundance and occurrence relative to background. Small-mammal community and population parameters were also measured across the site (Bennett and Robinson 2011). This information was considered useful for the current analysis as an additional line of evidence. Field mice were collected around the site and analyzed for dioxins and furans as well as metals, and for polychlorinated biphenyls (PCBs) (Fresquez 2011).

Small mammals that could occur at the Unit are the deer mouse (*Peromyscus maniculatus*), brush mouse (*Peromyscus boylii*), pinyon mouse (*Peromyscus truei*), silky pocket mouse (*Perognathus flavescens*), western harvest mouse (*Reithrodontomys megalotis*), white-throated woodrat (*Neotoma albigula*), and the Mexican woodrat (*Neotoma mexicana*) (Bennett and Robinson 2011). The Unit is located at the bottom of Ancho Canyon. The vegetation community consists of piñon (*Pinus edulis Engelm*.)-juniper (*Juniperus monosperma [Englem.] Sarg*.) with scattered ponderosa pine (*Pinus ponderosa C. Lawson*) and gambel oak (*Quercus gambelii Nutt*.) (Bennett and Robinson 2011).

The capture rate was higher at the Unit relative to the control area, but the Unit exhibited lower diversity and lower eveness. There were five species captured, including the rock pocket mouse (*Chaetodipus intermedius*) which had never been caught at LANL before. In addition, Mexican woodrats, deer mice, harvest mice, and brush mice were collected. There were no differences in deer mouse sex ratios or body weight between the Unit and the control area. The authors of the study concluded that there was no apparent adverse effects on small mammal populations at the Unit relative to controls.

Radionuclides and chemical concentrations in biota were compared to regional statistical reference levels (RSRLs). RSRLs represent natural and fallout levels, and are the upper-level background concentrations (mean plus three standard deviations = 99% confidence level) for radionuclides and chemicals calculated from biota that was collected from regional locations away from the influence of the Laboratory (over nine miles away) (Fresquez 2011). The only analytes that exceeded RSRLs were barium (two out of three samples) and lead (three out of three samples). Barium and lead soil concentrations were below BVs in the current data set. Dioxins/furans and explosives were not detected. These data suggest that there are no impacts to small mammal populations at the Unit.

3.4.2. Avian Field Investigations

One western bluebird (*Sialia mexicana*) and one ash-throated flycatcher (*Myiarchus cinerascens*) egg sample were obtained in 2018 from the Unit and analyzed for inorganic elements (Gaukler and Stanek 2019). Concentrations of inorganic elements were compared with the upper-level bounds of background concentrations in bird eggs as represented by the RSRL. The data indicated aluminum, antimony, arsenic, beryllium, cadmium, chromium, lead, nickel, silver, thallium, or vanadium were not detected in eggs (Gaukler and Stanec 2019). Barium, cobalt, and zinc were detected, but were below the RSRL.

Calcium, copper, iron, magnesium, manganese, mercury, potassium, selenium and sodium, were detected in bluebird eggs above the RSRL for avian eggs. Whereas mercury and selenium egg concentrations were below LOAELs, no benchmarks were available for copper, iron, or manganese (Gaukler and Stanek 2019). The other inorganics are considered macronutrients. Most of these inorganics above RSRLs in eggs were either not detected in soils or were detected with maximum soil concentrations below soil BVs. Only copper, mercury, and vanadium soil UCL95 EPCs exceeded NE ESLs, and copper and vanadium soil UCL95s exceeded LE ESLs. In the current data set analyzed for this report, none of the UCL95 EPCs for soil for the detected inorganics above BVs were above NE ESLs once area use factors were incorporated into the analysis. One sample consisting of four western bluebird eggs was collected in 2019, and no detected analytes were above the RSRLs (Gaukler and Stanek 2020).

Avian population metrics also do not suggest that birds in the vicinity are being negatively impacted (Hathcock et al 2018). The avian population transect at the Unit was in a canyon bottom, whereas the control areas were on mesa tops. This could lead to differences in species identified and population metrics between the Unit and control areas. Species diversity was significantly higher at the Unit in 2013, 2014, and 2016 than at the control areas. Abundance varied in the Unit and control areas annually, but abundance in the Unit compared to controls was similar over time. Combined, the egg concentration data and population metrics suggest that adverse health effects are not expected at the observed concentrations.

3.4.3. Area Use Factors

The Unit is very small with an aerial extent of 40 by 40 feet (0.037 acres or 0.015 hectares (ha)). This is less than the size of the home range (HR) of an individual robin or a deer mouse as shown in Table 3-7. The HR is used to calculate area use factors (AUFs) that are used in the EcoPRG equations (LANL 2017). Individual AUFs and population area use factors (PAUFs) may be used to modify the estimate of risk to wildlife receptors to allow estimates to be more site-specific. The application of AUFs or PAUFs reduces potential overestimation of risks for those receptors with HRs larger than the area of contamination being evaluated. The estimated ecological risk as indicated by the HQ or HI is multiplied by the AUF or PAUF. HQs for plants or invertebrates are not adjusted by area use.

Table 3-7 presents the area use hazard analysis based on NE ESLs. The NE ESLs for each COPC that failed the screening evaluation (i.e., because EPCs exceeded the SLs) are shown for each receptor. The site specific AUF and PAUFs are shown for an area equivalent to the Unit. The UCL95 EPC is divided by the ESL and multiplied by the PAUF to obtain revised HQs. The habitat is not suitable for Mexican Spotted Owls or other special status species, and so an AUF evaluation was not conducted.

There were no HQs above 1, or even above 0.3, for birds or mammals based on comparison of UCL95 values as the EPC to the NE ESLs for each receptor (Table 3-7). The HQs for copper for plants and earthworms, and the HQ for mercury for earthworms, were 1. Table 3-8 presents the area use hazard analysis based on comparison of the UCL95 values as the EPC to the LE ESLs for each receptor. There are no HQs above 1. The HI analysis (Table 3-9) indicates that no HIs exceeded 1 for the avian or mammalian receptors. The HIs for earthworms and plants were 3 and 2, respectively.

3.5. CONCLUSIONS

The ecological risk assessment used a tiered approach for determining if the Unit would present an ecological risk. The results of the initial and highly conservative screening step indicated several inorganics occurring above background concentrations, and several detected organics, would present an ecological risk. Maximum concentrations of six detected inorganics exceeded background (calcium, chromium, copper, mercury, vanadium, and zinc). There is no ESL for calcium, but maximum concentrations of these other inorganics exceeded NE ESLs.

Dioxin/furans, some polynuclear aromatic hydrocarbons (PAHs), phthalates, benzoic acid, benzyl alcohol, volatile organics, and two explosives were detected in the unit. Of the detected organics, only four (benzoic acid, di-n-butylphthalate, HMX, and TATB) exceeded minimum ESLs in the initial screening level evaluation which compared maximum detected values to the minimum ESLs.

Further evaluation by statistically estimating UCL95's to use as EPCs in soil suggested few inorganics or organics would occur at concentrations hazardous to ecological receptors. Use of the UCL95 as the EPC provides a conservative estimate of average exposure across the Unit. Copper, mercury, and vanadium were the only inorganics with an HQ above 1 based on dividing the UCL95 by the ESL. None of the UCL95's for organics exceeded ESLs.

Additional consideration of site ecology and receptor-specific adjustments to exposure by considering home range and site area further reduced the analytes exceeding NE ESLs. Only HQs for copper and mercury were as high as 1. This was for plants and earthworms for which the area use evaluation is not relevant as they are immobile in the environment. However, the Unit is not vegetated because of its designated use as an OD area, and so plants and invertebrates have no habitat in the Unit. The LE ESLs are not exceeded for any receptor.

The Unit does not present an ecological risk to any receptor evaluated.

4. REFERENCES

ATSDR. 2012. Toxicological Profile for Chromium. September 2012. Pg 374. https://www.atsdr.cdc.gov/toxprofiles/tp7.pdf

Bennett, K., and R. Robinson. 2011. Small Mammal Sampling at Open-Detonation Firing Sites. LA-UR-11-00717. January 2011. (Bennett and Robinson 2011)

EPA (U.S. Environmental Protection Agency), December 1989. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final," EPA/540/1-89/002, Office of Emergency and Remedial Response, Washington, D.C. (EPA 1989)

EPA (U.S. Environmental Protection Agency), 1993. "Wildlife Exposure Factors Handbook," U.S. Environmental Protection Agency document EPA/600/P93/187A, Office of Research and Development, Washington, D.C. (EPA 1993)

EPA (U.S. Environmental Protection Agency), June 5, 1997. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final," U.S. Environmental Protection Agency, Environmental Response Team, Edison NJ. (EPA 1997)

EPA (U.S. Environmental Protection Agency), November 2003. "Guidance for Developing Ecological Soil Screening Levels, Evaluation of Dermal Contact and Inhalation Exposure Pathways for the Purpose of Setting Eco-SSLs, Attachment 1-3, U.S. Environmental Protection Agency document OSWER Directive 92857-55, Office of Solid Waste and Emergency Response. (EPA 2003)

EPA (U.S. Environmental Protection Agency), December 2010a. "Final Report Bioavailability of Dioxins and Dioxin-Like Compounds in Soil," Office of Superfund Remediation and Technology Innovation, Environmental Response Team, West Las Vegas, Nevada (http://epa.gov/superfund/health/contaminants/dioxin/pdfs/Final_dioxin_RBA_Report_12_20_10.p df). (EPA 2010a)

EPA (U.S. Environmental Protection Agency), December 2010b. "Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8=Tetrachloro-p-dioxin and Dioxin-Like Compounds." EPA/100/R 10/005. (EPA 2010b)

EPA (U.S. Environmental Protection Agency), January 2014. "Technical Fact Sheet – N-Nitroso-dimethylamine (NDMA)". https://www.epa.gov/sites/production/files/2014-03/documents/ffrrofactsheet_contaminant_ndma_january2014_final.pdf . (EPA 2014)

EPA (U.S. Environmental Protection Agency), October 2015. "ProUCL Version 5.1.002 User Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations." EPA/600/R-07/041. ORD Site Characterization and Monitoring Technical Support Center. (EPA 2015)

EPA (U.S. Environmental Protection Agency), August 2019. Regional Screening Levels (RSLs) – Generic Tables Dated September 2018. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables. (EPA 2019)

Fresquez, P.R. 2011. Chemical Concentrations In Field Mice Collected From Open-Detonation Firing Sites Ta-36 Minie And Ta-39 Point 6 At Los Alamos National Laboratory. LA-UR-11-10614. May 2011. (Fresquez 2011)

Gaukler, S. and J Stanek. 2019. " Inorganic Element Concentrations in Passerine Eggs Collected at Technical Areas 36, 39, and 16 at Los Alamos National Laboratory". LA-UR-19-25647. June 2019. (Gaukler and Stanek 2019)

Gaukler, S. and J Stanek. 2020. "2019 Results for Avian Monitoring of Inorganic and Organic Element Concentrations in Passerine Eggs and a Nestling Collected from Technical Area 16 Burn Grounds, Technical Area 36 Minie, and Technical Area 39 Point 6 at Los Alamos National Laboratory." March 25 2020. LA-UR-20-22529. (Gaukler and Stanek 2020)

Hathcock, C. D., Bartlow, A. W., and B.E. Thompson. 2018. "2017 Results for Avian Monitoring at the TA-36 Minie Site, TA-39 Point 6, and TA-16 Burn Ground at Los Alamos National Laboratory". 2018-04-30 (rev.1) LA-UR-18-22897. (Hathcock et al. 2018)

LANL (Los Alamos National Laboratory), September 1998. "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998)

LANL (Los Alamos National Laboratory), November 2003. "ECORISK Database (Version 2.0)," on CD, Los Alamos, New Mexico. (LANL 2003)

LANL (Los Alamos National Laboratory), November 2012. "Screening-Level Ecological Risk Assessment Methods, Revision 3," Los Alamos National Laboratory document LA-UR-12-24152, Los Alamos, New Mexico. (LANL 2012a)

LANL (Los Alamos National Laboratory), October 2012. "ECORISK Database (Release 3.1)," LA-UR-12- 24548, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012b)

LANL (Los Alamos National Laboratory), 2017. "ECORISK Database User Guide, Revision 1". LA-UR-17-26376. Los Alamos National Laboratory, Los Alamos, New Mexico. September 2017. (LANL 2017)

LANL (Los Alamos National Laboratory), 2019. "ECORISK Database (Release 4.1),"March 2019 Release. (LANL 2019)

NMED (New Mexico Environment Department). 2017. Risk Assessment Guidance for Site Investigations and Remediation. Volume II. Soil Screening Guidance for Ecological Risk Assessments.2017 Revised. (NMED 2017)

NMED (New Mexico Environment Department). February 2019. Risk Assessment Guidance for Site Investigations and Remediation. Volume I. Soil Screening Guidance for Human Health Risk Assessments. February 2019. Rev. 1 (3/7/19) (NMED 2019)

Sample, B.E., Suter III, G.W., Efroymson, R.A., and Jones, D.A., May 1998. "A Guide to the ORNL Ecotoxicological Screening Benchmarks: Background, Development, and Application," Oak Ridge National Laboratory, Environmental Sciences Division, Publication No. 4783, ORNL/TM13615, Oak Ridge, TN. May 1998 (Sample et al. 1998)

Van den Berg et.al, 2006. The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency factors for Dioxin and Dioxin-like Compounds. ToxiSci Advance Access, July 7, 2006. (Van den Berg et al. 2006)

WHO (World Health Organization). September 2009. "Project For The Re-Evaluation Of Human And Mammalian Toxic Equivalency Factors (TEFS) Of Dioxins And Dioxin-Like Compounds". International Programme on Chemical Safety. http://www.who.int/ipcs/assessment/tef_update/en/ (WHO 2009)

Tables

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
INORGANICS								
Aluminum	13	1.76E+03	5.28E+03	3.90E+03	8.48E+02	6.24E+00	6.82E+00	13
Antimony	13	3.07E-01	3.24E+00	1.82E+00	1.45E+00	3.07E-01	3.24E+00	0
Arsenic	13	3.65E-01	1.28E+00	8.13E-01	2.07E-01	3.10E-01	3.36E-01	13
Barium	13	1.68E+01	8.86E+01	4.29E+01	1.75E+01	9.17E-02	1.00E-01	13
Beryllium	13	1.43E-01	2.32E-01	1.90E-01	2.68E-02	1.83E-02	1.99E-02	13
Cadmium	13	9.17E-02	1.00E-01	9.52E-02	2.23E-03	9.17E-02	1.00E-01	0
Calcium	13	5.88E+02	7.16E+03	4.67E+03	1.76E+03	7.34E+00	8.02E+00	13
Chromium	13	3.22E+00	4.79E+01	1.64E+01	1.18E+01	1.38E-01	1.50E-01	13
Cobalt	13	2.25E+00	8.95E+00	5.59E+00	1.85E+00	1.38E-01	1.50E-01	13
Copper	13	4.92E+00	1.74E+02	5.78E+01	5.23E+01	2.75E-01	3.01E-01	13
Iron	13	9.03E+03	2.14E+04	1.49E+04	3.77E+03	7.34E+00	8.02E+00	13
Lead	13	5.83E+00	1.56E+01	8.98E+00	2.88E+00	3.03E-01	3.31E-01	13
Magnesium	13	3.75E+02	3.74E+03	2.40E+03	8.21E+02	7.80E+00	8.52E+00	13
Manganese	13	1.47E+02	2.81E+02	2.14E+02	3.80E+01	1.83E-01	2.01E-01	13
Mercury	13	3.55E-03	1.31E-01	3.37E-02	4.50E-02	3.48E-03	3.93E-03	7
Nickel	13	1.27E+00	1.38E+01	8.19E+00	2.94E+00	9.17E-02	9.95E-02	13
Perchlorate	13	4.86E-04	5.04E-04	4.94E-04	5.39E-06	4.86E-04	5.04E-04	0
Potassium	13	3.74E+02	8.12E+02	6.21E+02	1.18E+02	5.87E+00	6.42E+00	13
Selenium	13	3.30E-01	3.58E-01	3.46E-01	9.48E-03	3.30E-01	3.58E-01	0
Silver	13	1.67E-01	6.85E-01	3.77E-01	1.65E-01	9.17E-02	1.00E-01	0
Sodium	13	1.28E+02	3.99E+02	2.76E+02	6.65E+01	6.42E+00	7.02E+00	13
Thallium	13	1.28E-01	1.39E-01	1.34E-01	3.84E-03	1.28E-01	1.39E-01	0
Vanadium	13	1.14E+01	4.83E+01	3.17E+01	1.10E+01	9.17E-02	1.00E-01	13
Zinc	13	2.44E+01	6.25E+01	3.89E+01	1.15E+01	3.67E-01	4.01E-01	13
ORGANICS								
2,4-Diamino-6-nitrotoluene	13	4.93E-01	5.00E-01	4.97E-01	2.94E-03	4.93E-01	5.00E-01	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
2,6-Diamino-4-nitrotoluene	13	6.50E-01	6.60E-01	6.56E-01	4.17E-03	6.50E-01	6.60E-01	0
3,5-Dinitroaniline	13	2.96E-01	3.00E-01	2.98E-01	1.71E-03	2.96E-01	3.00E-01	0
Acenaphthene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Acenaphthylene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Acetone	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Amino-2,6-dinitrotoluene[4-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Amino-4,6-dinitrotoluene[2-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Aniline	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Anthracene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Azobenzene	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Benzene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Benzo(a)anthracene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Benzo(a)pyrene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Benzo(b)fluoranthene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Benzo(g,h,i)perylene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Benzo(k)fluoranthene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Benzoic Acid	13	1.67E-01	4.83E-01	1.92E-01	8.75E-02	1.67E-01	1.68E-01	1
Benzyl Alcohol	13	1.00E-01	1.65E+00	3.93E-01	4.81E-01	1.00E-01	1.01E-01	7
Bis(2-chloroethoxy)methane	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Bis(2-chloroethyl)ether	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Bis(2-ethylhexyl)phthalate	13	1.00E-02	3.05E-02	1.23E-02	5.70E-03	1.00E-02	1.01E-02	0
Bromobenzene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Bromochloromethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Bromodichloromethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Bromoform	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Bromomethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Bromophenyl-phenylether[4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
Butanone[2-]	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Butylbenzene[n-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Butylbenzene[sec-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Butylbenzene[tert-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Butylbenzylphthalate	13	1.00E-02	6.35E-02	1.59E-02	1.56E-02	1.00E-02	1.01E-02	2
Carbon Disulfide	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Carbon Tetrachloride	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chloro-3-methylphenol[4-]	13	1.34E-01	1.34E-01	1.34E-01	3.73E-09	1.34E-01	1.34E-01	0
Chloroaniline[4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Chlorobenzene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chlorodibromomethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chloroethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chloroform	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chloromethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chloronaphthalene[2-]	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Chlorophenol[2-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Chlorophenyl-phenyl[4-] Ether	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Chlorotoluene[2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chlorotoluene[4-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Chrysene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Dibenz(a,h)anthracene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Dibenzofuran	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Dibromo-3-Chloropropane[1,2-]	13	4.93E-04	5.04E-04	4.99E-04	4.97E-06	4.93E-04	5.04E-04	0
Dibromoethane[1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dibromomethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichlorobenzene[1,2-]	26	3.28E-04	1.01E-01	5.05E-02	5.11E-02	3.28E-04	1.01E-01	0
Dichlorobenzene[1,3-]	26	3.28E-04	1.01E-01	5.05E-02	5.11E-02	3.28E-04	1.01E-01	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
Dichlorobenzene[1,4-]	26	3.28E-04	1.01E-01	5.05E-02	5.11E-02	3.28E-04	1.01E-01	0
Dichlorobenzidine[3,3'-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Dichlorodifluoromethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloroethane[1,1-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloroethane[1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloroethene[1,1-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloroethene[cis-1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloroethene[trans-1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichlorophenol[2,4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Dichloropropane[1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloropropane[1,3-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloropropane[2,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloropropene[1,1-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloropropene[cis-1,3-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Dichloropropene[trans-1,3-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Diethylphthalate	13	1.00E-02	1.28E-02	1.03E-02	7.62E-04	1.00E-02	1.01E-02	0
Dimethyl Phthalate	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Dimethylphenol[2,4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Di-n-butylphthalate	13	1.00E-02	1.00E-01	2.30E-02	2.63E-02	1.00E-02	1.01E-02	5
Dinitro-2-methylphenol[4,6-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Dinitrobenzene[1,3-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Dinitrophenol[2,4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Dinitrotoluene[2,4-]	26	1.00E-01	1.50E-01	1.25E-01	2.48E-02	1.00E-01	1.50E-01	0
Dinitrotoluene[2,6-]	26	1.00E-01	1.50E-01	1.25E-01	2.48E-02	1.00E-01	1.50E-01	0
Di-n-octylphthalate	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Diphenylamine	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Ethylbenzene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
Fluoranthene	13	1.00E-02	1.87E-02	1.07E-02	2.39E-03	1.00E-02	1.01E-02	1
Fluorene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	13	5.01E-07	1.17E-05	4.91E-06	3.79E-06	1.65E-06	1.67E-06	12
Heptachlorodibenzodioxins (Total)	13	0.00E+00	2.07E-05	8.49E-06	7.03E-06			11
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	13	4.96E-07	2.21E-06	7.84E-07	4.81E-07	1.65E-06	1.67E-06	6
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Heptachlorodibenzofurans (Total)	13	0.00E+00	1.22E-05	1.82E-06	3.35E-06			7
Hexachlorobenzene	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Hexachlorobutadiene	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Hexachlorocyclopentadiene	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.73E-06	1.75E-06	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.94E-06	1.97E-06	0
Hexachlorodibenzodioxins (Total)	13	0.00E+00	1.10E-06	2.06E-07	4.06E-07			3
Hexachlorodibenzofuran[1,2,3,4,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.71E-06	1.73E-06	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Hexachlorodibenzofurans (Total)	13	0.00E+00	1.36E-06	2.48E-07	4.30E-07			4
Hexachloroethane	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Hexanone[2-]	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
HMX	13	1.48E-01	6.66E+00	9.80E-01	1.80E+00	1.48E-01	1.50E-01	7
Indeno(1,2,3-cd)pyrene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Iodomethane	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Isophorone	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Isopropylbenzene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Isopropyltoluene[4-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
Methyl-2-pentanone[4-]	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Methylene Chloride	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Methylnaphthalene[2-]	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Methylphenol[2-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Methylphenol[3-,4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Naphthalene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Nitroaniline[2-]	13	1.10E-01	1.11E-01	1.11E-01	4.39E-04	1.10E-01	1.11E-01	0
Nitroaniline[3-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Nitroaniline[4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Nitrobenzene	26	1.00E-01	1.50E-01	1.25E-01	2.48E-02	1.00E-01	1.50E-01	0
Nitrophenol[2-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Nitrophenol[4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Nitrosodimethylamine[N-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Nitroso-di-n-propylamine[N-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Nitrotoluene[2-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Nitrotoluene[3-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Nitrotoluene[4-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	13	1.96E-06	9.57E-05	4.10E-05	3.26E-05	3.31E-06	3.35E-06	13
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	13	9.93E-07	1.92E-05	2.99E-06	4.94E-06	3.31E-06	3.35E-06	7
Oxybis(1-chloropropane)[2,2'-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Pentachlorodibenzodioxins (Total)	13	0.00E+00	0.00E+00	0.00E+00	0.00E+00			0
Pentachlorodibenzofuran[1,2,3,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.65E-06	1.67E-06	0
Pentachlorodibenzofuran[2,3,4,7,8-]	13	4.96E-07	5.02E-07	4.99E-07	2.02E-09	1.75E-06	1.77E-06	0
Pentachlorodibenzofurans (Totals)	13	0.00E+00	0.00E+00	0.00E+00	0.00E+00			0
Pentachlorophenol	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
PETN	13	2.46E-01	2.50E-01	2.49E-01	1.61E-03	2.46E-01	2.50E-01	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
Phenanthrene	13	1.00E-02	1.01E-02	1.01E-02	5.06E-05	1.00E-02	1.01E-02	0
Phenol	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Propylbenzene[1-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Pyrene	13	1.00E-02	1.61E-02	1.05E-02	1.67E-03	1.00E-02	1.01E-02	1
Pyridine	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
RDX	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Styrene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
TATB	13	2.96E-01	6.76E+00	1.37E+00	1.97E+00	2.96E-01	3.00E-01	6
Tetrachlorodibenzodioxin[2,3,7,8-]	13	9.93E-08	1.00E-07	9.98E-08	2.18E-10	3.31E-07	3.35E-07	0
Tetrachlorodibenzodioxins (Total)	13	0.00E+00	0.00E+00	0.00E+00	0.00E+00			0
Tetrachlorodibenzofuran[2,3,7,8-]	13	1.05E-07	5.60E-07	2.67E-07	1.62E-07	3.31E-07	3.35E-07	11
Tetrachlorodibenzofurans (Totals)	13	0.00E+00	6.28E-07	1.91E-07	1.84E-07			9
Tetrachloroethane[1,1,1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Tetrachloroethane[1,1,2,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Tetrachloroethene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Tetryl	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Toluene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trichloro-1,2,2-trifluoroethane[1,1,2-]	13	1.64E-03	1.68E-03	1.66E-03	1.80E-05	1.64E-03	1.68E-03	0
Trichlorobenzene[1,2,4-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Trichloroethane[1,1,1-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trichloroethane[1,1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trichloroethene	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trichlorofluoromethane	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trichlorophenol[2,4,5-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Trichlorophenol[2,4,6-]	13	1.00E-01	1.01E-01	1.01E-01	5.06E-04	1.00E-01	1.01E-01	0
Trichloropropane[1,2,3-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trimethylbenzene[1,2,4-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0

Table 2-1. Summary Statistics for Fall 2018 Data

Analyte Name	n	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detects
Trimethylbenzene[1,3,5-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Trinitrobenzene[1,3,5-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Trinitrotoluene[2,4,6-]	13	1.48E-01	1.50E-01	1.49E-01	8.01E-04	1.48E-01	1.50E-01	0
Tris (o-cresyl) phosphate	13	2.96E-01	3.00E-01	2.98E-01	1.71E-03	2.96E-01	3.00E-01	0
Vinyl Chloride	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Xylene[1,2-]	13	3.28E-04	3.36E-04	3.32E-04	3.33E-06	3.28E-04	3.36E-04	0
Xylene[1,3-]+Xylene[1,4-]	13	6.57E-04	6.73E-04	6.65E-04	6.86E-06	6.57E-04	6.73E-04	0

Notes: Sample size (n) includes duplicate of WST39-18-162832 (WST39-18-162973) and multiple analytical methods.

Table 2-2. Human Health Screening Results for Comparison of Maximum Detected Exposure Point Concentrations Greater than Background

Parameter Name	Maximum Reported Result (mg/kg)	Number of Detects	Background		Cancer				Noncancer			
			BV (mg/kg)	Max / BV Ratio	Res Cancer NMSSL (mg/kg)	Worker Cancer NMSSL (mg/kg)	Max Res Cancer Ratio	Max Worker Cancer Ratio	Res NC NMSSL (mg/kg)	Worker NC NMSSL (mg/kg)	Max Res HQ	Max Worker HQ
INORGANICS												
Aluminum	5.28E+03	13	29200	0.2								
Arsenic	1.28E+00	13	8.17	0.2								
Barium	8.86E+01	13	295	0.3								
Beryllium	2.32E-01	13	1.83	0.1								
Calcium	7.16E+03	13	6120	1.2	NA	NA	NA	NA	1.3E+07	3.2E+07	5E-04	2E-04
Chromium	4.79E+01	13	19.3	2	NA	NA	NA	NA	1.2E+05	1.9E+06	4E-04	2E-05
Cobalt	8.95E+00	13	8.64	1								
Copper	1.74E+02	13	14.7	12	NA	NA	NA	NA	3.1E+03	5.2E+04	6E-02	3E-03
Iron	2.14E+04	13	21500	1								
Lead	1.56E+01	13	22.3	0.7								
Magnesium	3.74E+03	13	4610	0.8								
Manganese	2.81E+02	13	671	0.4								
Mercury	1.31E-01	7	0.1	1.3	NA	NA	NA	NA	2.3E+01	3.9E+02	6E-03	3E-04
Nickel	1.38E+01	13	15.4	0.9								
Potassium	8.12E+02	13	3460	0.2								
Sodium	3.99E+02	13	915	0.4								
Vanadium	4.83E+01	13	39.6	1.2	NA	NA	NA	NA	3.9E+02	6.5E+03	1E-01	7E-03

Table 2-2. Human Health Screening Results for Comparison of Maximum Detected Exposure Point Concentrations Greater than Background

Parameter Name	Maximum Reported Result (mg/kg)	Number of Detects	Background		Cancer				Noncancer			
			BV (mg/kg)	Max / BV Ratio	Res Cancer NMSSL (mg/kg)	Worker Cancer NMSSL (mg/kg)	Max Res Cancer Ratio	Max Worker Cancer Ratio	Res NC NMSSL (mg/kg)	Worker NC NMSSL (mg/kg)	Max Res HQ	Max Worker HQ
Zinc	6.25E+01	13	48.8	1.3	NA	NA	NA	NA	2.3E+04	3.9E+05	3E-03	2E-04
ORGANICS												
Acetone	3.05E-02	1	NA	NA	NA	NA	NA	NA	6.6E+04	9.6E+05	5E-07	3E-08
Benzoic Acid	4.83E-01	1	NA	NA	NA	NA	NA	NA	**2.5E+05**	**3.3E+06**	2E-06	1E-07
Benzyl Alcohol	1.65E+00	7	NA	NA	NA	NA	NA	NA	**6.3E+03**	**8.2E+04**	3E-04	2E-05
Butanone[2-]	2.89E-03	1	NA	NA	NA	NA	NA	NA	3.7E+04	4.1E+05	8E-08	7E-09
Butylbenzylphthalate	6.35E-02	2	NA	NA	**2.9E+03**	**1.2E+04**	2E-05	5E-06	**1.3E+04**	**1.6E+05**	5E-06	4E-07
Di-n-butylphthalate	1.00E-01	5	NA	NA	NA	NA	NA	NA	6.2E+03	9.2E+04	2E-05	1E-06
Fluoranthene	1.87E-02	1	NA	NA	NA	NA	NA	NA	2.3E+03	3.4E+04	8E-06	6E-07
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.17E-05	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlorodibenzodioxins (Total)	2.07E-05	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	2.21E-06	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlorodibenzofurans (Total)	1.22E-05	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorodibenzodioxins (Total)	1.10E-06	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorodibenzofurans (Total)	1.36E-06	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HMX	6.66E+00	7	NA	NA	NA	NA	NA	NA	3.8E+03	6.3E+04	2E-03	1E-04
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	9.57E-05	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.92E-05	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2-2. Human Health Screening Results for Comparison of Maximum Detected Exposure Point Concentrations Greater than Background

Parameter Name	Maximum Reported Result (mg/kg)	Number of Detects	Background		Cancer				Noncancer			
			BV (mg/kg)	Max / BV Ratio	Res Cancer NMSSL (mg/kg)	Worker Cancer NMSSL (mg/kg)	Max Res Cancer Ratio	Max Worker Cancer Ratio	Res NC NMSSL (mg/kg)	Worker NC NMSSL (mg/kg)	Max Res HQ	Max Worker HQ
Pyrene	1.61E-02	1	NA	NA	NA	NA	NA	NA	1.7E+03	2.5E+04	9E-06	6E-07
TATB	6.76E+00	6	NA	NA	NA	NA	NA	NA	***2.2E+03***	***3.2E+04***	3E-03	2E-04
Tetrachlorodibenzofuran[2,3,7,8-]	5.60E-07	11	NA	NA	4.9E-04	2.4E-03	1E-03	2E-04	NA	NA	NA	NA
Tetrachlorodibenzofurans (Totals)	6.28E-07	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganic Hazard Index							NA	NA			0.2	0.01
Organic Hazard Index							0.001	0.0002			0.005	0.003

Notes:
All data in mg/kg. Shaded Max/BV cells indicate the maximum>BV
Bolded NMSSL cells indicate the EPA RSL for an HQ of 1 is used because a NMSSL is not available
Italics – a surrogate is applied. See Section 1.2.3
If the maximum <BV, no further evaluation is performed
Cancer ratio = Maximum/Cancer-based NMSSL
HQ = Maximum/Noncancer-based NMSSL

Abbreviations:
BV – Background value
EPA – U.S. Environmental Protection Agency
HQ – Noncancer hazard quotient
Max – Maximum reported result
NA – Not available
NC – Noncancer
NMSSL – New Mexico soil screening level
Res - Residential
RSL – Regional Screening level

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Parameter Name	Point 1 WST39-18-162832		Point 1 Dup WST39-18-162973		Point 2 WST39-18-162974		Point 3 WST39-18-162975		Point 4 WST39-18-162976		Point 5 WST39-18-162977	
	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	8.52E-06	1	9.83E-06	1	4.57E-06	1	3.49E-06	1	5.01E-07	0	8.28E-07	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	9.01E-07	1	1.00E-06	1	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	7.21E-05	1	8.89E-05	1	3.58E-05	1	2.99E-05	1	1.96E-06	1	5.50E-06	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	2.49E-06	1	2.73E-06	1	1.38E-06	1	9.97E-07	0	1.00E-06	0	1.00E-06	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	0	5.02E-07	0	5.02E-07	0	4.98E-07	0	5.01E-07	0	5.01E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	0	1.00E-07	0	1.00E-07	0	9.97E-08	0	1.00E-07	0	1.00E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	3.65E-07	1	3.63E-07	1	2.01E-07	1	2.57E-07	1	1.05E-07	0	1.36E-07	1

Notes:
DC- Detect code (1 = detected, 0 = not detected)

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Congener Name	CAS	TEF	Point 1 WST39-18-162832	Point 1 Dup WST39-18-162973	Point 2 WST39-18-162974	Point 3 WST39-18-162975	Point 4 WST39-18-162976	Point 5 WST39-18-162977
			TECi	TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	8.52E-08	9.83E-08	4.57E-08	3.49E-08	ND	8.28E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	9.01E-09	1.00E-08	ND	ND	ND	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	2.16E-08	2.67E-08	1.07E-08	8.97E-09	5.88E-10	1.65E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	7.47E-10	8.19E-10	4.14E-10	ND	ND	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	3.65E-08	3.63E-08	2.01E-08	2.57E-08	ND	1.36E-08
TEQ			**1.53E-07**	**1.72E-07**	**7.70E-08**	**6.96E-08**	**5.88E-10**	**2.35E-08**
NMED SL Residential =4.90E-05		**Risk Ratio =**	**3E-03**	**4E-03**	**2E-03**	**1E-03**	**1E-05**	**5E-04**
NMED SL Industrial =8.47E-03		**Risk Ratio =**	**2E-05**	**2 E-05**	**9E-06**	**8E-06**	**7E-08**	**3E-06**

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Parameter Name	Point 6 WST39-18-162978		Point 7 WST39-18-162979		Point 8 WST39-18-162980		Point 9 WST39-18-162981		Point 10 WST39-18-162982	
	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC	Result (mg/kg)	DC
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	8.60E-06	1	5.86E-06	1	1.13E-06	1	6.07E-07	1	5.21E-06	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	7.97E-07	1	2.21E-06	1	4.98E-07	0	4.98E-07	0	6.88E-07	1
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	5.49E-05	1	6.84E-05	1	9.66E-06	1	3.91E-06	1	4.10E-05	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	2.51E-06	1	1.92E-05	1	9.97E-07	0	9.96E-07	0	1.18E-06	1
Pentachlorodibenzodioxin[1,2,3,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	5.02E-07	0	4.98E-07	0	4.98E-07	0	4.98E-07	0	4.99E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	0	9.97E-08	0	9.97E-08	0	9.96E-08	0	9.97E-08	0
Tetrachlorodibenzofuran[2,3,7,8-]	1.87E-07	1	1.16E-07	0	1.44E-07	1	1.06E-07	1	5.50E-07	1

Notes:
DC- Detect code (1 = detected, 0 = not detected)

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Congener Name	CAS	TEF	Point 6 WST39-18-162978	Point 7 WST39-18-162979	Point 8 WST39-18-162980	Point 9 WST39-18-162981	Point 10 WST39-18-162982
			TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	8.60E-08	5.86E-08	1.13E-08	6.07E-09	5.21E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	7.97E-09	2.21E-08	ND	ND	6.88E-09
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	1.65E-08	2.05E-08	2.90E-09	1.17E-09	1.23E-08
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	7.53E-10	5.76E-09	ND	ND	3.54E-10
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	1.87E-08	ND	1.44E-08	1.06E-08	5.50E-08
TEQ			**1.30E-07**	**1.07E-07**	**2.86E-08**	**1.78E-08**	**1.27E-07**
NMED SL Residential =	**5E-05**		**3E-03**	**2E-03**	**6E-04**	**4E-04**	**3E-03**
NMED SL Industrial =	**8E-03**		**2E-05**	**1E-05**	**3E-06**	**2E-06**	**1E-05**

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Parameter Name	Parameter Code	Point 11 WST39-18-162983		Point 12 WST39-18-162984	
		Result (mg/kg)	DC	Result (mg/kg)	DC
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	1.17E-05	1	3.01E-06	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	1.10E-06	1	4.96E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	4.98E-07	0	4.96E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.98E-07	0	4.96E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.98E-07	0	4.96E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.98E-07	0	4.96E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.98E-07	0	4.96E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.98E-07	0	4.96E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.98E-07	0	4.96E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.98E-07	0	4.96E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	9.57E-05	1	2.49E-05	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	3.40E-06	1	9.93E-07	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.98E-07	0	4.96E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.98E-07	0	4.96E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.98E-07	0	4.96E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.96E-08	0	9.93E-08	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	5.60E-07	1	3.75E-07	1

Notes:
DC- Detect code (1 = detected, 0 = not detected)

Table 2-3. Dioxin/Furan Data, Human Health TEFs, and Screening Results by Sample

Congener Name	CAS	TEF	Point 11 WST39-18-162983	Point 12 WST39-18-162984
			TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	1.17E-07	3.01E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	1.10E-08	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	2.87E-08	7.47E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	1.02E-09	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	5.60E-08	3.75E-08
TEQ			**2.14E-07**	**7.51E-08**
NMED SL Residential	**5E-05**		**4E-03**	**2E-03**
NMED SL Industrial	**8E-03**		**3E-05**	**9E-06**

Notes: The TECi are summed in each column to obtain the TEQ. The TEQ is divided by the residential or the industrial SL for TCDD to obtain a risk ratio, shown directly under the TEQ. None of the TEQs exceeded the SLs.
All data in mg/kg

Table 3-1. Ecological Screening Evaluation

Parameter Name	Maximum (mg/kg)	Number of Detects	Background		ESL and Risk Ratios			
			BV (mg/kg)	Max/ BV Ratio	Minimum NE ESL	Max/ NE ESL Ratio	Minimum LE ESL	Max/ LE ESL Ratio
INORGANICS								
Calcium	7.16E+03	13	6120	1.2	NA	NA	NA	NA
Chromium	4.79E+01	13	19.3	2	2.30E+01	2 E+00	7.30E+01	7E-01
Copper	1.74E+02	13	14.7	12	1.40E+01	1E+01	4.30E+01	4E+00
Mercury	1.31E-01	7	0.1	1.3	1.30E-02	1E+01	1.30E-01	1E+00
Vanadium	4.83E+01	13	39.6	1.2	4.70E+00	1E+01	9.50E+00	5E+00
Zinc	6.25E+01	13	48.8	1.3	4.70E+01	1E+00	1.20E+02	5E-01
ORGANICS								
Acetone	3.05E-02	1	NA	NA	1.20E+00	3E-02	6.30E+00	5E-03
Benzoic Acid	4.83E-01	1	NA	NA	1.00E+00	5E-01	1.00E+01	5E-02
Benzyl Alcohol	1.65E+00	7	NA	NA	1.20E+02	1E-02	1.20E+03	1E-03
Butanone[2-]	2.89E-03	1	NA	NA	3.50E+02	8E-06	9.20E+02	3E-06
Butylbenzylphthalate	6.35E-02	2	NA	NA	9.00E+01	7E-04	9.00E+02	7E-05
Di-n-butylphthalate	1.00E-01	5	NA	NA	1.10E-02	9E+00	1.10E-01	9E-01
Fluoranthene	1.87E-02	1	NA	NA	1.00E+01	2E-03	2.30E+01	8E-04
HMX	6.66E+00	7	NA	NA	1.60E+01	4E-01	1.60E+02	4E-02
Pyrene	1.61E-02	1	NA	NA	1.00E+01	2E-03	2.00E+01	8E-04
TATB	6.76E+00	6	NA	NA	1.00E+01	1E+00	2.80E+01	2E-01
Hazard Index						**7E+01**		**2E+01**

Notes:
Shaded cells indicate the ratio > 0.3 for initial screening evaluation
Italics – a surrogate is used. See Section 1.2.3.
Only detected data and inorganics above background are reported.

Abbreviations:
BV – Background Value
ESL – Ecological Screening Value
Max– Maximum Exposure Point Concentration
mg/kg – Milligram per Kilogram
LE – Low Effect
NE – No Effect

Table 3-2. Ecological Risk Evaluation Using UCL95 EPCs for COPCs.

Name	UCL95 (mg/kg)	UCL Type	Distribution	Minimum NE ESL (mg/kg)	UCL/ NE ESL Ratio	Minimum LE ESL (mg/kg)	UCL/ LE ESL Ratio
Calcium	5458.00	95% Student's-t UCL	Normal	NV	NA	NV	NA
Chromium	23.24	95% Student's-t UCL	Normal	23	1	73	0.3
Copper	87.30	95% Student's-t UCL	Normal	14	6	43	2
Mercury	0.0519	95% KM (t) UCL	Normal	0.013	4	0	0.4
Vanadium	38.08	95% Student's-t UCL	Normal	5	8	9.50	4
Zinc	45.38	95% Student's-t UCL	Normal	47	1	120.00	0.4
Benzoic Acid	0.17	Median of Detect and RLs	NA, Detects<6	1	0.2	10.00	0.02
Di-n-butylphthalate	0.01	Median of Detect and RLs	NA, Detects<6	0.01	0.9	0.11	0.1
HMX	3.697	95% KM Bootstrap t UCL	Gamma	16	0.2	160.00	0.02
TATB	1.857	95% KM (t) UCL	Approx. Normal	10	0.2	28.00	0.1
Hazard Index (HI)					**22**		**7**

Notes:
Shaded cells represent HQs>1
HI is the sum of all HQs

Abbreviations:
ESL – Ecological Screening Level
HI – Hazard Index
LE – Low Effect
mg/kg – milligram per kilogram
NE – No Effect
UCL – Upper Confidence Limit

Table 3-3. Toxic Equivalency Factors (TEFs) Used for Calculating Ecological TCDD Equivalent Concentrations

Name	CAS	Mammalian TEF[a]	Avian TEF[b]
Chlorinated dibenzo-p-dioxins			
2,3,7,8-TCDD	1746-01-6	1	1
1,2,3,7,8-PeCDD	40321-76-4	1	1
1,2,3,4,7,8-HxCDD	39227-28-6	0.1	0.05
1,2,3,6,7,8-HxCDD	57653-85-7	0.1	0.01
1,2,3,7,8,9-HxCDD	19408-74-3	0.1	0.1
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.01	0.001
OCDD	3268-87-9	0.0003	0.0001
Chlorinated dibenzofurans			
2,3,7,8-TCDF	51207-31-9	0.1	1
1,2,3,7,8-PeCDF	57117-41-6	0.03	0.1
2,3,4,7,8-PeCDF	57117-31-4	0.3	0.1
1,2,3,4,7,8-HxCDF	70648-26-9	0.1	1
1,2,3,6,7,8-HxCDF	57117-44-9	0.1	0.1
1,2,3,7,8,9-HxCDF	72918-21-9	0.1	0.1
2,3,4,6,7,8-HxCDF	60851-34-5	0.1	0.1
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.01	0.01
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.01	0.01
OCDF	39001-02-0	0.0003	0.0001

[a] *EPA (2010a,b); WHO (2009)*
[b] *Van den Berg et al. (1998)*

Table 3-4. Dioxin-Furan TECi, TEQs, SLs, and Mammalian Risk Estimates by Sample

Congener Name	CAS	Point 1 WST39-18-162832	Point 1 Dup WST39-18-162973	Point 2 WST39-18-162974	Point 3 WST39-18-162975	Point 4 WST39-18-162976	Point 5 WST39-18-162977
		TECi	TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	8.52E-08	9.83E-08	4.57E-08	3.49E-08	ND	8.28E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	9.01E-09	1.00E-08	ND	ND	ND	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	ND	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	2.16E-08	2.67E-08	1.07E-08	8.97E-09	5.88E-10	1.65E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	7.47E-10	8.19E-10	4.14E-10	ND	ND	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	3.65E-08	3.63E-08	2.01E-08	2.57E-08	ND	1.36E-08
TEQ		**1.53E-07**	**1.72E-07**	**7.70E-08**	**6.96E-08**	**5.88E-10**	**2.35E-08**
Mammalian No Effect ESL= 5.80E-07	**Risk Ratio=**	**3E-01**	**3E-01**	**1E-01**	**1E-01**	**1E-03**	**4E-02**
Mammalian Low Effect ESL= 3.80E-06	**Risk Ratio=**	**4E-02**	**5E-02**	**2E-02**	**2E-02**	**2E-04**	**6E-03**

Table 3-4. Dioxin-Furan TECi, TEQs, SLs, and Mammalian Risk Estimates by Sample

Congener Name	CAS	Point 6 WST39-18-162978	Point 7 WST39-18-162979	Point 8 WST39-18-162980	Point 9 WST39-18-162981	Point 10 WST39-18-162982	Point 11 WST39-18-162983	Point 12 WST39-18-162984
		TECi	TECi	TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	8.60E-08	5.86E-08	1.13E-08	6.07E-09	5.21E-08	1.17E-07	3.01E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	7.97E-09	2.21E-08	ND	ND	6.88E-09	1.10E-08	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	ND	ND	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	1.65E-08	2.05E-08	2.90E-09	1.17E-09	1.23E-08	2.87E-08	7.47E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	7.53E-10	5.76E-09	ND	ND	3.54E-10	1.02E-09	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	ND	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	ND	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	ND	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	ND	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.87E-08	ND	1.44E-08	1.06E-08	5.50E-08	5.60E-08	3.75E-08
TEQ		**1.30E-07**	**1.07E-07**	**2.86E-08**	**1.78E-08**	**1.27E-07**	**2.14E-07**	**7.51E-08**
Mammalian No Effect ESL	**5.80E-07**	**2E-01**	**2E-01**	**5E-02**	**3E-02**	**2E-01**	**4E-01**	**1E-01**
Mammalian Low Effect ESL	**3.80E-06**	**3E-02**	**3E-02**	**8E-03**	**5E-03**	**3E-02**	**6E-02**	**2E-02**

Notes: The data and detection status were reported in Table 2-1 and 2-3. The TEFs for mammals are reported in Table 3-3.
The TECi are summed in each column to obtain the TEQ. The TEQ is divided by the NE and LE mammalian ESLs for TCDD to obtain a risk ratio, shown directly under the TEQ. Shaded cells indicate the ratio of the TEQ/SSL exceeds 1
The deer mouse ESLs are used in lieu of shrew ESLs as this area is not preferred shrew habitat
All data in mg/kg. DC= Detect Code = 1 is detected, 0 is not detected

Abbreviations: Ci – Measured Sample Concentration of Congener i; TECi – Toxicity Equivalent Concentration for Congener i; TEF – Toxicity Equivalency Factor; TEQ – Toxicity Equivalent Quotient

Table 3-5. Dioxin-Furan TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Congener Name	CAS	Point 1 WST39-18-162832	Point 1 Dup WST39-18-162973	Point 2 WST39-18-162974	Point 3 WST39-18-162975	Point 4 WST39-18-162976	Point 5 WST39-18-162977
		TECi	TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	8.52E-09	9.83E-09	4.57E-09	3.49E-09	ND	8.28E-10
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	9.01E-09	1.00E-08	ND	ND	ND	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	ND	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	7.21E-09	8.89E-09	3.58E-09	2.99E-09	1.96E-10	5.50E-10
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	2.49E-10	2.73E-10	1.38E-10	ND	ND	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	3.65E-07	3.63E-07	2.01E-07	2.57E-07	ND	1.36E-07
TEQ		**3.90E-07**	**3.92E-07**	**2.09E-07**	**2.63E-07**	**1.96E-10**	**1.37E-07**
Avian No Effect ESL = 4.1 E-06	**Risk Ratio=**	**1E-01**	**1E-01**	**5E-02**	**6E-02**	**4E-05**	**3E-02**

Table 3-5. Dioxin-Furan TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Congener Name	CAS	Point 6 WST39-18-162978	Point 7 WST39-18-162979	Point 8 WST39-18-162980	Point 9 WST39-18-162981	Point 10 WST39-18-162982	Point 11 WST39-18-162983	Point 12 WST39-18-162984
		TECi	TECi	TECi	TECi	TECi	TECi	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	8.60E-09	5.86E-09	1.13E-09	6.07E-10	5.21E-09	1.17E-08	3.01E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	7.97E-09	2.21E-08	ND	ND	6.88E-09	1.10E-08	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	ND	ND	ND	ND	ND	ND	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	ND	ND	ND	ND	ND	ND	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	5.49E-09	6.84E-09	9.66E-10	3.91E-10	4.10E-09	9.57E-09	2.49E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	2.51E-10	1.92E-09	ND	ND	1.18E-10	3.40E-10	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	ND	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	ND	ND	ND	ND	ND	ND	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	ND	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	ND	ND	ND	ND	ND	ND	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.87E-07	ND	1.44E-07	1.06E-07	5.50E-07	5.60E-07	3.75E-07
TEQ		**2.09E-07**	**3.67E-08**	**1.46E-07**	**1.07E-07**	**5.66E-07**	**5.93E-07**	**3.81E-07**
Avian No Effect ESL = 4.1E-06		**5E-02**	**9E-03**	**4E-02**	**3E-02**	**1E-01**	**1E-01**	**9E-02**

Notes: The data and detection status were reported in Table 2-1 and 2-3. The TEFs for birds are reported in Table 3-3.
The TECi are summed in each column to obtain the TEQ. The TEQ is divided by the residential or the industrial SSLs for TCDD to obtain a risk ratio, shown directly under the TEQ. Shaded cells indicate the ratio of the TEQ/SSL exceeds 1. See Table 3-4 for sample-specific concentrations.
All data in mg/kg.
An avian LE ESL was not reviewed because dioxin/furan risks for the NE ESL were less than 0.3.

Abbreviations:
Ci – Measured Sample Concentration of Congener i; TECi – Toxicity Equivalent Concentration for Congener i; TEF – Toxicity Equivalency Factor; TEQ – Toxicity Equivalent Quotient

Table 3-6. UCL Calculations for Dioxin/Furans for Mammals

Congener Name	Parameter	UCL (mg/kg)	Detect Code	Distribution	Statistic Type
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	6.49E-06	1	Normal	95% KM (t) UCL
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	9.51E-07	1	Normal	Median detect- only 5 detects
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7		0		
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6		0		
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7		0		
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3		0		
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9		0		
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9		0		
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9		0		
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5		0		
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	5.40E-05	1	Normal	95% Student's-t UCL
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	4.84E-06	1	Lognormal	KM H-UCL
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4		0		
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6		0		
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4		0		
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6		0		
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	3.45E-07	1	Normal	95% KM (t) UCL

Congener Name	CAS	TEF	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	6.49E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	9.51E-09
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	1.62E-08
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	1.45E-09
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	3.45E-08
TEQ			**1.27E-07**
Mammalian No Effect SSL	**5.80E-07**	**Risk Ratio=**	2E-01
Mammalian Low Effect SSL	**3.80E-06**	**Risk Ratio=**	3E-02

Note: the UCL is multiplied by the mammalian TEF to obtain the TECi. The TECi are summed to obtain the TEQ. The TEQ is divided by the ESL for TCDD to obtain a risk ratio. The risk ratios are less than 1, indicating no risk to mammals.

Table 3-7. Area Use Factors for TA 39-6 and Risks based on the NE ESL

COPC Name	CAS	No Effect Ecological Screening Levels (ESLs) for Terrestrial Receptors (mg/kg)									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
Calcium	CA	0	0	0	0	0	0	0	0	0	0
Chromium	CR	170	51	23	32	110	410	0	0	63	1800
Copper	CU	80	34	14	20	63	260	80	70	42	4000
Mercury	HG	0.058	0.067	0.013	0.022	3	23	0.05	34	1.7	76
Vanadium	V	56	6.8	4.7	5.5	470	740	0	60	290	3200
Zinc	ZN	220	330	47	83	170	1800	120	160	99	9600
Benzoic Acid	65-85-0	0	0	0	0	1.3	4.6	0	0	1.00	2000
Di-n-butylphthalate	84-74-2	0.052	0.38	0.011	0.021	360	17000	0	160	180	62000
HMX	2691-41-0	0	0	0	0	290	410	16	2700	1100	59000
TATB		0	0	0	0	110	150	10	0	720	10000

Note: The TATB toxicity values are based on 1,3,5-trinitrobenzene as a surrogate

HR (ha)[a]	106	0.42	0.42	0.42	0.077	3.1	NA	NA	0.39	1038
Population Area[b]	4240	16.8	16.8	16.8	3.08	124	NA	NA	15.6	41520
PAUF[c]	0.000004	0.001	0.001	0.001	0.005	0.0001	NA	NA	0.001	0.0000004
AUF[d]	0.0001	0.04	0.04	0.04	0.19	0.005	NA	NA	0.04	0.00001

COPC Name	UCL95 EPC (mg/kg)	Population Area Use Adjusted NE ESL Hazard Quotients									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Inorganics											
Calcium	5458.00	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL
Chromium	23.24	5E-07	4E-04	9E-04	6E-04	1E-03	7E-06	NA, No ESL	NA, No ESL	4E-04	5E-09
Copper	87.3	4E-06	2E-03	6E-03	4E-03	7E-03	4E-05	1E+00	1E+00	2E-03	8E-09
Mercury	0.0519	3E-06	7E-04	4E-03	2E-03	8E-05	3E-07	1E+00	2E-03	3E-05	2E-10
Vanadium	38.08	2E-06	5E-03	7E-03	6E-03	4E-04	6E-06	NA, No ESL	6E-01	1E-04	4E-09
Zinc	45.38	7E-07	1E-04	9E-04	5E-04	1E-03	3E-06	4E-01	3E-01	4E-04	2E-09
Organics											
Benzoic Acid	1.68E-01	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	6E-04	4E-06	NA, No ESL	NA, No ESL	2E-04	3E-11
Di-n-butylphthalate	1.01E-02	7E-07	2E-05	8E-04	4E-04	1E-07	7E-11	NA, No ESL	6E-05	5E-08	6E-14
HMX	3.70E+00	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	6E-05	1E-06	2E-01	1E-03	3E-06	2E-11
TATB	1.86E+00	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	8E-05	1E-06	2E-01	NA, No ESL	2E-06	7E-11

Table 3-8. Area Use Factors for TA 39-6 and Risks based on the LE ESL.

COPC Name	CAS	Low Effect Ecological Screening Levels (ESLs) for Terrestrial Receptors (mg/kg)									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
Calcium	CA	0	0	0	0	0	0	0	0	0	0
Chromium	CR	560	160.00	73	100	11000	41000	0	0	6300	180000
Copper	CU	240	100.00	43	60	100	430	530	490	70	6700
Mercury	HG	0.58	0.67	0.13	0.22	30	230	0.5	64	17	760
Vanadium	V	110	13.00	9.5	11	1000	1500	0	80	610	6900
Zinc	ZN	590	120.00	120	220	1700	18000	930	810	980	94000
Benzoic Acid	65-85-0	0	0.00	0	0	13	46	0	0	10	20000
Di-n-butylphthalate	84-74-2	0.52	3.80	0.11	0.21	860	40000	0	600	450	140000
HMX	2691-41-0	0	0	0	0	790	1100	160	3500	2900	150000
TATB		0	0	0	0	1100	1500	28	0	7200	100000

Note: The TATB toxicity values are based on 1,3,5-trinitrobenzene as a surrogate

HR (ha)[a]	106	0.42	0.42	0.42	0.077	3.1	NA	NA	0.39	1038
Population Area[b]	4240	16.8	16.8	16.8	3.08	124	NA	NA	15.6	41520
PAUF[c]	0.00002	0.005	0.005	0.005	0.03	0.001	NA	NA	0.005	0.000002
AUF[d]	0.0008	0.19	0.19	0.19	1.00	0.03	NA	NA	0.21	0.0001

COPC Name	UCL95 EPC (mg/kg)	Population Area Use Adjusted LE ESL Hazard Quotients									
		Kestrel (carnivore/insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Inorganics											
Calcium	5458	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL
Chromium	23.24	8E-07	7E-04	2E-03	1E-03	5E-05	4E-07	NA, No ESL	NA, No ESL	2E-05	2E-10
Copper	87.3	7E-06	4E-03	1E-02	7E-03	2E-02	1E-04	2E-01	2E-01	6E-03	3E-08
Mercury	0.0519	2E-06	4E-04	2E-03	1E-03	4E-05	1E-07	1E-01	8E-04	2E-05	1E-10
Vanadium	38.08	7E-06	1E-02	2E-02	2E-02	1E-03	2E-05	NA, No ESL	5E-01	3E-04	1E-08
Zinc	45.38	1E-06	2E-03	2E-03	1E-03	7E-04	2E-06	5E-02	6E-02	2E-04	9E-10
Organics											
Benzoic Acid	1.68E-01	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	3E-04	2E-06	NA, No ESL	NA, No ESL	9E-05	2E-11
Di-n-butylphthalate	1.01E-02	4E-07	1E-05	4E-04	2E-04	3E-07	2E-10	NA, No ESL	2E-05	1E-07	1E-13
HMX	3.70E+00	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	1E-04	2E-06	2E-02	1E-03	7E-06	5E-11
TATB	1.86E+00	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	4E-05	8E-07	7E-02	NA, No ESL	1E-06	4E-11

Notes:

Area of Site (ha): 0.08

NA - Not applicable	PAUF - Population area use factor	HR - Home range
ESLs - Ecological screening level	AUF - Area use factor	

a - Values from USEPA (1993)
b - Derived as 40*HR
c - PAUF is the area of site divided by the Population Area
d - AUF is the area of the site divided by the HR; AUF cannot exceed 1 and value is set to 1 if calculation results in a higher value

Table 3-9. Hazard Index Analysis by Receptor for Exposure Adjusted with Area Use Factors

Hazard Index	**Kestrel (carnivore/insectivore)**	**Robin (herbivore)**	**Robin (insectivore)**	**Robin (omnivore)**	**Deer mouse**	**Desert cottontail**	**Earthworm**	**Plant**	**Montane shrew**	**Red fox**
Hazard Index for NE ESL	1E-05	9E-03	2E-02	1E-02	1E-02	6E-05	3E+00	2E+00	3E-03	2E-08
Hazard Index for LE ESL	2E-05	2E-02	3E-02	3E-02	3E-02	2E-04	4E-01	7E-01	7E-03	4E-08

Figures

Figure 1-1. Location of TA-39 at the Los Alamos National Laboratory

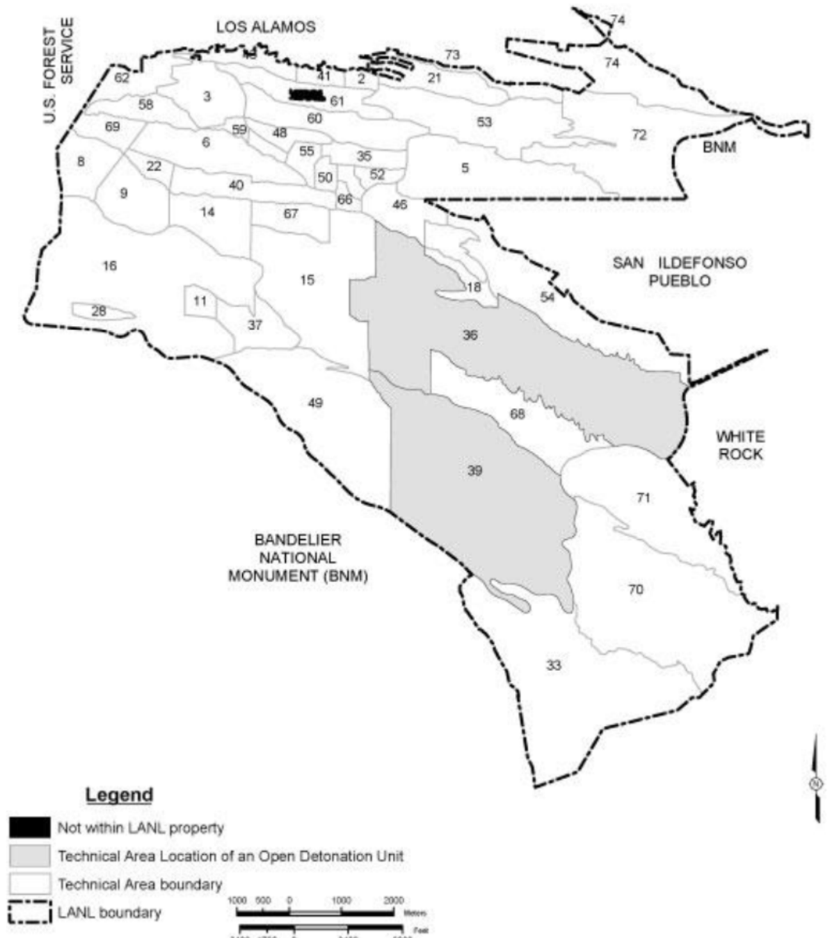


Figure 1-2. Sample Location Map for TA-39-6 OD Area

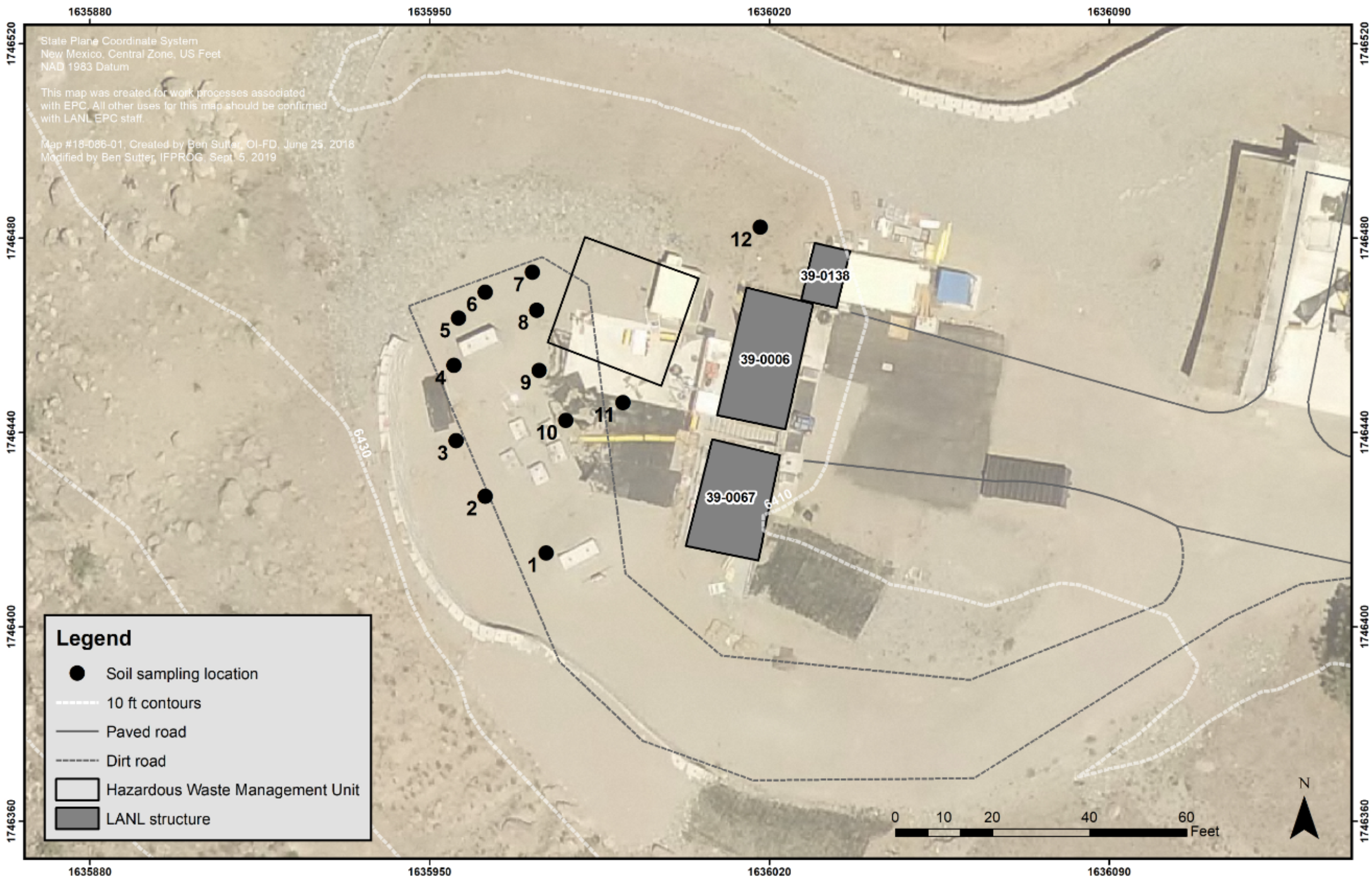
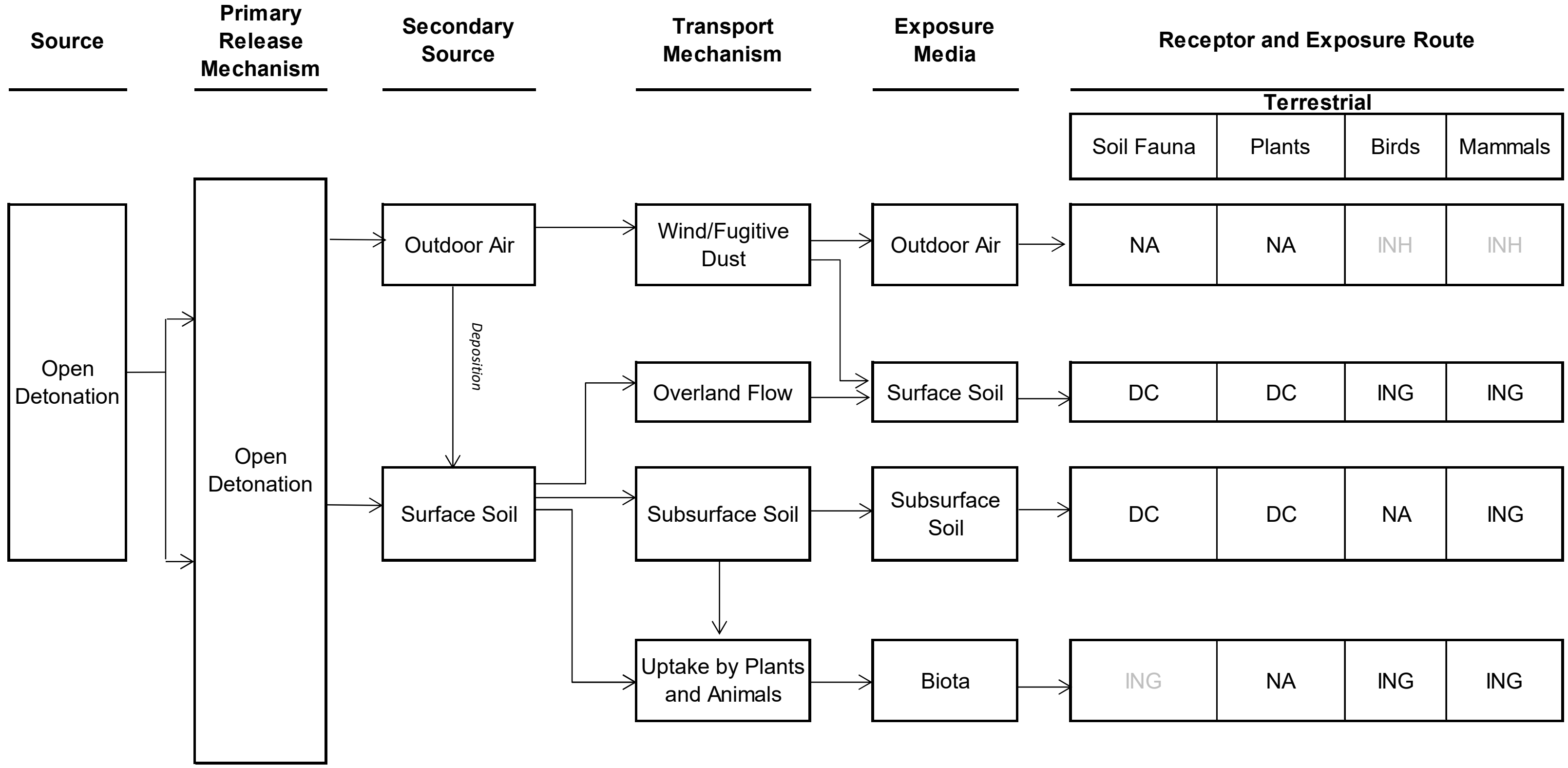


Figure 3-1. Conceptual Site Exposure Model for the ERA



Abbreviations

DC	Direct contact; applies to receptors for which toxic effects are addressed by exposure concentration and not dose
ING	Ingestion; typically quantified as dose for birds and mammals only
INH	Inhalation; recognized to occur, but not typically quantified as standard practice with the exception of evaluating burrow air exposure by burrowing mammals
NA	Pathway considered incomplete; not applicable

Notes:

Grayed text indicates pathways are recognized to potentially exist but are not quantified. Inhalation is considered minimal relative to dietary exposure. Ingestion by invertebrates is not typically quantified due to absence of accurate exposure parameters.

Attachment A. ProUCL Output for Upper Confidence Limit Calculations

UCL Statistics for Data Sets with Non-Detects

User Selected Options			
Date/Time of Computation	ProUCL 5.18/23/2019 3:00:31 PM		
From File	WorkSheet.xls		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
Ca			
General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	1
Minimum	588	Mean	4567
Maximum	6780	Median	4925
SD	1720	Std. Error of Mean	496.6
Coefficient of Variation	0.377	Skewness	-1.071
Normal GOF Test			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.15	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5458	95% Adjusted-CLT UCL (Chen-1995)	5219
		95% Modified-t UCL (Johnson-1978)	5433
Gamma GOF Test			
A-D Test Statistic	0.968	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.736	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.198	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.246	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.013	k star (bias corrected MLE)	3.065
Theta hat (MLE)	1138	Theta star (bias corrected MLE)	1490
nu hat (MLE)	96.31	nu star (bias corrected)	73.57
MLE Mean (bias corrected)	4567	MLE Sd (bias corrected)	2608
		Approximate Chi Square Value (0.05)	54.81
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	52.35
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6129	95% Adjusted Gamma UCL (use when n<50)	6417
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.687	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.377	Mean of logged Data	8.297
Maximum of Logged Data	8.822	SD of logged Data	0.657
Assuming Lognormal Distribution			
95% H-UCL	7929	90% Chebyshev (MVUE) UCL	7752
95% Chebyshev (MVUE) UCL	9056	97.5% Chebyshev (MVUE) UCL	10866
99% Chebyshev (MVUE) UCL	14420		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	5383	95% Jackknife UCL	5458
95% Standard Bootstrap UCL	5331	95% Bootstrap-t UCL	5303
95% Hall's Bootstrap UCL	5263	95% Percentile Bootstrap UCL	5309
95% BCA Bootstrap UCL	5221		

90% Chebyshev(Mean, Sd) UCL	6056	95% Chebyshev(Mean, Sd) UCL	6731
97.5% Chebyshev(Mean, Sd) UCL	7668	99% Chebyshev(Mean, Sd) UCL	9508

Suggested UCL to Use

95% Student's-t UCL	5458		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not
be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Cr

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	1
Minimum	3.22	Mean	16.91
Maximum	47.9	Median	12.25
SD	12.21	Std. Error of Mean	3.525
Coefficient of Variation	0.722	Skewness	1.746

Normal GOF Test

Shapiro Wilk Test Statistic	0.818	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.232	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.32E+01	95% Adjusted-CLT UCL (Chen-1995)	24.61
		95% Modified-t UCL (Johnson-1978)	23.54

Gamma GOF Test

A-D Test Statistic	0.425	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.74	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.184	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.248	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.542	k star (bias corrected MLE)	1.962
Theta hat (MLE)	6.652	Theta star (bias corrected MLE)	8.618
nu hat (MLE)	6.10E+01	nu star (bias corrected)	47.09
MLE Mean (bias corrected)	16.91	MLE Sd (bias corrected)	12.07
		Approximate Chi Square Value (0.05)	32.34
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	30.49

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	24.62	95% Adjusted Gamma UCL (use when n<50)	26.12

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.952	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.184	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	2.43E-01	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.169	Mean of logged Data	2.618
Maximum of Logged Data	3.869	SD of logged Data	0.684

Assuming Lognormal Distribution

95% H-UCL	28.39	90% Chebyshev (MVUE) UCL	27.39
95% Chebyshev (MVUE) UCL	32.12	97.5% Chebyshev (MVUE) UCL	38.69
99% Chebyshev (MVUE) UCL	51.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	22.71	95% Jackknife UCL	23.24
95% Standard Bootstrap UCL	22.47	95% Bootstrap-t UCL	29.12
95% Hall's Bootstrap UCL	55.27	95% Percentile Bootstrap UCL	23.07
95% BCA Bootstrap UCL	24.39		
90% Chebyshev(Mean, Sd) UCL	27.49	95% Chebyshev(Mean, Sd) UCL	32.28

97.5% Chebyshev(Mean, Sd) UCL	38.92	99% Chebyshev(Mean, Sd) UCL	51.99

Suggested UCL to Use

95% Student's-t UCL	23.24

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Cu

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	1
Minimum	4.92	Mean	59.28
Maximum	174	Median	46.18
SD	54.05	Std. Error of Mean	15.6
Coefficient of Variation	0.912	Skewness	1.445

Normal GOF Test

Shapiro Wilk Test Statistic	0.813	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	8.73E+01	95% Adjusted-CLT UCL (Chen-1995)	91.9
		95% Modified-t UCL (Johnson-1978)	88.39

Gamma GOF Test

A-D Test Statistic	0.255	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.125	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.25	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.408	k star (bias corrected MLE)	1.111
Theta hat (MLE)	42.12	Theta star (bias corrected MLE)	53.35
nu hat (MLE)	33.78	nu star (bias corrected)	26.67
MLE Mean (bias corrected)	5.93E+01	MLE Sd (bias corrected)	56.24
		Approximate Chi Square Value (0.05)	15.9
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	14.64

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	99.46	95% Adjusted Gamma UCL (use when n<50)	108

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.964	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.11	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.593	Mean of logged Data	3.687
Maximum of Logged Data	5.159	SD of logged Data	0.996

Assuming Lognormal Distribution

95% H-UCL	1.57E+02	90% Chebyshev (MVUE) UCL	119.1
95% Chebyshev (MVUE) UCL	145	97.5% Chebyshev (MVUE) UCL	180.9
99% Chebyshev (MVUE) UCL	251.5		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	84.95	95% Jackknife UCL	87.3
95% Standard Bootstrap UCL	83.64	95% Bootstrap-t UCL	111.3
95% Hall's Bootstrap UCL	247.7	95% Percentile Bootstrap UCL	85.08
95% BCA Bootstrap UCL	90.62		
90% Chebyshev(Mean, Sd) UCL	106.1	95% Chebyshev(Mean, Sd) UCL	127.3
97.5% Chebyshev(Mean, Sd) UCL	156.7	99% Chebyshev(Mean, Sd) UCL	214.5

Suggested UCL to Use

95% Student's-t UCL	8.73E+01

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL
Hg
General Statistics

Total Number of Observations	12	Number of Distinct Observations	11
		Number of Missing Observations	1
Number of Detects	6	Number of Non-Detects	6
Number of Distinct Detects	6	Number of Distinct Non-Detects	5
Minimum Detect	0.00507	Minimum Non-Detect	0.00355
Maximum Detect	0.131	Maximum Non-Detect	0.0039
Variance Detects	0.00254	Percent Non-Detects	50%
Mean Detects	0.0536	SD Detects	0.0504
Median Detects	0.038	CV Detects	0.94
Skewness Detects	0.751	Kurtosis Detects	-1.048
Mean of Logged Detects	-3.449	SD of Logged Detects	1.241

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.895	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.253	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0286	KM Standard Error of Mean	0.013
KM SD	0.041	95% KM (BCA) UCL	0.0516
95% KM (t) UCL	0.0519	95% KM (Percentile Bootstrap) UCL	0.0495
95% KM (z) UCL	0.0499	95% KM Bootstrap t UCL	0.0722
90% KM Chebyshev UCL	0.0675	95% KM Chebyshev UCL	0.0851
97.5% KM Chebyshev UCL	0.11	99% KM Chebyshev UCL	0.158

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.262	Anderson-Darling GOF Test	
5% A-D Critical Value	0.714	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.218	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.34	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level
Gamma Statistics on Detected Data Only

k hat (MLE)	1.094	k star (bias corrected MLE)	0.658
Theta hat (MLE)	0.049	Theta star (bias corrected MLE)	0.0814
nu hat (MLE)	13.13	nu star (bias corrected)	7.898
Mean (detects)	0.0536		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00507	Mean	0.0318
Maximum	0.131	Median	0.01
SD	0.0409	CV	1.286
k hat (MLE)	0.998	k star (bias corrected MLE)	0.804
Theta hat (MLE)	0.0319	Theta star (bias corrected MLE)	0.0395
nu hat (MLE)	23.96	nu star (bias corrected)	19.3
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (19.30, α)	10.34	Adjusted Chi Square Value (19.30, β)	9.35
95% Gamma Approximate UCL (use when n>=50)	0.0594	95% Gamma Adjusted UCL (use when n<50)	0.0656

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0286	SD (KM)	0.041
Variance (KM)	0.00168	SE of Mean (KM)	0.013
k hat (KM)	0.485	k star (KM)	0.419
nu hat (KM)	11.64	nu star (KM)	10.06
theta hat (KM)	0.0589	theta star (KM)	0.0681
80% gamma percentile (KM)	0.0463	90% gamma percentile (KM)	0.08
95% gamma percentile (KM)	0.117	99% gamma percentile (KM)	0.209

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.06, α)	3.981	Adjusted Chi Square Value (10.06, β)	3.418

95% Gamma Approximate KM-UCL (use when n>=50)	0.0722	95% Gamma Adjusted KM-UCL (use when n<50)	0.0841
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0273	Mean in Log Scale	-5.232
SD in Original Scale	0.0437	SD in Log Scale	2.062
95% t UCL (assumes normality of ROS data)	0.0499	95% Percentile Bootstrap UCL	0.0491
95% BCA Bootstrap UCL	0.0536	95% Bootstrap t UCL	0.0775
95% H-UCL (Log ROS)	1.064		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-4.545	KM Geo Mean	0.0106
KM SD (logged)	1.358	95% Critical H Value (KM-Log)	3.603
KM Standard Error of Mean (logged)	0.429	95% H-UCL (KM -Log)	0.117
KM SD (logged)	1.358	95% Critical H Value (KM-Log)	3.603
KM Standard Error of Mean (logged)	0.429		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0277	Mean in Log Scale	-4.866
SD in Original Scale	0.0434	SD in Log Scale	1.701
95% t UCL (Assumes normality)	0.0502	95% H-Stat UCL	0.299
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0519		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

V

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	11
		Number of Missing Observations	1
Minimum	11	Mean	32.14
Maximum	48	Median	30
SD	11.46	Std. Error of Mean	3.308
Coefficient of Variation	0.357	Skewness	-0.104
Normal GOF Test			
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	38.08	95% Adjusted-CLT UCL (Chen-1995)	37.47
		95% Modified-t UCL (Johnson-1978)	38.06
Gamma GOF Test			
A-D Test Statistic	0.344	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.246	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	7.238	k star (bias corrected MLE)	5.484
Theta hat (MLE)	4.44	Theta star (bias corrected MLE)	5.861
nu hat (MLE)	173.7	nu star (bias corrected)	131.6
MLE Mean (bias corrected)	32.14	MLE Sd (bias corrected)	13.72
		Approximate Chi Square Value (0.05)	106.1

Adjusted Level of Significance	0.029	Adjusted Chi Square Value	102.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	39.86	95% Adjusted Gamma UCL (use when n<50)	41.22
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.147	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.398	Mean of logged Data	3.399
Maximum of Logged Data	3.871	SD of logged Data	0.418
Assuming Lognormal Distribution			
95% H-UCL	42.31	90% Chebyshev (MVUE) UCL	44.38
95% Chebyshev (MVUE) UCL	49.8	97.5% Chebyshev (MVUE) UCL	57.31
99% Chebyshev (MVUE) UCL	72.08		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	37.58	95% Jackknife UCL	38.08
95% Standard Bootstrap UCL	37.43	95% Bootstrap-t UCL	38
95% Hall's Bootstrap UCL	37.43	95% Percentile Bootstrap UCL	37.33
95% BCA Bootstrap UCL	37.08		
90% Chebyshev(Mean, Sd) UCL	42.06	95% Chebyshev(Mean, Sd) UCL	46.55
97.5% Chebyshev(Mean, Sd) UCL	52.79	99% Chebyshev(Mean, Sd) UCL	65.05
Suggested UCL to Use			
95% Student's-t UCL	38.08		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Zn

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	1
Minimum	24.4	Mean	39.19
Maximum	62.5	Median	37.55
SD	11.94	Std. Error of Mean	3.447
Coefficient of Variation	0.305	Skewness	0.723
Normal GOF Test			
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.156	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	45.38	95% Adjusted-CLT UCL (Chen-1995)	45.62
		95% Modified-t UCL (Johnson-1978)	45.5
Gamma GOF Test			
A-D Test Statistic	0.234	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.118	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.245	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	12.31	k star (bias corrected MLE)	9.29
Theta hat (MLE)	3.183	Theta star (bias corrected MLE)	4.218
nu hat (MLE)	295.5	nu star (bias corrected)	223

MLE Mean (bias corrected)	39.19	MLE Sd (bias corrected)	12.86
		Approximate Chi Square Value (0.05)	189.4
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	184.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	46.13	95% Adjusted Gamma UCL (use when n<50)	47.31
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.961	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.101	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.195	Mean of logged Data	3.627
Maximum of Logged Data	4.135	SD of logged Data	0.298
Assuming Lognormal Distribution			
95% H-UCL	46.76	90% Chebyshev (MVUE) UCL	49.38
95% Chebyshev (MVUE) UCL	54.01	97.5% Chebyshev (MVUE) UCL	60.43
99% Chebyshev (MVUE) UCL	73.05		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	44.86	95% Jackknife UCL	45.38
95% Standard Bootstrap UCL	44.63	95% Bootstrap-t UCL	47.07
95% Hall's Bootstrap UCL	47.84	95% Percentile Bootstrap UCL	45.16
95% BCA Bootstrap UCL	45.42		
90% Chebyshev(Mean, Sd) UCL	49.53	95% Chebyshev(Mean, Sd) UCL	54.21
97.5% Chebyshev(Mean, Sd) UCL	60.71	99% Chebyshev(Mean, Sd) UCL	73.48
Suggested UCL to Use			
95% Student's-t UCL	45.38		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

HMX

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	9
		Number of Missing Observations	100.00%
Number of Detects	7	Number of Non-Detects	5
Number of Distinct Detects	7	Number of Distinct Non-Detects	2
Minimum Detect	0.172	Minimum Non-Detect	0.149
Maximum Detect	6.66	Maximum Non-Detect	0.15
Variance Detects	5.265	Percent Non-Detects	41.67%
Mean Detects	1.683	SD Detects	2.295
Median Detects	1.14	CV Detects	1.363
Skewness Detects	2.198	Kurtosis Detects	5.159
Mean of Logged Detects	-0.217	SD of Logged Detects	1.34
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.704	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.314	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1.044	KM Standard Error of Mean	0.558
KM SD	1.79	95% KM (BCA) UCL	2.049
95% KM (t) UCL	2.046	95% KM (Percentile Bootstrap) UCL	2.046
95% KM (z) UCL	1.962	95% KM Bootstrap t UCL	3.697
90% KM Chebyshev UCL	2.718	95% KM Chebyshev UCL	3.477
97.5% KM Chebyshev UCL	4.53	99% KM Chebyshev UCL	6.598
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.394	Anderson-Darling GOF Test	
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.22	Kolmogorov-Smirnov GOF	

5% K-S Critical Value	0.322	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.804	k star (bias corrected MLE)	0.555
Theta hat (MLE)	2.093	Theta star (bias corrected MLE)	3.034
nu hat (MLE)	11.26	nu star (bias corrected)	7.766
Mean (detects)	1.683		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.986
Maximum	6.66	Median	0.194
SD	1.901	CV	1.928
k hat (MLE)	0.334	k star (bias corrected MLE)	0.306
Theta hat (MLE)	2.955	Theta star (bias corrected MLE)	3.225
nu hat (MLE)	8.007	nu star (bias corrected)	7.339
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (7.34, α)	2.358	Adjusted Chi Square Value (7.34, β)	1.951
95% Gamma Approximate UCL (use when n>=50)	3.068	95% Gamma Adjusted UCL (use when n<50)	3.709
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1.044	SD (KM)	1.79
Variance (KM)	3.204	SE of Mean (KM)	0.558
k hat (KM)	0.34	k star (KM)	0.311
nu hat (KM)	8.162	nu star (KM)	7.455
theta hat (KM)	3.07	theta star (KM)	3.361
80% gamma percentile (KM)	1.614	90% gamma percentile (KM)	3.066
95% gamma percentile (KM)	4.722	99% gamma percentile (KM)	9.009
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (7.45, α)	2.423	Adjusted Chi Square Value (7.45, β)	2.009
95% Gamma Approximate KM-UCL (use when n>=50)	3.211	95% Gamma Adjusted KM-UCL (use when n<50)	3.874
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.927	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.993	Mean in Log Scale	-1.753
SD in Original Scale	1.897	SD in Log Scale	2.196
95% t UCL (assumes normality of ROS data)	1.976	95% Percentile Bootstrap UCL	2
95% BCA Bootstrap UCL	2.542	95% Bootstrap t UCL	3.884
95% H-UCL (Log ROS)	68.69		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.92	KM Geo Mean	0.399
KM SD (logged)	1.26	95% Critical H Value (KM-Log)	3.41
KM Standard Error of Mean (logged)	0.393	95% H-UCL (KM -Log)	3.223
KM SD (logged)	1.26	95% Critical H Value (KM-Log)	3.41
KM Standard Error of Mean (logged)	0.393		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.013	Mean in Log Scale	-1.207
SD in Original Scale	1.886	SD in Log Scale	1.573
95% t UCL (Assumes normality)	1.991	95% H-Stat UCL	7.039
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Bootstrap t UCL	3.697	Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	3.874
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

TATB

General Statistics

Total Number of Observations	12	Number of Distinct Observations	8
		Number of Missing Observations	100%
Number of Detects	5	Number of Non-Detects	7
Number of Distinct Detects	5	Number of Distinct Non-Detects	3
Minimum Detect	0.791	Minimum Non-Detect	0.296
Maximum Detect	5.535	Maximum Non-Detect	0.3
Variance Detects	3.981	Percent Non-Detects	58.33%
Mean Detects	2.042	SD Detects	1.995
Median Detects	1.06	CV Detects	0.977
Skewness Detects	2.017	Kurtosis Detects	4.113
Mean of Logged Detects	0.424	SD of Logged Detects	0.786

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.713	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.336	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.024	KM Standard Error of Mean	0.464
KM SD	1.438	95% KM (BCA) UCL	1.848
95% KM (t) UCL	1.857	95% KM (Percentile Bootstrap) UCL	1.837
95% KM (z) UCL	1.787	95% KM Bootstrap t UCL	2.743
90% KM Chebyshev UCL	2.416	95% KM Chebyshev UCL	3.047
97.5% KM Chebyshev UCL	3.922	99% KM Chebyshev UCL	5.642

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.595	Anderson-Darling GOF Test	
5% A-D Critical Value	0.685	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.31	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.361	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.873	k star (bias corrected MLE)	0.883
Theta hat (MLE)	1.09	Theta star (bias corrected MLE)	2.314
nu hat (MLE)	18.73	nu star (bias corrected)	8.826
Mean (detects)	2.042		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.857
Maximum	5.535	Median	0.01
SD	1.595	CV	1.861
k hat (MLE)	0.294	k star (bias corrected MLE)	0.276
Theta hat (MLE)	2.916	Theta star (bias corrected MLE)	3.105
nu hat (MLE)	7.051	nu star (bias corrected)	6.622
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (6.62, α)	1.965	Adjusted Chi Square Value (6.62, β)	1.603
95% Gamma Approximate UCL (use when n>=50)	2.887	95% Gamma Adjusted UCL (use when n<50)	3.539

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.024	SD (KM)	1.438
Variance (KM)	2.068	SE of Mean (KM)	0.464
k hat (KM)	0.507	k star (KM)	0.436
nu hat (KM)	12.16	nu star (KM)	10.45
theta hat (KM)	2.02	theta star (KM)	2.35
80% gamma percentile (KM)	1.666	90% gamma percentile (KM)	2.846
95% gamma percentile (KM)	4.129	99% gamma percentile (KM)	7.325

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.45, α)	4.226	Adjusted Chi Square Value (10.45, β)	3.642

95% Gamma Approximate KM-UCL (use when n>=50)	2.531	95% Gamma Adjusted KM-UCL (use when n<50)	2.938

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.851	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.279	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.93	Mean in Log Scale	-1.077
SD in Original Scale	1.554	SD in Log Scale	1.48
95% t UCL (assumes normality of ROS data)	1.736	95% Percentile Bootstrap UCL	1.724
95% BCA Bootstrap UCL	2.159	95% Bootstrap t UCL	3.195
95% H-UCL (Log ROS)	5.697		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.533	KM Geo Mean	0.587
KM SD (logged)	0.928	95% Critical H Value (KM-Log)	2.786
KM Standard Error of Mean (logged)	0.299	95% H-UCL (KM -Log)	1.967
KM SD (logged)	0.928	95% Critical H Value (KM-Log)	2.786
KM Standard Error of Mean (logged)	0.299		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.938	Mean in Log Scale	-0.933
SD in Original Scale	1.548	SD in Log Scale	1.288
95% t UCL (Assumes normality)	1.741	95% H-Stat UCL	3.464

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.857

Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
Number of Detects	11	Number of Non-Detects	1
Number of Distinct Detects	11	Number of Distinct Non-Detects	1
Minimum Detect	6.07E-07	Minimum Non-Detect	5.01
Maximum Detect	1.17E-05	Maximum Non-Detect	5.01E-07
Variance Detects	1.34E-11	Percent Non-Detects	8.33%
Mean Detects	4.93E-06	SD Detects	3.66E-06
Median Detects	4.57E-06	CV Detects	N/A
Skewness Detects	0.558	Kurtosis Detects	-0.629
Mean of Logged Detects	-12.58	SD of Logged Detects	1.007

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.56E-06	KM Standard Error of Mean	1.08E-06
KM SD	3.56E-06	95% KM (BCA) UCL	6.38E-06
95% KM (t) UCL	6.49E-06	95% KM (Percentile Bootstrap) UCL	6.38E-06
95% KM (z) UCL	6.33E-06	95% KM Bootstrap t UCL	7.12E-06
90% KM Chebyshev UCL	7.79E-06	95% KM Chebyshev UCL	9.25E-06
97.5% KM Chebyshev UCL	1.13E-05	99% KM Chebyshev UCL	1.53E-05

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.299	Anderson-Darling GOF Test	
5% A-D Critical Value	0.742	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.152	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.26	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.525	k star (bias corrected MLE)	1.17

Theta hat (MLE)	3.23E-06	Theta star (bias corrected MLE)	4.21E-06
nu hat (MLE)	33.55	nu star (bias corrected)	25.73
Mean (detects)	4.93E-06		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	6.07E-07	Mean	8.38E-04
Maximum	0.01	Median	4.89E-06
SD	0.00289	CV	3.444
k hat (MLE)	0.158	k star (bias corrected MLE)	0.174
Theta hat (MLE)	0.00531	Theta star (bias corrected MLE)	0.00482
nu hat (MLE)	3.788	nu star (bias corrected)	4.174
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (4.17, α)	0.792	Adjusted Chi Square Value (4.17, β)	0.598
95% Gamma Approximate UCL (use when n>=50)	0.00442	95% Gamma Adjusted UCL (use when n<50)	0.00585

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.56E-06	SD (KM)	3.56E-06
Variance (KM)	1.27E-11	SE of Mean (KM)	1.08E-06
k hat (KM)	1.639	k star (KM)	1.285
nu hat (KM)	39.33	nu star (KM)	30.83
theta hat (KM)	2.78E-06	theta star (KM)	3.55E-06
80% gamma percentile (KM)	7.17E-06	90% gamma percentile (KM)	9.86E-06
95% gamma percentile (KM)	1.25E-05	99% gamma percentile (KM)	1.85E-05

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (30.83, α)	19.15	Adjusted Chi Square Value (30.83, β)	17.75
95% Gamma Approximate KM-UCL (use when n>=50)	7.34E-06	95% Gamma Adjusted KM-UCL (use when n<50)	7.91E-06

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.91	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.176	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.54E-06	Mean in Log Scale	-12.78
SD in Original Scale	3.74E-06	SD in Log Scale	1.183
95% t UCL (assumes normality of ROS data)	6.48E-06	95% Percentile Bootstrap UCL	6.28E-06
95% BCA Bootstrap UCL	6.42E-06	95% Bootstrap t UCL	6.79E-06
95% H-UCL (Log ROS)	1.81E-05		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-12.74	KM Geo Mean	2.92E-06
KM SD (logged)	1.062	95% Critical H Value (KM-Log)	3.027
KM Standard Error of Mean (logged)	0.321	95% H-UCL (KM -Log)	1.35E-05
KM SD (logged)	1.062	95% Critical H Value (KM-Log)	3.027
KM Standard Error of Mean (logged)	0.321		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.54E-06	Mean in Log Scale	-12.8
SD in Original Scale	3.74E-06	SD in Log Scale	1.221
95% t UCL (Assumes normality)	6.48E-06	95% H-Stat UCL	1.98E-05

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	6.49E-06

Heptachlorodibenzofuran[1,2,3,4,6,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	9
Number of Detects	5	Number of Non-Detects	7
Number of Distinct Detects	5	Number of Distinct Non-Detects	4
Minimum Detect	6.88E-07	Minimum Non-Detect	4.96E-07
Maximum Detect	2.21E-06	Maximum Non-Detect	5.02E-07
Variance Detects	3.76E-13	Percent Non-Detects	58.33%

Mean Detects	1.15E-06	SD Detects	6.13E-07
Median Detects	9.51E-07	CV Detects	N/A
Skewness Detects	1.888	Kurtosis Detects	3.751
Mean of Logged Detects	-13.77	SD of Logged Detects	0.453
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.332	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	7.68E-07	KM Standard Error of Mean	1.54E-07
KM SD	4.79E-07	95% KM (BCA) UCL	1.05E-06
95% KM (t) UCL	1.05E-06	95% KM (Percentile Bootstrap) UCL	1.02E-06
95% KM (z) UCL	1.02E-06	95% KM Bootstrap t UCL	1.13E-06
90% KM Chebyshev UCL	1.23E-06	95% KM Chebyshev UCL	1.44E-06
97.5% KM Chebyshev UCL	1.73E-06	99% KM Chebyshev UCL	2.30E-06
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.476	Anderson-Darling GOF Test	
5% A-D Critical Value	0.68	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.284	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.358	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.617	k star (bias corrected MLE)	2.38
Theta hat (MLE)	2.05E-07	Theta star (bias corrected MLE)	4.83E-07
nu hat (MLE)	56.17	nu star (bias corrected)	23.8
Mean (detects)	1.15E-06		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	6.88E-07	Mean	0.00583
Maximum	0.01	Median	0.01
SD	0.00515	CV	0.883
k hat (MLE)	0.221	k star (bias corrected MLE)	0.221
Theta hat (MLE)	0.0264	Theta star (bias corrected MLE)	0.0264
nu hat (MLE)	5.303	nu star (bias corrected)	5.31
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (5.31, α)	1.298	Adjusted Chi Square Value (5.31, β)	1.023
95% Gamma Approximate UCL (use when n>=50)	0.0239	95% Gamma Adjusted UCL (use when n<50)	0.0303
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	7.68E-07	SD (KM)	4.79E-07
Variance (KM)	2.29E-13	SE of Mean (KM)	1.54E-07
k hat (KM)	2.576	k star (KM)	1.988
nu hat (KM)	61.84	nu star (KM)	47.71
theta hat (KM)	2.98E-07	theta star (KM)	3.86E-07
80% gamma percentile (KM)	1.15E-06	90% gamma percentile (KM)	1.50E-06
95% gamma percentile (KM)	1.83E-06	99% gamma percentile (KM)	2.56E-06
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (47.71, α)	32.86	Adjusted Chi Square Value (47.71, β)	30.98
95% Gamma Approximate KM-UCL (use when n>=50)	1.12E-06	95% Gamma Adjusted KM-UCL (use when n<50)	1.18E-06
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.887	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.258	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			

Mean in Original Scale	6.23E-07	Mean in Log Scale	-14.63
SD in Original Scale	5.96E-07	SD in Log Scale	0.845
95% t UCL (assumes normality of ROS data)	9.32E-07	95% Percentile Bootstrap UCL	9.32E-07
95% BCA Bootstrap UCL	1.01E-06	95% Bootstrap t UCL	1.14E-06
95% H-UCL (Log ROS)	1.24E-06		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-14.2	KM Geo Mean	6.78E-07
KM SD (logged)	0.452	95% Critical H Value (KM-Log)	2.084
KM Standard Error of Mean (logged)	0.146	95% H-UCL (KM -Log)	9.97E-07
KM SD (logged)	0.452	95% Critical H Value (KM-Log)	2.084
KM Standard Error of Mean (logged)	0.146		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	6.24E-07	Mean in Log Scale	-14.61
SD in Original Scale	5.93E-07	SD in Log Scale	0.788
95% t UCL (Assumes normality)	9.32E-07	95% H-Stat UCL	1.13E-06

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.05E-06

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

Heptachlorodibenzofuran[1,2,3,4,7,8,9-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Heptachlorodibenzofuran[1,2,3,4,7,8,9-] was not processed!

Hexachlorodibenzodioxin[1,2,3,4,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzodioxin[1,2,3,4,7,8-] was not processed!

Hexachlorodibenzodioxin[1,2,3,6,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzodioxin[1,2,3,6,7,8-] was not processed!

Hexachlorodibenzodioxin[1,2,3,7,8,9-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hexachlorodibenzodioxin[1,2,3,7,8,9-] was not processed!

Hexachlorodibenzofuran[1,2,3,4,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Hexachlorodibenzofuran[1,2,3,4,7,8-] was not processed!

Hexachlorodibenzofuran[1,2,3,6,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Hexachlorodibenzofuran[1,2,3,6,7,8-] was not processed!

Hexachlorodibenzofuran[1,2,3,7,8,9-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Hexachlorodibenzofuran[1,2,3,7,8,9-] was not processed!

Hexachlorodibenzofuran[2,3,4,6,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Hexachlorodibenzofuran[2,3,4,6,7,8-] was not processed!

Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	1.96E-06	Mean	3.77E-05
Maximum	9.57E-05	Median	3.29E-05
SD	3.15E-05	Std. Error of Mean	9.09E-06
Coefficient of Variation	N/A	Skewness	0.58

Normal GOF Test

Shapiro Wilk Test Statistic	0.923	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.146	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5.40E-05	95% Adjusted-CLT UCL (Chen-1995)	5.43E-05
		95% Modified-t UCL (Johnson-1978)	5.43E-05

Gamma GOF Test

A-D Test Statistic	0.319	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.755	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.141	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.252	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.065	k star (bias corrected MLE)	0.855
Theta hat (MLE)	3.54E-05	Theta star (bias corrected MLE)	4.41E-05
nu hat (MLE)	25.57	nu star (bias corrected)	20.51
MLE Mean (bias corrected)	3.77E-05	MLE Sd (bias corrected)	4.08E-05
		Approximate Chi Square Value (0.05)	11.23
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	10.19

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	6.88E-05	95% Adjusted Gamma UCL (use when n<50)	7.58E-05

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.906	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-13.14	Mean of logged Data	-10.72
Maximum of Logged Data	-9.254	SD of logged Data	1.284
Assuming Lognormal Distribution			
95% H-UCL	1.91E-04	90% Chebyshev (MVUE) UCL	9.96E-05
95% Chebyshev (MVUE) UCL	1.24E-04	97.5% Chebyshev (MVUE) UCL	1.59E-04
99% Chebyshev (MVUE) UCL	2.26E-04		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	5.26E-05	95% Jackknife UCL	5.40E-05
95% Standard Bootstrap UCL	5.20E-05	95% Bootstrap-t UCL	5.71E-05
95% Hall's Bootstrap UCL	5.44E-05	95% Percentile Bootstrap UCL	5.18E-05
95% BCA Bootstrap UCL	5.22E-05		
90% Chebyshev(Mean, Sd) UCL	6.50E-05	95% Chebyshev(Mean, Sd) UCL	7.73E-05
97.5% Chebyshev(Mean, Sd) UCL	9.45E-05	99% Chebyshev(Mean, Sd) UCL	1.28E-04
Suggested UCL to Use			
95% Student's-t UCL	5.40E-05		

Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	6
Number of Distinct Detects	6	Number of Distinct Non-Detects	4
Minimum Detect	1.18E-06	Minimum Non-Detect	9.93E-07
Maximum Detect	1.92E-05	Maximum Non-Detect	1.00E-06
Variance Detects	4.88E-11	Percent Non-Detects	50%
Mean Detects	5.05E-06	SD Detects	6.98E-06
Median Detects	2.56E-06	CV Detects	N/A
Skewness Detects	2.373	Kurtosis Detects	5.708
Mean of Logged Detects	-12.72	SD of Logged Detects	0.999
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.607	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.427	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	3.02E-06	KM Standard Error of Mean	1.56E-06
KM SD	4.94E-06	95% KM (BCA) UCL	6.00E-06
95% KM (t) UCL	5.83E-06	95% KM (Percentile Bootstrap) UCL	5.84E-06
95% KM (z) UCL	5.59E-06	95% KM Bootstrap t UCL	1.59E-05
90% KM Chebyshev UCL	7.71E-06	95% KM Chebyshev UCL	9.83E-06
97.5% KM Chebyshev UCL	1.28E-05	99% KM Chebyshev UCL	1.86E-05
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.795	Anderson-Darling GOF Test	
5% A-D Critical Value	0.714	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.355	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.34	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.084	k star (bias corrected MLE)	0.653
Theta hat (MLE)	4.66E-06	Theta star (bias corrected MLE)	7.73E-06
nu hat (MLE)	13	nu star (bias corrected)	7.836
Mean (detects)	5.05E-06		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.18E-06	Mean	0.005
Maximum	0.01	Median	0.00501
SD	0.00522	CV	1.043
k hat (MLE)	0.216	k star (bias corrected MLE)	0.218
Theta hat (MLE)	0.0232	Theta star (bias corrected MLE)	0.023
nu hat (MLE)	5.183	nu star (bias corrected)	5.22
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (5.22, α)	1.255	Adjusted Chi Square Value (5.22, β)	0.986
95% Gamma Approximate UCL (use when n>=50)	0.0208	95% Gamma Adjusted UCL (use when n<50)	0.0265

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.02E-06	SD (KM)	4.94E-06
Variance (KM)	2.44E-11	SE of Mean (KM)	1.56E-06
k hat (KM)	0.373	k star (KM)	0.336
nu hat (KM)	8.961	nu star (KM)	8.054
theta hat (KM)	8.09E-06	theta star (KM)	9.00E-06
80% gamma percentile (KM)	4.75E-06	90% gamma percentile (KM)	8.78E-06
95% gamma percentile (KM)	1.33E-05	99% gamma percentile (KM)	2.50E-05

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.05, α)	2.766	Adjusted Chi Square Value (8.05, β)	2.316
95% Gamma Approximate KM-UCL (use when n>=50)	8.79E-06	95% Gamma Adjusted KM-UCL (use when n<50)	1.05E-05

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.843	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.28	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.62E-06	Mean in Log Scale	-14.15
SD in Original Scale	5.35E-06	SD in Log Scale	1.661
95% t UCL (assumes normality of ROS data)	5.39E-06	95% Percentile Bootstrap UCL	5.42E-06
95% BCA Bootstrap UCL	7.28E-06	95% Bootstrap t UCL	1.29E-05
95% H-UCL (Log ROS)	2.38E-05		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-13.27	KM Geo Mean	1.72E-06
KM SD (logged)	0.847	95% Critical H Value (KM-Log)	2.647
KM Standard Error of Mean (logged)	0.268	95% H-UCL (KM -Log)	4.84E-06
KM SD (logged)	0.847	95% Critical H Value (KM-Log)	2.647
KM Standard Error of Mean (logged)	0.268		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.77E-06	Mean in Log Scale	-13.62
SD in Original Scale	5.27E-06	SD in Log Scale	1.151
95% t UCL (Assumes normality)	5.51E-06	95% H-Stat UCL	7.16E-06

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	4.84E-06

Pentachlorodibenzodioxin[1,2,3,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Pentachlorodibenzodioxin[1,2,3,7,8-] was not processed!

Pentachlorodibenzofuran[1,2,3,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Pentachlorodibenzofuran[1,2,3,7,8-] was not processed!

Pentachlorodibenzofuran[2,3,4,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	6

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Pentachlorodibenzofuran[2,3,4,7,8-] was not processed!

Tetrachlorodibenzodioxin[2,3,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	5
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	5

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable Tetrachlorodibenzodioxin[2,3,7,8-] was not processed!

Tetrachlorodibenzofuran[2,3,7,8-]

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
Number of Detects	10	Number of Non-Detects	2
Number of Distinct Detects	10	Number of Distinct Non-Detects	2
Minimum Detect	1.06E-07	Minimum Non-Detect	1.05E-07
Maximum Detect	5.60E-07	Maximum Non-Detect	1.16E-07
Variance Detects	2.80E-14	Percent Non-Detects	16.67%
Mean Detects	2.88E-07	SD Detects	1.67E-07
Median Detects	2.29E-07	CV Detects	N/A
Skewness Detects	0.741	Kurtosis Detects	-0.85
Mean of Logged Detects	-15.21	SD of Logged Detects	0.589

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.878	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.58E-07	KM Standard Error of Mean	4.87E-08
KM SD	1.60E-07	95% KM (BCA) UCL	3.43E-07
95% KM (t) UCL	3.45E-07	95% KM (Percentile Bootstrap) UCL	3.38E-07
95% KM (z) UCL	3.38E-07	95% KM Bootstrap t UCL	3.71E-07
90% KM Chebyshev UCL	4.04E-07	95% KM Chebyshev UCL	4.70E-07
97.5% KM Chebyshev UCL	5.62E-07	99% KM Chebyshev UCL	7.42E-07

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.352	Anderson-Darling GOF Test	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.268	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.408	k star (bias corrected MLE)	2.452
Theta hat (MLE)	8.45E-08	Theta star (bias corrected MLE)	1.17E-07
nu hat (MLE)	68.16	nu star (bias corrected)	49.05
Mean (detects)	2.88E-07		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.06E-07	Mean	0.00167
Maximum	0.01	Median	3.11E-07
SD	0.00389	CV	2.335
k hat (MLE)	0.113	k star (bias corrected MLE)	0.141
Theta hat (MLE)	0.0147	Theta star (bias corrected MLE)	0.0119
nu hat (MLE)	2.721	nu star (bias corrected)	3.374
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (3.37, α)	0.491	Adjusted Chi Square Value (3.37, β)	0.358
95% Gamma Approximate UCL (use when n>=50)	0.0114	95% Gamma Adjusted UCL (use when n<50)	0.0157
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	2.58E-07	SD (KM)	1.60E-07
Variance (KM)	2.56E-14	SE of Mean (KM)	4.87E-08
k hat (KM)	2.59	k star (KM)	1.998
nu hat (KM)	62.16	nu star (KM)	47.95
theta hat (KM)	9.94E-08	theta star (KM)	1.29E-07
80% gamma percentile (KM)	3.86E-07	90% gamma percentile (KM)	5.01E-07
95% gamma percentile (KM)	6.11E-07	99% gamma percentile (KM)	8.55E-07
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (47.95, α)	33.06	Adjusted Chi Square Value (47.95, β)	31.18
95% Gamma Approximate KM-UCL (use when n>=50)	3.74E-07	95% Gamma Adjusted KM-UCL (use when n<50)	3.96E-07
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.51E-07	Mean in Log Scale	-15.43
SD in Original Scale	1.74E-07	SD in Log Scale	0.738
95% t UCL (assumes normality of ROS data)	3.41E-07	95% Percentile Bootstrap UCL	3.30E-07
95% BCA Bootstrap UCL	3.41E-07	95% Bootstrap t UCL	3.76E-07
95% H-UCL (Log ROS)	4.53E-07		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-15.36	KM Geo Mean	2.14E-07
KM SD (logged)	0.601	95% Critical H Value (KM-Log)	2.272
KM Standard Error of Mean (logged)	0.183	95% H-UCL (KM -Log)	3.87E-07
KM SD (logged)	0.601	95% Critical H Value (KM-Log)	2.272
KM Standard Error of Mean (logged)	0.183		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.49E-07	Mean in Log Scale	-15.46
SD in Original Scale	1.76E-07	SD in Log Scale	0.79
95% t UCL (Assumes normality)	3.41E-07	95% H-Stat UCL	4.83E-07
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	3.45E-07		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

ATTACHMENT B. LANL ECORISK DATABASE FOR INORGANICS AND ORGANICS (MG/KG)

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Tetrachlorodibenzodioxin[2,3,7,8-]	Deer mouse (Mammalian omnivore)	0.00000058	0.0000038	
Tetrachlorodibenzodioxin[2,3,7,8-]	Earthworm (Soil-dwelling invertebrate)	5	10	
Tetrachlorodibenzodioxin[2,3,7,8-]	Gray fox (Mammalian top carnivore)	0.0001	0.00068	
Tetrachlorodibenzodioxin[2,3,7,8-]	Montane shrew (Mammalian insectivore)	0.00000029	0.0000019	MINIMUM
Tetrachlorodibenzodioxin[2,3,7,8-]	Mountain cottontail (Mammalian herbivore)	0.00004	0.00027	
Amino-2,6-dinitrotoluene[4-]	Deer mouse (Mammalian omnivore)	23	230	
Amino-2,6-dinitrotoluene[4-]	Earthworm (Soil-dwelling invertebrate)	18	180	
Amino-2,6-dinitrotoluene[4-]	Generic plant (Terrestrial autotroph - producer)	33	330	
Amino-2,6-dinitrotoluene[4-]	Gray fox (Mammalian top carnivore)	6700	67000	
Amino-2,6-dinitrotoluene[4-]	Montane shrew (Mammalian insectivore)	12	120	MINIMUM
Amino-2,6-dinitrotoluene[4-]	Mountain cottontail (Mammalian herbivore)	320	3200	
Amino-4,6-dinitrotoluene[2-]	Deer mouse (Mammalian omnivore)	23	230	
Amino-4,6-dinitrotoluene[2-]	Earthworm (Soil-dwelling invertebrate)	43	430	
Amino-4,6-dinitrotoluene[2-]	Generic plant (Terrestrial autotroph - producer)	14	140	MINIMUM
Amino-4,6-dinitrotoluene[2-]	Gray fox (Mammalian top carnivore)	9700	97000	
Amino-4,6-dinitrotoluene[2-]	Montane shrew (Mammalian insectivore)	16	160	
Amino-4,6-dinitrotoluene[2-]	Mountain cottontail (Mammalian herbivore)	110	1100	
Dinitrobenzene[1,3-]	American kestrel (Avian top carnivore)	120	1200	
Dinitrobenzene[1,3-]	American kestrel (insectivore / carnivore)	9.3	93	
Dinitrobenzene[1,3-]	American robin (Avian herbivore)	0.079	0.79	
Dinitrobenzene[1,3-]	American robin (Avian insectivore)	1.6	16	
Dinitrobenzene[1,3-]	American robin (Avian omnivore)	0.15	1.5	
Dinitrobenzene[1,3-]	Deer mouse (Mammalian omnivore)	0.072	0.16	MINIMUM
Dinitrobenzene[1,3-]	Gray fox (Mammalian top carnivore)	82	190	
Dinitrobenzene[1,3-]	Montane shrew (Mammalian insectivore)	0.95	2.2	
Dinitrobenzene[1,3-]	Mountain cottontail (Mammalian herbivore)	0.091	0.21	
Dinitrotoluene[2,4-]	Deer mouse (Mammalian omnivore)	20	200	
Dinitrotoluene[2,4-]	Earthworm (Soil-dwelling invertebrate)	18	180	
Dinitrotoluene[2,4-]	Generic plant (Terrestrial autotroph - producer)	6	60	MINIMUM
Dinitrotoluene[2,4-]	Gray fox (Mammalian top carnivore)	2000	20000	
Dinitrotoluene[2,4-]	Montane shrew (Mammalian insectivore)	14	140	
Dinitrotoluene[2,4-]	Mountain cottontail (Mammalian herbivore)	74	740	
Dinitrotoluene[2,6-]	American kestrel (Avian top carnivore)	18000	180000	
Dinitrotoluene[2,6-]	American kestrel (insectivore / carnivore)	680	6800	
Dinitrotoluene[2,6-]	American robin (Avian herbivore)	52	520	
Dinitrotoluene[2,6-]	American robin (Avian insectivore)	130	1300	
Dinitrotoluene[2,6-]	American robin (Avian omnivore)	74	740	
Dinitrotoluene[2,6-]	Deer mouse (Mammalian omnivore)	4	40	MINIMUM
Dinitrotoluene[2,6-]	Earthworm (Soil-dwelling invertebrate)	30	44	
Dinitrotoluene[2,6-]	Gray fox (Mammalian top carnivore)	1300	13000	
Dinitrotoluene[2,6-]	Montane shrew (Mammalian insectivore)	7.6	76	
Dinitrotoluene[2,6-]	Mountain cottontail (Mammalian herbivore)	6.7	67	
HMX	Deer mouse (Mammalian omnivore)	290	790	
HMX	Earthworm (Soil-dwelling invertebrate)	16	160	MINIMUM
HMX	Generic plant (Terrestrial autotroph - producer)	2700	3500	
HMX	Gray fox (Mammalian top carnivore)	59000	150000	
HMX	Montane shrew (Mammalian insectivore)	1100	2900	
HMX	Mountain cottontail (Mammalian herbivore)	410	1100	
Nitroglycerine	Deer mouse (Mammalian omnivore)	70	740	
Nitroglycerine	Earthworm (Soil-dwelling invertebrate)	13	130	MINIMUM
Nitroglycerine	Generic plant (Terrestrial autotroph - producer)	21	210	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Nitroglycerine	Gray fox (Mammalian top carnivore)	69000	730000	
Nitroglycerine	Montane shrew (Mammalian insectivore)	1200	13000	
Nitroglycerine	Mountain cottontail (Mammalian herbivore)	88	930	
Nitrotoluene[2-]	Deer mouse (Mammalian omnivore)	9.8	98	MINIMUM
Nitrotoluene[2-]	Gray fox (Mammalian top carnivore)	6000	60000	
Nitrotoluene[2-]	Montane shrew (Mammalian insectivore)	22	220	
Nitrotoluene[2-]	Mountain cottontail (Mammalian herbivore)	15	150	
Nitrotoluene[3-]	Deer mouse (Mammalian omnivore)	12	120	MINIMUM
Nitrotoluene[3-]	Gray fox (Mammalian top carnivore)	7000	70000	
Nitrotoluene[3-]	Montane shrew (Mammalian insectivore)	19	190	
Nitrotoluene[3-]	Mountain cottontail (Mammalian herbivore)	21	210	
Nitrotoluene[4-]	Deer mouse (Mammalian omnivore)	21	210	MINIMUM
Nitrotoluene[4-]	Gray fox (Mammalian top carnivore)	13000	130000	
Nitrotoluene[4-]	Montane shrew (Mammalian insectivore)	41	410	
Nitrotoluene[4-]	Mountain cottontail (Mammalian herbivore)	36	360	
PETN	Deer mouse (Mammalian omnivore)	100	1000	MINIMUM
PETN	Gray fox (Mammalian top carnivore)	47000	470000	
PETN	Montane shrew (Mammalian insectivore)	1000	10000	
PETN	Mountain cottontail (Mammalian herbivore)	120	1200	
RDX	American kestrel (Avian top carnivore)	780	1400	
RDX	American kestrel (insectivore / carnivore)	11	22	
RDX	American robin (Avian herbivore)	2.3	4.3	MINIMUM
RDX	American robin (Avian insectivore)	2.4	4.5	
RDX	American robin (Avian omnivore)	2.3	4.4	MINIMUM
RDX	Deer mouse (Mammalian omnivore)	16	51	
RDX	Earthworm (Soil-dwelling invertebrate)	8.4	15	
RDX	Gray fox (Mammalian top carnivore)	7000	22000	
RDX	Montane shrew (Mammalian insectivore)	16	53	
RDX	Mountain cottontail (Mammalian herbivore)	38	120	
Tetryl	Deer mouse (Mammalian omnivore)	1.5	7.2	MINIMUM
Tetryl	Gray fox (Mammalian top carnivore)	960	4600	
Tetryl	Montane shrew (Mammalian insectivore)	60	280	
Tetryl	Mountain cottontail (Mammalian herbivore)	1.8	8.9	
Trinitrobenzene[1,3,5-]	Deer mouse (Mammalian omnivore)	110	1100	
Trinitrobenzene[1,3,5-]	Earthworm (Soil-dwelling invertebrate)	10	28	MINIMUM
Trinitrobenzene[1,3,5-]	Gray fox (Mammalian top carnivore)	10000	100000	
Trinitrobenzene[1,3,5-]	Montane shrew (Mammalian insectivore)	720	7200	
Trinitrobenzene[1,3,5-]	Mountain cottontail (Mammalian herbivore)	150	1500	
Trinitrotoluene[2,4,6-]	American kestrel (Avian top carnivore)	3100	5700	
Trinitrotoluene[2,4,6-]	American kestrel (insectivore / carnivore)	1300	2400	
Trinitrotoluene[2,4,6-]	American robin (Avian herbivore)	7.5	13	MINIMUM
Trinitrotoluene[2,4,6-]	American robin (Avian insectivore)	120	220	
Trinitrotoluene[2,4,6-]	American robin (Avian omnivore)	14	26	
Trinitrotoluene[2,4,6-]	Deer mouse (Mammalian omnivore)	95	440	
Trinitrotoluene[2,4,6-]	Earthworm (Soil-dwelling invertebrate)	32	58	
Trinitrotoluene[2,4,6-]	Generic plant (Terrestrial autotroph - producer)	62	120	
Trinitrotoluene[2,4,6-]	Gray fox (Mammalian top carnivore)	26000	120000	
Trinitrotoluene[2,4,6-]	Montane shrew (Mammalian insectivore)	1900	9100	
Trinitrotoluene[2,4,6-]	Mountain cottontail (Mammalian herbivore)	110	540	
Aluminum	American kestrel (Avian top carnivore)			
Aluminum	American kestrel (insectivore / carnivore)			
Aluminum	American robin (Avian herbivore)			
Aluminum	American robin (Avian insectivore)			
Aluminum	American robin (Avian omnivore)			
Aluminum	Deer mouse (Mammalian omnivore)			

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Aluminum	Earthworm (Soil-dwelling invertebrate)			
Aluminum	Generic plant (Terrestrial autotroph - producer)			
Aluminum	Gray fox (Mammalian top carnivore)			
Aluminum	Montane shrew (Mammalian insectivore)			
Aluminum	Mountain cottontail (Mammalian herbivore)			
Antimony	Deer mouse (Mammalian omnivore)	2.3	23	MINIMUM
Antimony	Earthworm (Soil-dwelling invertebrate)	78	780	
Antimony	Generic plant (Terrestrial autotroph - producer)	11	58	
Antimony	Gray fox (Mammalian top carnivore)	46	460	
Antimony	Montane shrew (Mammalian insectivore)	7.9	79	
Antimony	Mountain cottontail (Mammalian herbivore)	2.7	27	
Arsenic	American kestrel (Avian top carnivore)	740	7400	
Arsenic	American kestrel (insectivore / carnivore)	100	1000	
Arsenic	American robin (Avian herbivore)	34	340	
Arsenic	American robin (Avian insectivore)	15	150	
Arsenic	American robin (Avian omnivore)	21	210	
Arsenic	Deer mouse (Mammalian omnivore)	32	51	
Arsenic	Earthworm (Soil-dwelling invertebrate)	6.8	68	MINIMUM
Arsenic	Generic plant (Terrestrial autotroph - producer)	18	91	
Arsenic	Gray fox (Mammalian top carnivore)	820	1300	
Arsenic	Montane shrew (Mammalian insectivore)	19	31	
Arsenic	Mountain cottontail (Mammalian herbivore)	110	180	
Barium	American kestrel (Avian top carnivore)	24000	44000	
Barium	American kestrel (insectivore / carnivore)	7500	13000	
Barium	American robin (Avian herbivore)	720	1200	
Barium	American robin (Avian insectivore)	820	1400	
Barium	American robin (Avian omnivore)	770	1300	
Barium	Deer mouse (Mammalian omnivore)	1800	8700	
Barium	Earthworm (Soil-dwelling invertebrate)	330	3200	
Barium	Generic plant (Terrestrial autotroph - producer)	110	260	MINIMUM
Barium	Gray fox (Mammalian top carnivore)	41000	190000	
Barium	Montane shrew (Mammalian insectivore)	2100	10000	
Barium	Mountain cottontail (Mammalian herbivore)	2900	14000	
Beryllium	Deer mouse (Mammalian omnivore)	56	560	
Beryllium	Earthworm (Soil-dwelling invertebrate)	40	400	
Beryllium	Generic plant (Terrestrial autotroph - producer)	2.5	25	MINIMUM
Beryllium	Gray fox (Mammalian top carnivore)	420	4200	
Beryllium	Montane shrew (Mammalian insectivore)	35	350	
Beryllium	Mountain cottontail (Mammalian herbivore)	89	890	
Boron	American kestrel (Avian top carnivore)	960	4700	
Boron	American kestrel (insectivore / carnivore)	37	180	
Boron	American robin (Avian herbivore)	2	10	MINIMUM
Boron	American robin (Avian insectivore)	7.1	35	
Boron	American robin (Avian omnivore)	3.1	15	
Boron	Deer mouse (Mammalian omnivore)	55	550	
Boron	Generic plant (Terrestrial autotroph - producer)	36	86	
Boron	Gray fox (Mammalian top carnivore)	21000	210000	
Boron	Montane shrew (Mammalian insectivore)	130	1300	
Boron	Mountain cottontail (Mammalian herbivore)	84	840	
Cadmium	American kestrel (Avian top carnivore)	430	2300	
Cadmium	American kestrel (insectivore / carnivore)	1.3	7.7	
Cadmium	American robin (Avian herbivore)	4.3	23	
Cadmium	American robin (Avian insectivore)	0.29	1.6	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Cadmium	American robin (Avian omnivore)	0.54	3	
Cadmium	Deer mouse (Mammalian omnivore)	0.5	6.8	
Cadmium	Earthworm (Soil-dwelling invertebrate)	140	760	
Cadmium	Generic plant (Terrestrial autotroph - producer)	32	160	
Cadmium	Gray fox (Mammalian top carnivore)	550	7400	
Cadmium	Montane shrew (Mammalian insectivore)	0.27	3.6	MINIMUM
Cadmium	Mountain cottontail (Mammalian herbivore)	10	140	
Chromium (total)	American kestrel (Avian top carnivore)	860	2700	
Chromium (total)	American kestrel (insectivore / carnivore)	170	560	
Chromium (total)	American robin (Avian herbivore)	51	160	
Chromium (total)	American robin (Avian insectivore)	23	73	MINIMUM
Chromium (total)	American robin (Avian omnivore)	32	100	
Chromium (total)	Deer mouse (Mammalian omnivore)	110	11000	
Chromium (total)	Gray fox (Mammalian top carnivore)	1800	180000	
Chromium (total)	Montane shrew (Mammalian insectivore)	63	6300	
Chromium (total)	Mountain cottontail (Mammalian herbivore)	410	41000	
Chromium(+6)	American kestrel (Avian top carnivore)	3600	36000	
Chromium(+6)	American kestrel (insectivore / carnivore)	1400	14000	
Chromium(+6)	American robin (Avian herbivore)	210	2100	
Chromium(+6)	American robin (Avian insectivore)	140	1400	
Chromium(+6)	American robin (Avian omnivore)	160	1600	
Chromium(+6)	Deer mouse (Mammalian omnivore)	850	5500	
Chromium(+6)	Earthworm (Soil-dwelling invertebrate)	0.34	3.4	MINIMUM
Chromium(+6)	Generic plant (Terrestrial autotroph - producer)	0.35	4	
Chromium(+6)	Gray fox (Mammalian top carnivore)	7200	46000	
Chromium(+6)	Montane shrew (Mammalian insectivore)	510	3300	
Chromium(+6)	Mountain cottontail (Mammalian herbivore)	1600	10000	
Cobalt	American kestrel (Avian top carnivore)	2300	5200	
Cobalt	American kestrel (insectivore / carnivore)	620	1400	
Cobalt	American robin (Avian herbivore)	130	300	
Cobalt	American robin (Avian insectivore)	76	170	
Cobalt	American robin (Avian omnivore)	97	210	
Cobalt	Deer mouse (Mammalian omnivore)	400	1000	
Cobalt	Generic plant (Terrestrial autotroph - producer)	13	130	MINIMUM
Cobalt	Gray fox (Mammalian top carnivore)	5400	14000	
Cobalt	Montane shrew (Mammalian insectivore)	240	640	
Cobalt	Mountain cottontail (Mammalian herbivore)	1000	2800	
Copper	American kestrel (Avian top carnivore)	1100	3500	
Copper	American kestrel (insectivore / carnivore)	80	240	
Copper	American robin (Avian herbivore)	34	100	
Copper	American robin (Avian insectivore)	14	43	MINIMUM
Copper	American robin (Avian omnivore)	20	60	
Copper	Deer mouse (Mammalian omnivore)	63	100	
Copper	Earthworm (Soil-dwelling invertebrate)	80	530	
Copper	Generic plant (Terrestrial autotroph - producer)	70	490	
Copper	Gray fox (Mammalian top carnivore)	4000	6700	
Copper	Montane shrew (Mammalian insectivore)	42	70	
Copper	Mountain cottontail (Mammalian herbivore)	260	430	
Cyanide (total)	American kestrel (Avian top carnivore)	0.59	5.9	
Cyanide (total)	American kestrel (insectivore / carnivore)	0.36	3.6	
Cyanide (total)	American robin (Avian herbivore)	0.1	1	
Cyanide (total)	American robin (Avian insectivore)	0.098	0.98	MINIMUM
Cyanide (total)	American robin (Avian omnivore)	0.099	0.99	
Cyanide (total)	Deer mouse (Mammalian omnivore)	330	3300	
Cyanide (total)	Gray fox (Mammalian top carnivore)	3300	33000	
Cyanide (total)	Montane shrew (Mammalian insectivore)	330	3300	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Cyanide (total)	Mountain cottontail (Mammalian herbivore)	790	7900	
Lead	American kestrel (Avian top carnivore)	540	1000	
Lead	American kestrel (insectivore / carnivore)	83	160	
Lead	American robin (Avian herbivore)	18	36	
Lead	American robin (Avian insectivore)	11	23	MINIMUM
Lead	American robin (Avian omnivore)	14	28	
Lead	Deer mouse (Mammalian omnivore)	120	230	
Lead	Earthworm (Soil-dwelling invertebrate)	1700	8400	
Lead	Generic plant (Terrestrial autotroph - producer)	120	570	
Lead	Gray fox (Mammalian top carnivore)	3700	7000	
Lead	Montane shrew (Mammalian insectivore)	93	170	
Lead	Mountain cottontail (Mammalian herbivore)	310	600	
Manganese	American kestrel (Avian top carnivore)	60000	120000	
Manganese	American kestrel (insectivore / carnivore)	24000	50000	
Manganese	American robin (Avian herbivore)	1300	2700	
Manganese	American robin (Avian insectivore)	2200	4700	
Manganese	American robin (Avian omnivore)	1600	3500	
Manganese	Deer mouse (Mammalian omnivore)	1400	5400	
Manganese	Earthworm (Soil-dwelling invertebrate)	450	4500	
Manganese	Generic plant (Terrestrial autotroph - producer)	220	1100	MINIMUM
Manganese	Gray fox (Mammalian top carnivore)	40000	150000	
Manganese	Montane shrew (Mammalian insectivore)	2800	10000	
Manganese	Mountain cottontail (Mammalian herbivore)	2000	7500	
Mercury (inorganic)	American kestrel (Avian top carnivore)	0.32	3.2	
Mercury (inorganic)	American kestrel (insectivore / carnivore)	0.058	0.58	
Mercury (inorganic)	American robin (Avian herbivore)	0.067	0.67	
Mercury (inorganic)	American robin (Avian insectivore)	0.013	0.13	MINIMUM
Mercury (inorganic)	American robin (Avian omnivore)	0.022	0.22	
Mercury (inorganic)	Deer mouse (Mammalian omnivore)	3	30	
Mercury (inorganic)	Earthworm (Soil-dwelling invertebrate)	0.05	0.5	
Mercury (inorganic)	Generic plant (Terrestrial autotroph - producer)	34	64	
Mercury (inorganic)	Gray fox (Mammalian top carnivore)	76	760	
Mercury (inorganic)	Montane shrew (Mammalian insectivore)	1.7	17	
Mercury (inorganic)	Mountain cottontail (Mammalian herbivore)	23	230	
Mercury (methyl)	American kestrel (Avian top carnivore)	0.009	0.09	
Mercury (methyl)	American kestrel (insectivore / carnivore)	0.0015	0.015	
Mercury (methyl)	American robin (Avian herbivore)	0.066	0.66	
Mercury (methyl)	American robin (Avian insectivore)	0.00035	0.0035	MINIMUM
Mercury (methyl)	American robin (Avian omnivore)	0.00071	0.0071	
Mercury (methyl)	Deer mouse (Mammalian omnivore)	0.0062	0.031	
Mercury (methyl)	Earthworm (Soil-dwelling invertebrate)	2.5	12	
Mercury (methyl)	Gray fox (Mammalian top carnivore)	0.14	0.74	
Mercury (methyl)	Montane shrew (Mammalian insectivore)	0.0031	0.015	
Mercury (methyl)	Mountain cottontail (Mammalian herbivore)	1.9	9.8	
Molybdenum	American kestrel (Avian top carnivore)	1100	11000	
Molybdenum	American kestrel (insectivore / carnivore)	90	900	
Molybdenum	American robin (Avian herbivore)	18	180	
Molybdenum	American robin (Avian insectivore)	15	150	MINIMUM
Molybdenum	American robin (Avian omnivore)	16	160	
Nickel	American kestrel (Avian top carnivore)	2000	8100	
Nickel	American kestrel (insectivore / carnivore)	110	440	
Nickel	American robin (Avian herbivore)	120	500	
Nickel	American robin (Avian insectivore)	20	81	
Nickel	American robin (Avian omnivore)	35	130	
Nickel	Deer mouse (Mammalian omnivore)	20	40	
Nickel	Earthworm (Soil-dwelling invertebrate)	280	1300	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Nickel	Generic plant (Terrestrial autotroph - producer)	38	270	
Nickel	Gray fox (Mammalian top carnivore)	1200	2500	
Nickel	Montane shrew (Mammalian insectivore)	10	21	MINIMUM
Nickel	Mountain cottontail (Mammalian herbivore)	270	540	
Perchlorate Ion	American kestrel (Avian top carnivore)	2	4	
Perchlorate Ion	American kestrel (insectivore / carnivore)	3.9	8	
Perchlorate Ion	American robin (Avian herbivore)	0.12	0.24	MINIMUM
Perchlorate Ion	American robin (Avian insectivore)	31	64	
Perchlorate Ion	American robin (Avian omnivore)	0.24	0.49	
Perchlorate Ion	Deer mouse (Mammalian omnivore)	0.21	1	
Perchlorate Ion	Earthworm (Soil-dwelling invertebrate)	3.5	35	
Perchlorate Ion	Generic plant (Terrestrial autotroph - producer)	40	80	
Perchlorate Ion	Gray fox (Mammalian top carnivore)	3.3	16	
Perchlorate Ion	Montane shrew (Mammalian insectivore)	31	150	
Perchlorate Ion	Mountain cottontail (Mammalian herbivore)	0.26	1.3	
Selenium	American kestrel (Avian top carnivore)	74	140	
Selenium	American kestrel (insectivore / carnivore)	3.7	7.5	
Selenium	American robin (Avian herbivore)	0.98	1.9	
Selenium	American robin (Avian insectivore)	0.71	1.4	
Selenium	American robin (Avian omnivore)	0.83	1.6	
Selenium	Deer mouse (Mammalian omnivore)	0.82	1.2	
Selenium	Earthworm (Soil-dwelling invertebrate)	4.1	41	
Selenium	Generic plant (Terrestrial autotroph - producer)	0.52	3	MINIMUM
Selenium	Gray fox (Mammalian top carnivore)	92	130	
Selenium	Montane shrew (Mammalian insectivore)	0.7	1	
Selenium	Mountain cottontail (Mammalian herbivore)	2.2	3.4	
Silver	American kestrel (Avian top carnivore)	600	6000	
Silver	American kestrel (insectivore / carnivore)	13	130	
Silver	American robin (Avian herbivore)	10	100	
Silver	American robin (Avian insectivore)	2.6	26	MINIMUM
Silver	American robin (Avian omnivore)	4.1	41	
Silver	Deer mouse (Mammalian omnivore)	24	240	
Silver	Generic plant (Terrestrial autotroph - producer)	560	2800	
Silver	Gray fox (Mammalian top carnivore)	4400	44000	
Silver	Montane shrew (Mammalian insectivore)	14	140	
Silver	Mountain cottontail (Mammalian herbivore)	150	1500	
Thallium	American kestrel (Avian top carnivore)	100	1000	
Thallium	American kestrel (insectivore / carnivore)	48	480	
Thallium	American robin (Avian herbivore)	6.9	69	
Thallium	American robin (Avian insectivore)	4.5	45	
Thallium	American robin (Avian omnivore)	5.5	55	
Thallium	Deer mouse (Mammalian omnivore)	0.72	7.2	
Thallium	Generic plant (Terrestrial autotroph - producer)	0.05	0.5	MINIMUM
Thallium	Gray fox (Mammalian top carnivore)	5	50	
Thallium	Montane shrew (Mammalian insectivore)	0.42	4.2	
Thallium	Mountain cottontail (Mammalian herbivore)	1.2	12	
Vanadium	American kestrel (Avian top carnivore)	110	230	
Vanadium	American kestrel (insectivore / carnivore)	56	110	
Vanadium	American robin (Avian herbivore)	6.8	13	
Vanadium	American robin (Avian insectivore)	4.7	9.5	MINIMUM
Vanadium	American robin (Avian omnivore)	5.5	11	
Vanadium	Deer mouse (Mammalian omnivore)	470	1000	
Vanadium	Generic plant (Terrestrial autotroph - producer)	60	80	
Vanadium	Gray fox (Mammalian top carnivore)	3200	6900	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Vanadium	Montane shrew (Mammalian insectivore)	290	610	
Vanadium	Mountain cottontail (Mammalian herbivore)	740	1500	
Zinc	American kestrel (Avian top carnivore)	2600	7000	
Zinc	American kestrel (insectivore / carnivore)	220	590	
Zinc	American robin (Avian herbivore)	330	120	
Zinc	American robin (Avian insectivore)	47	120	MINIMUM
Zinc	American robin (Avian omnivore)	83	220	
Zinc	Deer mouse (Mammalian omnivore)	170	1700	
Zinc	Earthworm (Soil-dwelling invertebrate)	120	930	
Zinc	Generic plant (Terrestrial autotroph - producer)	160	810	
Zinc	Gray fox (Mammalian top carnivore)	9600	94000	
Zinc	Montane shrew (Mammalian insectivore)	99	980	
Zinc	Mountain cottontail (Mammalian herbivore)	1800	18000	
Acenaphthene	Deer mouse (Mammalian omnivore)	160	1600	
Acenaphthene	Generic plant (Terrestrial autotroph - producer)	0.25	2	MINIMUM
Acenaphthene	Gray fox (Mammalian top carnivore)	29000	290000	
Acenaphthene	Montane shrew (Mammalian insectivore)	130	1300	
Acenaphthene	Mountain cottontail (Mammalian herbivore)	530	5300	
Acenaphthylene	Deer mouse (Mammalian omnivore)	160	1600	
Acenaphthylene	Gray fox (Mammalian top carnivore)	28000	280000	
Acenaphthylene	Montane shrew (Mammalian insectivore)	120	1200	MINIMUM
Acenaphthylene	Mountain cottontail (Mammalian herbivore)	540	5400	
Anthracene	Deer mouse (Mammalian omnivore)	300	3000	
Anthracene	Generic plant (Terrestrial autotroph - producer)	6.8	9	MINIMUM
Anthracene	Gray fox (Mammalian top carnivore)	38000	380000	
Anthracene	Montane shrew (Mammalian insectivore)	210	2100	
Anthracene	Mountain cottontail (Mammalian herbivore)	1200	12000	
Benzo(a)anthracene	American kestrel (Avian top carnivore)	28	280	
Benzo(a)anthracene	American kestrel (insectivore / carnivore)	6.4	64	
Benzo(a)anthracene	American robin (Avian herbivore)	0.73	7.3	MINIMUM
Benzo(a)anthracene	American robin (Avian insectivore)	0.88	8.8	
Benzo(a)anthracene	American robin (Avian omnivore)	0.8	8	
Benzo(a)anthracene	Deer mouse (Mammalian omnivore)	3.4	34	
Benzo(a)anthracene	Generic plant (Terrestrial autotroph - producer)	18	180	
Benzo(a)anthracene	Gray fox (Mammalian top carnivore)	110	1100	
Benzo(a)anthracene	Montane shrew (Mammalian insectivore)	4	40	
Benzo(a)anthracene	Mountain cottontail (Mammalian herbivore)	6.1	61	
Benzo(a)pyrene	Deer mouse (Mammalian omnivore)	84	260	
Benzo(a)pyrene	Gray fox (Mammalian top carnivore)	3400	11000	
Benzo(a)pyrene	Montane shrew (Mammalian insectivore)	62	190	MINIMUM
Benzo(a)pyrene	Mountain cottontail (Mammalian herbivore)	260	830	
Benzo(b)fluoranthene	Deer mouse (Mammalian omnivore)	51	510	
Benzo(b)fluoranthene	Generic plant (Terrestrial autotroph - producer)	18	180	MINIMUM
Benzo(b)fluoranthene	Gray fox (Mammalian top carnivore)	2400	24000	
Benzo(b)fluoranthene	Montane shrew (Mammalian insectivore)	44	440	
Benzo(b)fluoranthene	Mountain cottontail (Mammalian herbivore)	130	1300	
Benzo(g,h,i)perylene	Deer mouse (Mammalian omnivore)	46	460	
Benzo(g,h,i)perylene	Gray fox (Mammalian top carnivore)	3600	36000	
Benzo(g,h,i)perylene	Montane shrew (Mammalian insectivore)	25	250	MINIMUM
Benzo(g,h,i)perylene	Mountain cottontail (Mammalian herbivore)	470	4700	
Benzo(k)fluoranthene	Deer mouse (Mammalian omnivore)	99	990	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Benzo(k)fluoranthene	Gray fox (Mammalian top carnivore)	4300	43000	
Benzo(k)fluoranthene	Montane shrew (Mammalian insectivore)	71	710	MINIMUM
Benzo(k)fluoranthene	Mountain cottontail (Mammalian herbivore)	330	3300	
Chrysene	Deer mouse (Mammalian omnivore)	3.1	31	
Chrysene	Gray fox (Mammalian top carnivore)	110	1100	
Chrysene	Montane shrew (Mammalian insectivore)	3.1	31	MINIMUM
Chrysene	Mountain cottontail (Mammalian herbivore)	6.3	63	
Dibenzo(a,h)anthracene	Deer mouse (Mammalian omnivore)	22	220	
Dibenzo(a,h)anthracene	Gray fox (Mammalian top carnivore)	850	8500	
Dibenzo(a,h)anthracene	Montane shrew (Mammalian insectivore)	14	140	MINIMUM
Dibenzo(a,h)anthracene	Mountain cottontail (Mammalian herbivore)	84	840	
Fluoranthene	Deer mouse (Mammalian omnivore)	38	380	
Fluoranthene	Earthworm (Soil-dwelling invertebrate)	10	23	MINIMUM
Fluoranthene	Gray fox (Mammalian top carnivore)	3900	39000	
Fluoranthene	Montane shrew (Mammalian insectivore)	22	220	
Fluoranthene	Mountain cottontail (Mammalian herbivore)	270	2700	
Fluorene	Deer mouse (Mammalian omnivore)	340	680	
Fluorene	Earthworm (Soil-dwelling invertebrate)	3.7	19	MINIMUM
Fluorene	Gray fox (Mammalian top carnivore)	50000	100000	
Fluorene	Montane shrew (Mammalian insectivore)	250	510	
Fluorene	Mountain cottontail (Mammalian herbivore)	1100	2300	
Indeno(1,2,3-cd)pyrene	Deer mouse (Mammalian omnivore)	110	1100	
Indeno(1,2,3-cd)pyrene	Gray fox (Mammalian top carnivore)	4600	46000	
Indeno(1,2,3-cd)pyrene	Montane shrew (Mammalian insectivore)	71	710	MINIMUM
Indeno(1,2,3-cd)pyrene	Mountain cottontail (Mammalian herbivore)	510	5100	
Methylnaphthalene[2-]	Deer mouse (Mammalian omnivore)	24	240	
Methylnaphthalene[2-]	Gray fox (Mammalian top carnivore)	4900	49000	
Methylnaphthalene[2-]	Montane shrew (Mammalian insectivore)	16	160	MINIMUM
Methylnaphthalene[2-]	Mountain cottontail (Mammalian herbivore)	110	1100	
Naphthalene	American kestrel (Avian top carnivore)	2100	21000	
Naphthalene	American kestrel (insectivore / carnivore)	78	780	
Naphthalene	American robin (Avian herbivore)	3.4	34	
Naphthalene	American robin (Avian insectivore)	15	150	
Naphthalene	American robin (Avian omnivore)	5.7	57	
Naphthalene	Deer mouse (Mammalian omnivore)	9.6	27	
Naphthalene	Generic plant (Terrestrial autotroph - producer)	1	10	MINIMUM
Naphthalene	Gray fox (Mammalian top carnivore)	5800	16000	
Naphthalene	Montane shrew (Mammalian insectivore)	28	79	
Naphthalene	Mountain cottontail (Mammalian herbivore)	14	40	
Phenanthrene	Deer mouse (Mammalian omnivore)	15	150	
Phenanthrene	Earthworm (Soil-dwelling invertebrate)	5.5	12	MINIMUM
Phenanthrene	Gray fox (Mammalian top carnivore)	1900	19000	
Phenanthrene	Montane shrew (Mammalian insectivore)	11	110	
Phenanthrene	Mountain cottontail (Mammalian herbivore)	62	620	
Pyrene	American kestrel (Avian top carnivore)	3000	30000	
Pyrene	American kestrel (insectivore / carnivore)	160	1600	
Pyrene	American robin (Avian herbivore)	68	680	
Pyrene	American robin (Avian insectivore)	33	330	
Pyrene	American robin (Avian omnivore)	44	440	
Pyrene	Deer mouse (Mammalian omnivore)	31	310	
Pyrene	Earthworm (Soil-dwelling invertebrate)	10	20	MINIMUM
Pyrene	Gray fox (Mammalian top carnivore)	3100	31000	
Pyrene	Montane shrew (Mammalian insectivore)	23	230	
Pyrene	Mountain cottontail (Mammalian herbivore)	110	1100	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Aroclor-1016	Deer mouse (Mammalian omnivore)	2	5.9	
Aroclor-1016	Gray fox (Mammalian top carnivore)	250	720	
Aroclor-1016	Montane shrew (Mammalian insectivore)	1.1	3.1	MINIMUM
Aroclor-1016	Mountain cottontail (Mammalian herbivore)	48	130	
Aroclor-1242	American kestrel (Avian top carnivore)	6.2	62	
Aroclor-1242	American kestrel (insectivore / carnivore)	0.19	1.9	
Aroclor-1242	American robin (Avian herbivore)	0.92	9.2	
Aroclor-1242	American robin (Avian insectivore)	0.041	0.41	MINIMUM
Aroclor-1242	American robin (Avian omnivore)	0.078	0.78	
Aroclor-1242	Deer mouse (Mammalian omnivore)	0.75	3	
Aroclor-1242	Gray fox (Mammalian top carnivore)	100	400	
Aroclor-1242	Montane shrew (Mammalian insectivore)	0.39	1.5	
Aroclor-1242	Mountain cottontail (Mammalian herbivore)	27	110	
Aroclor-1248	American kestrel (Avian top carnivore)	6.3	63	
Aroclor-1248	American kestrel (insectivore / carnivore)	0.19	1.9	
Aroclor-1248	American robin (Avian herbivore)	0.94	9.4	
Aroclor-1248	American robin (Avian insectivore)	0.041	0.41	
Aroclor-1248	American robin (Avian omnivore)	0.078	0.78	
Aroclor-1248	Deer mouse (Mammalian omnivore)	0.014	0.14	
Aroclor-1248	Gray fox (Mammalian top carnivore)	1.9	19	
Aroclor-1248	Montane shrew (Mammalian insectivore)	0.0073	0.073	MINIMUM
Aroclor-1248	Mountain cottontail (Mammalian herbivore)	0.53	5.3	
Aroclor-1254	American kestrel (Avian top carnivore)	7.6	76	
Aroclor-1254	American kestrel (insectivore / carnivore)	0.19	1.9	
Aroclor-1254	American robin (Avian herbivore)	1.1	11	
Aroclor-1254	American robin (Avian insectivore)	0.041	0.41	MINIMUM
Aroclor-1254	American robin (Avian omnivore)	0.079	0.79	
Aroclor-1254	Deer mouse (Mammalian omnivore)	0.87	4.8	
Aroclor-1254	Generic plant (Terrestrial autotroph - producer)	160	620	
Aroclor-1254	Gray fox (Mammalian top carnivore)	7.2	72	
Aroclor-1254	Montane shrew (Mammalian insectivore)	0.45	2.4	
Aroclor-1254	Mountain cottontail (Mammalian herbivore)	44	240	
Aroclor-1260	American kestrel (Avian top carnivore)	400	560	
Aroclor-1260	American kestrel (insectivore / carnivore)	4.2	5.9	
Aroclor-1260	American robin (Avian herbivore)	37	52	
Aroclor-1260	American robin (Avian insectivore)	0.88	1.2	MINIMUM
Aroclor-1260	American robin (Avian omnivore)	1.7	2.4	
Aroclor-1260	Deer mouse (Mammalian omnivore)	20	48	
Aroclor-1260	Gray fox (Mammalian top carnivore)	15	150	
Aroclor-1260	Montane shrew (Mammalian insectivore)	10	24	
Aroclor-1260	Mountain cottontail (Mammalian herbivore)	1800	4500	
Benzoic Acid	Deer mouse (Mammalian omnivore)	1.3	13	
Benzoic Acid	Gray fox (Mammalian top carnivore)	2000	20000	
Benzoic Acid	Montane shrew (Mammalian insectivore)	1	10	MINIMUM
Benzoic Acid	Mountain cottontail (Mammalian herbivore)	4.6	46	
Bis(2-ethylhexyl)phthalate	American kestrel (Avian top carnivore)	9.3	93	
Bis(2-ethylhexyl)phthalate	American kestrel (insectivore / carnivore)	0.096	0.96	
Bis(2-ethylhexyl)phthalate	American robin (Avian herbivore)	16	160	
Bis(2-ethylhexyl)phthalate	American robin (Avian insectivore)	0.02	0.2	MINIMUM
Bis(2-ethylhexyl)phthalate	American robin (Avian omnivore)	0.04	0.4	
Bis(2-ethylhexyl)phthalate	Deer mouse (Mammalian omnivore)	1.1	11	
Bis(2-ethylhexyl)phthalate	Gray fox (Mammalian top carnivore)	500	5000	
Bis(2-ethylhexyl)phthalate	Montane shrew (Mammalian insectivore)	0.6	6	
Bis(2-ethylhexyl)phthalate	Mountain cottontail (Mammalian herbivore)	1900	19000	
Butyl Benzyl Phthalate	Deer mouse (Mammalian omnivore)	160	1600	
Butyl Benzyl Phthalate	Gray fox (Mammalian top carnivore)	23000	230000	
Butyl Benzyl Phthalate	Montane shrew (Mammalian insectivore)	90	900	MINIMUM

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Butyl Benzyl Phthalate	Mountain cottontail (Mammalian herbivore)	2400	24000	
Carbazole	Deer mouse (Mammalian omnivore)	79	790	MINIMUM
Carbazole	Gray fox (Mammalian top carnivore)	13000	130000	
Carbazole	Montane shrew (Mammalian insectivore)	110	1100	
Carbazole	Mountain cottontail (Mammalian herbivore)	140	1400	
Chlorobenzene	Deer mouse (Mammalian omnivore)	53	530	
Chlorobenzene	Earthworm (Soil-dwelling invertebrate)	2.4	24	MINIMUM
Chlorobenzene	Gray fox (Mammalian top carnivore)	25000	250000	
Chlorobenzene	Montane shrew (Mammalian insectivore)	43	430	
Chlorobenzene	Mountain cottontail (Mammalian herbivore)	170	1700	
Chlorophenol[2-]	American kestrel (Avian top carnivore)	310	3100	
Chlorophenol[2-]	American kestrel (insectivore / carnivore)	14	140	
Chlorophenol[2-]	American robin (Avian herbivore)	0.39	3.9	MINIMUM
Chlorophenol[2-]	American robin (Avian insectivore)	2.6	26	
Chlorophenol[2-]	American robin (Avian omnivore)	0.68	6.8	
Chlorophenol[2-]	Deer mouse (Mammalian omnivore)	0.54	5.4	
Chlorophenol[2-]	Gray fox (Mammalian top carnivore)	340	3400	
Chlorophenol[2-]	Montane shrew (Mammalian insectivore)	2.3	23	
Chlorophenol[2-]	Mountain cottontail (Mammalian herbivore)	0.74	7.4	
Dibenzofuran	Generic plant (Terrestrial autotroph - producer)	6.1	61	MINIMUM
Diethyl Phthalate	Deer mouse (Mammalian omnivore)	3600	36000	
Diethyl Phthalate	Generic plant (Terrestrial autotroph - producer)	100	1000	MINIMUM
Diethyl Phthalate	Gray fox (Mammalian top carnivore)	2500000	25000000	
Diethyl Phthalate	Montane shrew (Mammalian insectivore)	3600	36000	
Diethyl Phthalate	Mountain cottontail (Mammalian herbivore)	8800	88000	
Dimethyl Phthalate	Deer mouse (Mammalian omnivore)	38	460	
Dimethyl Phthalate	Earthworm (Soil-dwelling invertebrate)	10	100	MINIMUM
Dimethyl Phthalate	Gray fox (Mammalian top carnivore)	48000	590000	
Dimethyl Phthalate	Montane shrew (Mammalian insectivore)	80	980	
Dimethyl Phthalate	Mountain cottontail (Mammalian herbivore)	60	740	
Di-n-Butyl Phthalate	American kestrel (Avian top carnivore)	2	20	
Di-n-Butyl Phthalate	American kestrel (insectivore / carnivore)	0.052	0.52	
Di-n-Butyl Phthalate	American robin (Avian herbivore)	0.38	3.8	
Di-n-Butyl Phthalate	American robin (Avian insectivore)	0.011	0.11	MINIMUM
Di-n-Butyl Phthalate	American robin (Avian omnivore)	0.021	0.21	
Di-n-Butyl Phthalate	Deer mouse (Mammalian omnivore)	360	860	
Di-n-Butyl Phthalate	Generic plant (Terrestrial autotroph - producer)	160	600	
Di-n-Butyl Phthalate	Gray fox (Mammalian top carnivore)	62000	140000	
Di-n-Butyl Phthalate	Montane shrew (Mammalian insectivore)	180	450	
Di-n-Butyl Phthalate	Mountain cottontail (Mammalian herbivore)	17000	40000	
Di-n-octylphthalate	Deer mouse (Mammalian omnivore)	1.8	18	
Di-n-octylphthalate	Gray fox (Mammalian top carnivore)	1300	13000	
Di-n-octylphthalate	Montane shrew (Mammalian insectivore)	0.91	9.1	MINIMUM
Di-n-octylphthalate	Mountain cottontail (Mammalian herbivore)	8400	84000	
Methylphenol[2-]	Deer mouse (Mammalian omnivore)	580	5800	
Methylphenol[2-]	Generic plant (Terrestrial autotroph - producer)	0.67	7	MINIMUM
Methylphenol[2-]	Gray fox (Mammalian top carnivore)	160000	1600000	
Methylphenol[2-]	Montane shrew (Mammalian insectivore)	1500	15000	
Methylphenol[2-]	Mountain cottontail (Mammalian herbivore)	880	8800	
Methylphenol[3-]	Generic plant (Terrestrial autotroph - producer)	0.69	7	MINIMUM
Nitroaniline[2-]	Deer mouse (Mammalian omnivore)	5.3	10	MINIMUM

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Nitroaniline[2-]	Gray fox (Mammalian top carnivore)	2200	4400	
Nitroaniline[2-]	Montane shrew (Mammalian insectivore)	6.5	13	
Nitroaniline[2-]	Mountain cottontail (Mammalian herbivore)	11	22	
Nitrobenzene	Deer mouse (Mammalian omnivore)	4.8	48	
Nitrobenzene	Earthworm (Soil-dwelling invertebrate)	2.2	22	MINIMUM
Nitrobenzene	Gray fox (Mammalian top carnivore)	4100	41000	
Nitrobenzene	Montane shrew (Mammalian insectivore)	21	210	
Nitrobenzene	Mountain cottontail (Mammalian herbivore)	6.7	67	
Pentachloronitrobenzene	American kestrel (Avian top carnivore)	110	1100	
Pentachloronitrobenzene	American kestrel (insectivore / carnivore)	3.3	33	
Pentachloronitrobenzene	American robin (Avian herbivore)	21	210	
Pentachloronitrobenzene	American robin (Avian insectivore)	0.7	7	MINIMUM
Pentachloronitrobenzene	American robin (Avian omnivore)	1.3	13	
Pentachloronitrobenzene	Deer mouse (Mammalian omnivore)	22	220	
Pentachloronitrobenzene	Gray fox (Mammalian top carnivore)	3500	35000	
Pentachloronitrobenzene	Montane shrew (Mammalian insectivore)	11	110	
Pentachloronitrobenzene	Mountain cottontail (Mammalian herbivore)	930	9300	
Pentachlorophenol	American kestrel (Avian top carnivore)	57	570	
Pentachlorophenol	American kestrel (insectivore / carnivore)	1.7	17	
Pentachlorophenol	American robin (Avian herbivore)	29	290	
Pentachlorophenol	American robin (Avian insectivore)	0.36	3.6	MINIMUM
Pentachlorophenol	American robin (Avian omnivore)	0.72	7.2	
Pentachlorophenol	Deer mouse (Mammalian omnivore)	1.5	15	
Pentachlorophenol	Earthworm (Soil-dwelling invertebrate)	31	150	
Pentachlorophenol	Generic plant (Terrestrial autotroph - producer)	5	50	
Pentachlorophenol	Gray fox (Mammalian top carnivore)	230	2300	
Pentachlorophenol	Montane shrew (Mammalian insectivore)	0.81	8.1	
Pentachlorophenol	Mountain cottontail (Mammalian herbivore)	180	1800	
Phenol	Deer mouse (Mammalian omnivore)	37	370	
Phenol	Earthworm (Soil-dwelling invertebrate)	1.8	18	
Phenol	Generic plant (Terrestrial autotroph - producer)	0.79	8	MINIMUM
Phenol	Gray fox (Mammalian top carnivore)	43000	430000	
Phenol	Montane shrew (Mammalian insectivore)	640	6400	
Phenol	Mountain cottontail (Mammalian herbivore)	47	470	
Acetone	American kestrel (Avian top carnivore)	66000	660000	
Acetone	American kestrel (insectivore / carnivore)	840	8400	
Acetone	American robin (Avian herbivore)	7.5	75	
Acetone	American robin (Avian insectivore)	170	1700	
Acetone	American robin (Avian omnivore)	14	140	
Acetone	Deer mouse (Mammalian omnivore)	1.2	6.3	MINIMUM
Acetone	Gray fox (Mammalian top carnivore)	7800	39000	
Acetone	Montane shrew (Mammalian insectivore)	15	79	
Acetone	Mountain cottontail (Mammalian herbivore)	1.6	8	
Benzene	Deer mouse (Mammalian omnivore)	24	240	MINIMUM
Benzene	Gray fox (Mammalian top carnivore)	18000	180000	
Benzene	Montane shrew (Mammalian insectivore)	49	490	
Benzene	Mountain cottontail (Mammalian herbivore)	38	380	
Benzyl Alcohol	Deer mouse (Mammalian omnivore)	120	1200	MINIMUM
Benzyl Alcohol	Gray fox (Mammalian top carnivore)	110000	1100000	
Benzyl Alcohol	Montane shrew (Mammalian insectivore)	270	2700	
Benzyl Alcohol	Mountain cottontail (Mammalian herbivore)	190	1900	
Butanone[2-]	Deer mouse (Mammalian omnivore)	350	920	MINIMUM
Butanone[2-]	Gray fox (Mammalian top carnivore)	1300000	3500000	
Butanone[2-]	Montane shrew (Mammalian insectivore)	2700	6900	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Butanone[2-]	Mountain cottontail (Mammalian herbivore)	470	1200	
Carbon Disulfide	Deer mouse (Mammalian omnivore)	0.81	8.1	MINIMUM
Carbon Disulfide	Gray fox (Mammalian top carnivore)	190	1900	
Carbon Disulfide	Montane shrew (Mammalian insectivore)	1.2	12	
Carbon Disulfide	Mountain cottontail (Mammalian herbivore)	1.4	14	
Chloroaniline[4-]	Earthworm (Soil-dwelling invertebrate)	1.8	18	
Chloroaniline[4-]	Generic plant (Terrestrial autotroph - producer)	1	10	MINIMUM
Chloroform	Deer mouse (Mammalian omnivore)	8	21	MINIMUM
Chloroform	Gray fox (Mammalian top carnivore)	8900	24000	
Chloroform	Montane shrew (Mammalian insectivore)	8.2	22	
Chloroform	Mountain cottontail (Mammalian herbivore)	19	52	
Dichlorobenzene[1,2-]	Deer mouse (Mammalian omnivore)	1.5	15	
Dichlorobenzene[1,2-]	Gray fox (Mammalian top carnivore)	480	4800	
Dichlorobenzene[1,2-]	Montane shrew (Mammalian insectivore)	0.92	9.2	MINIMUM
Dichlorobenzene[1,2-]	Mountain cottontail (Mammalian herbivore)	12	120	
Dichlorobenzene[1,3-]	Deer mouse (Mammalian omnivore)	1.2	12	
Dichlorobenzene[1,3-]	Gray fox (Mammalian top carnivore)	380	3800	
Dichlorobenzene[1,3-]	Montane shrew (Mammalian insectivore)	0.74	7.4	MINIMUM
Dichlorobenzene[1,3-]	Mountain cottontail (Mammalian herbivore)	13	130	
Dichlorobenzene[1,4-]	Deer mouse (Mammalian omnivore)	1.5	6	
Dichlorobenzene[1,4-]	Earthworm (Soil-dwelling invertebrate)	1.2	12	
Dichlorobenzene[1,4-]	Gray fox (Mammalian top carnivore)	470	1800	
Dichlorobenzene[1,4-]	Montane shrew (Mammalian insectivore)	0.89	3.5	MINIMUM
Dichlorobenzene[1,4-]	Mountain cottontail (Mammalian herbivore)	12	49	
Dichloroethane[1,1-]	Deer mouse (Mammalian omnivore)	210	2100	MINIMUM
Dichloroethane[1,1-]	Gray fox (Mammalian top carnivore)	250000	2500000	
Dichloroethane[1,1-]	Montane shrew (Mammalian insectivore)	290	2900	
Dichloroethane[1,1-]	Mountain cottontail (Mammalian herbivore)	410	4100	
Dichloroethane[1,2-]	American kestrel (Avian top carnivore)	1300	2700	
Dichloroethane[1,2-]	American kestrel (insectivore / carnivore)	22	44	
Dichloroethane[1,2-]	American robin (Avian herbivore)	0.85	1.6	MINIMUM
Dichloroethane[1,2-]	American robin (Avian insectivore)	4.5	9	
Dichloroethane[1,2-]	American robin (Avian omnivore)	1.4	2.8	
Dichloroethane[1,2-]	Deer mouse (Mammalian omnivore)	27	270	
Dichloroethane[1,2-]	Gray fox (Mammalian top carnivore)	36000	360000	
Dichloroethane[1,2-]	Montane shrew (Mammalian insectivore)	91	910	
Dichloroethane[1,2-]	Mountain cottontail (Mammalian herbivore)	39	390	
Dichloroethene[1,1-]	Deer mouse (Mammalian omnivore)	14	140	
Dichloroethene[1,1-]	Gray fox (Mammalian top carnivore)	14000	140000	
Dichloroethene[1,1-]	Montane shrew (Mammalian insectivore)	11	110	MINIMUM
Dichloroethene[1,1-]	Mountain cottontail (Mammalian herbivore)	44	440	
Dichloroethene[cis/trans-1,2-]	Deer mouse (Mammalian omnivore)	25	250	
Dichloroethene[cis/trans-1,2-]	Gray fox (Mammalian top carnivore)	25000	250000	
Dichloroethene[cis/trans-1,2-]	Montane shrew (Mammalian insectivore)	24	240	MINIMUM
Dichloroethene[cis/trans-1,2-]	Mountain cottontail (Mammalian herbivore)	64	640	
Diphenylamine	American kestrel (Avian top carnivore)	3900	6500	
Diphenylamine	American kestrel (insectivore / carnivore)	49	81	
Diphenylamine	American robin (Avian herbivore)	78	130	
Diphenylamine	American robin (Avian insectivore)	10	16	MINIMUM
Diphenylamine	American robin (Avian omnivore)	17	29	
Hexachlorobenzene	American kestrel (Avian top carnivore)	12	120	
Hexachlorobenzene	American kestrel (insectivore / carnivore)	0.37	3.7	
Hexachlorobenzene	American robin (Avian herbivore)	83	830	
Hexachlorobenzene	American robin (Avian insectivore)	0.079	0.79	MINIMUM

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Hexachlorobenzene	American robin (Avian omnivore)	0.15	1.5	
Hexachlorobenzene	Deer mouse (Mammalian omnivore)	0.39	3.9	
Hexachlorobenzene	Earthworm (Soil-dwelling invertebrate)	10	100	
Hexachlorobenzene	Generic plant (Terrestrial autotroph - producer)	10	100	
Hexachlorobenzene	Gray fox (Mammalian top carnivore)	59	590	
Hexachlorobenzene	Montane shrew (Mammalian insectivore)	0.2	2	
Hexachlorobenzene	Mountain cottontail (Mammalian herbivore)	910	9100	
Hexanone[2-]	American kestrel (Avian top carnivore)	290	2900	
Hexanone[2-]	American kestrel (insectivore / carnivore)	1.7	17	
Hexanone[2-]	American robin (Avian herbivore)	0.47	4.7	
Hexanone[2-]	American robin (Avian insectivore)	0.36	3.6	MINIMUM
Hexanone[2-]	American robin (Avian omnivore)	0.41	4.1	
Hexanone[2-]	Deer mouse (Mammalian omnivore)	6.1	23	
Hexanone[2-]	Gray fox (Mammalian top carnivore)	5900	22000	
Hexanone[2-]	Montane shrew (Mammalian insectivore)	5.4	20	
Hexanone[2-]	Mountain cottontail (Mammalian herbivore)	17	65	
Iodomethane	American kestrel (Avian top carnivore)	46	92	
Iodomethane	American kestrel (insectivore / carnivore)	0.29	0.59	
Iodomethane	American robin (Avian herbivore)	0.038	0.076	MINIMUM
Iodomethane	American robin (Avian insectivore)	0.062	0.12	
Iodomethane	American robin (Avian omnivore)	0.047	0.095	
Methyl-2-pentanone[4-]	Deer mouse (Mammalian omnivore)	9.7	97	MINIMUM
Methyl-2-pentanone[4-]	Gray fox (Mammalian top carnivore)	18000	180000	
Methyl-2-pentanone[4-]	Montane shrew (Mammalian insectivore)	15	150	
Methyl-2-pentanone[4-]	Mountain cottontail (Mammalian herbivore)	17	170	
Methylene Chloride	Deer mouse (Mammalian omnivore)	2.6	22	MINIMUM
Methylene Chloride	Generic plant (Terrestrial autotroph - producer)	1600	16000	
Methylene Chloride	Gray fox (Mammalian top carnivore)	4300	36000	
Methylene Chloride	Montane shrew (Mammalian insectivore)	9.2	79	
Methylene Chloride	Mountain cottontail (Mammalian herbivore)	3.8	32	
Styrene	Earthworm (Soil-dwelling invertebrate)	1.2	12	MINIMUM
Styrene	Generic plant (Terrestrial autotroph - producer)	3.2	32	
Tetrachloroethene	Deer mouse (Mammalian omnivore)	0.35	1.7	
Tetrachloroethene	Generic plant (Terrestrial autotroph - producer)	10	100	
Tetrachloroethene	Gray fox (Mammalian top carnivore)	120	630	
Tetrachloroethene	Montane shrew (Mammalian insectivore)	0.18	0.94	MINIMUM
Tetrachloroethene	Mountain cottontail (Mammalian herbivore)	9.5	47	
Toluene	Deer mouse (Mammalian omnivore)	25	250	
Toluene	Generic plant (Terrestrial autotroph - producer)	200	2000	
Toluene	Gray fox (Mammalian top carnivore)	12000	120000	
Toluene	Montane shrew (Mammalian insectivore)	23	230	MINIMUM
Toluene	Mountain cottontail (Mammalian herbivore)	66	660	
Trichlorobenzene[1,2,4-]	Deer mouse (Mammalian omnivore)	0.51	5.1	
Trichlorobenzene[1,2,4-]	Earthworm (Soil-dwelling invertebrate)	1.2	12	
Trichlorobenzene[1,2,4-]	Gray fox (Mammalian top carnivore)	110	1100	
Trichlorobenzene[1,2,4-]	Montane shrew (Mammalian insectivore)	0.27	2.7	MINIMUM
Trichlorobenzene[1,2,4-]	Mountain cottontail (Mammalian herbivore)	12	120	
Trichloroethane[1,1,1-]	Deer mouse (Mammalian omnivore)	400	4000	
Trichloroethane[1,1,1-]	Gray fox (Mammalian top carnivore)	310000	3100000	
Trichloroethane[1,1,1-]	Montane shrew (Mammalian insectivore)	260	2600	MINIMUM
Trichloroethane[1,1,1-]	Mountain cottontail (Mammalian herbivore)	2000	20000	
Trichloroethene	Deer mouse (Mammalian omnivore)	54	540	

Analyte Name	ESL Receptor	No Effect ESL	Low Effect ESL	Minimum ESL
Trichloroethene	Gray fox (Mammalian top carnivore)	42000	420000	
Trichloroethene	Montane shrew (Mammalian insectivore)	42	420	MINIMUM
Trichloroethene	Mountain cottontail (Mammalian herbivore)	190	1900	
Trichlorofluoromethane	Deer mouse (Mammalian omnivore)	97	650	
Trichlorofluoromethane	Gray fox (Mammalian top carnivore)	62000	420000	
Trichlorofluoromethane	Montane shrew (Mammalian insectivore)	52	350	MINIMUM
Trichlorofluoromethane	Mountain cottontail (Mammalian herbivore)	1800	12000	
Vinyl Chloride	Deer mouse (Mammalian omnivore)	0.13	1.3	
Vinyl Chloride	Gray fox (Mammalian top carnivore)	110	1100	
Vinyl Chloride	Montane shrew (Mammalian insectivore)	0.12	1.2	MINIMUM
Vinyl Chloride	Mountain cottontail (Mammalian herbivore)	0.34	3.4	
Xylene (Total)	American kestrel (Avian top carnivore)	13000	130000	
Xylene (Total)	American kestrel (insectivore / carnivore)	190	1900	
Xylene (Total)	American robin (Avian herbivore)	89	890	
Xylene (Total)	American robin (Avian insectivore)	41	410	
Xylene (Total)	American robin (Avian omnivore)	56	560	
Xylene (Total)	Deer mouse (Mammalian omnivore)	1.9	2.4	
Xylene (Total)	Generic plant (Terrestrial autotroph - producer)	100	1000	
Xylene (Total)	Gray fox (Mammalian top carnivore)	750	930	
Xylene (Total)	Montane shrew (Mammalian insectivore)	1.4	1.8	MINIMUM
Xylene (Total)	Mountain cottontail (Mammalian herbivore)	7.6	9.5	

Supplement 4-9

Revision of 2011 Open Detonation Risk Assessment

LA-UR-20-24479

EXECUTIVE SUMMARY

The areas around two open detonation (OD) units operating at the Los Alamos National Laboratory at Technical Area 36 (TA-36) and TA-39 were sampled. Surface soil samples (0–1 ft) were collected from 19 and 10 locations, respectively, and analyzed for inorganic chemicals, organic chemicals, and isotopic uranium. Data from these samples were used to conduct human health and ecological risk-screening assessments at the two sites.

For the human health risk-screening assessment, both the industrial and residential scenarios were evaluated. The exposure point concentrations for the chemicals of potential concern were less than their respective industrial and residential soil screening levels and screening action levels. The potential risks/doses for the industrial and residential scenarios were below the New Mexico Environment Department and U.S. Department of Energy target levels.

Ecological receptors were evaluated using several lines of evidence, including minimum ecological screening level comparisons, hazard index analyses, potential effects to populations (individuals for threatened and endangered species), and lowest observed adverse effect level analyses. The ecological risk screening assessments indicated potential risks to the robin, deer mouse, and shrew at both OD units and to the earthworm and plant at the TA-39-6 OD unit. However, field studies found no adverse impacts to the small mammal population at either site, and field observations made during the site visit revealed the plant communities, which are kept sparse to non-existent to minimize fire danger, appear healthy at both sites. In addition, nest boxes have been added to the areas around each OD unit and are being monitored for occupancy, hatching success, and fledgling success. Avian surveys at the two open detonation sites were also initiated to monitor patterns of bird abundance and diversity, and population trends at both sites. This information will supplement or replace the nest box results, particularly if the drought continues to effect nest box occupancy. Results for 2013 indicated that avian abundance and diversity at the OD units were comparable to or greater than that of the control sites.

1.0 INTRODUCTION

Two open detonation (OD) units operate at the Los Alamos National Laboratory (LANL or Laboratory). The two units are located at Technical Area 36 (TA-36) and TA-39, and are referred to as TA-36-8 OD unit or “Minie” and TA-39-6 OD unit or “Point 6,” respectively. The OD hazardous waste treatment operations require a permit under the Resource Conservation and Recovery Act (RCRA). Each of these locations is also used for high explosives (HE) testing operations that do not require a RCRA permit. Soil sampling was conducted for the purpose of characterizing the sites as a baseline condition for continued treatment operations at the hazardous waste treatment units.

The TA-36-8 OD unit consists of an irregularly shaped sand- and grass-covered area. Solid and liquid hazardous explosive waste and explosive-contaminated waste may be treated (i.e., open detonated) at the unit. The TA-39-6 OD unit consists of a relatively flat, sand-covered area that measures approximately 40 feet by 40 feet in a canyon bottom. Solid and liquid hazardous explosive waste may be treated at the unit. The units are used primarily for non-treatment-related experimental test detonations and are occasionally also used for treatment of hazardous explosive waste.

Human health and ecological risk-screening assessments for the OD units were conducted using surface soil data collected in 2011. The results of the risk-screening assessments are presented in the following sections.

1.1 Conceptual Site Model

Only authorized Laboratory workers currently have access to the area around the OD units so the primary land use is industrial. Therefore, Laboratory workers are the primary receptors and the industrial scenario is the defining scenario for the human health risk-screening assessment (i.e., the scenario on which site decisions are based). Because the sites are located within the boundaries of operational facilities, the reasonably foreseeable future land use will continue to be industrial. Residential exposure is also assessed and provided for comparison purposes.

The release of contaminants from the OD operations has occurred over more than 50 yr. Releases are transported primarily by atmospheric winds, which rapidly disperse the material in ambient air. Most material is deposited close to the source(s) and decreases with distance from the source.

The regional water table is approximately 1000 ft below the TA-36-8 OD unit and approximately 560 ft below the TA-39-6 OD unit. Municipal supply well PM-4 is the operating supply well nearest to the TA-36-8 OD unit and is 9300 ft north-northeast of the OD unit. The regional groundwater flow direction in the vicinity of the TA-36-8 OD unit is expected to flow from east-northeast to east-southeast. No municipal supply wells are located in the vicinity of or downgradient of the TA-39-6 OD unit. The regional groundwater flow in the vicinity of the TA-39-6 OD unit is expected to be towards the southeast. Therefore, there are no potential uses of groundwater beneath the OD units. Furthermore, the hydrologic conditions yield little contaminant migration and are characterized by very slow unsaturated water flow from the surface to the regional aquifer. Because surface-water flow is infrequent and shallow alluvial groundwater is not common, contaminants largely remain near their original sources, predominantly in soil and sediment. As a result, no complete groundwater pathway exists at either of these sites.

Potential exposure pathways for a site worker (as well as a hypothetical resident) include incidental ingestion of soil, inhalation of fugitive dust or vapors, and dermal contact with soil. Other potential pathways from subsurface releases to potential receptors would be complete only if soil were to be excavated and brought to the surface. In such a case, the potential contaminant migration pathways and potential exposure pathways would be the same as those of a surface soil release.

The primary ecological exposure pathways include root uptake, ingestion of soil, and food-web transport. Exposure of plants and soil invertebrates is not related to dietary pathways, but is the result of direct contact to, and uptake from, the surrounding medium. For terrestrial wildlife, most exposure is through the oral pathway from the diet and incidental ingestion of soil (Sample et al. 1997). The dermal contact and inhalation pathways are not typically assessed quantitatively in ecological risk assessments, based on guidance indicating the ingestion route is most important to terrestrial animals (EPA 1997; EPA 2003). Dermal exposure to wildlife is mitigated by the fur or feathers covering the bodies of most vertebrates, and the incidental consumption of soil during grooming is included in the direct soil ingestion estimates. Respirable dust particles are most likely ingested rather than inhaled and is a negligible pathway (EPA 1997; EPA 2003), while nonrespirable dust is ingested and accounted for in incidental soil ingestion values for wildlife species (EPA 1993; EPA 2003). Therefore, the exposure pathways considered in the development of the ecological screening levels (ESLs) used in the risk-screening assessment capture the primary exposure for wildlife receptors.

1.2 Identification of Chemicals of Potential Concern

1.2.1 Sampling

Nineteen surface samples (0−1 ft) were collected from 19 locations across the TA-36-8 OD unit (Figure 1.2-1) and 10 surface samples (0−1 ft) were collected from 10 locations across the TA-39-6 OD unit (Figure 1.2-2). Samples were marked by XY (U.S. Survey Feet) coordinates, preserved according to U.S. Environmental Protection Agency (EPA) guideline methodology, recorded on chain-of-custody forms, and analyzed for the following constituents using the methods in the parentheses:

- high explosives (SW-846-8321A-MOD)
- metals (SW-846-6010B and SW-846-6020)
- dioxins and furans (EPA Method 1618 and SW-846-8290)
- semivolatile organic compounds (SVOCs) (SW-846-8270C)
- volatile organic compounds (VOCs) (SW-846-8260B)
- polychlorinated biphenyls (PCBs) (SW-846-8082)
- perchlorate (SW-846-6850)
- isotopic uranium (HASL-300-ISOU)

The soil data reflect the deposition of contaminants over more than 50 yr of operation. The data for each OD unit are provided on CD as Attachment 1.

1.2.2 Evaluation of Inorganic Chemicals

TA-36-8

Nineteen surface samples were collected from 19 locations and analyzed for metals and perchlorate. Cadmium, calcium, copper, lead, nickel, and zinc were detected above soil background values (BVs) (LANL 1998) in at least one soil sample (Table 1.2-1). Perchlorate was detected in nine samples but does not have any background data.

Statistical comparisons of the six inorganic chemicals with background data were conducted using the Gehan, quantile, and slippage tests to determine whether the site data are statistically different from background data. If a p-value is less than a specified probability (0.05), then there is some reason to suspect a difference exists between the distributions. If the p-value is greater than 0.05, no difference is indicated.

The statistical comparisons found cadmium and nickel were not statistically different from background ($p>0.05$), while copper and lead were statistically different from background ($p<0.05$). Although the statistical comparisons for calcium and zinc indicated the site data were statistically different from the background data sets (Gehan $p<0.05$), the box plots show the site data are entirely within the range of background concentrations and the site data do not exceed the maximum background concentrations for these inorganic chemicals. Furthermore, calcium had only one concentration (6210 mg/kg) slightly above the soil BV (6120 mg/kg), and both calcium and zinc passed the quantile and slippage tests ($p>0.05$). Therefore, calcium and zinc are not retained as chemicals of potential concern (COPCs) at the TA-36-8 OD unit. The results of the statistical comparisons and the box plots are provided as Attachment 2 on CD. Copper, lead, and perchlorate were retained as COPCs at the TA-36-8 OD unit (Figure 1.2-3).

TA-39-6

Ten surface samples were collected from 10 locations and analyzed for metals and perchlorate. Antimony, barium, cadmium, copper, lead, mercury, silver, and zinc were detected above soil BVs (LANL 1998) in at least one soil sample (Table 1.2-2). Perchlorate was detected in five samples but does not have any background data.

Statistical comparisons with background data were conducted for antimony, barium, cadmium, and zinc. Copper, lead, and mercury were interpreted to be substantially above background and no statistical comparisons were conducted. The statistical comparisons found barium and cadmium were not statistically different from background ($p>0.05$), while antimony and zinc were statistically different from background ($p<0.05$). The results of the statistical comparisons and the box plots are provided as Attachment 2 on CD. Antimony, copper, lead, mercury, perchlorate, silver, and zinc were retained as COPCs at TA-39-6 OD unit (Figure 1.2-4).

1.2.3 Evaluation of Organic Chemicals

TA-36-8

Nineteen surface samples were collected from 19 locations and analyzed for HE, SVOCs, VOCs, PCBs, and dioxins/furans. Thirty-four organic chemicals plus 15 dioxin and furan congeners were detected in 1 or more samples and were retained as COPCs (Tables 1.2-3 and 1.2-4 and Figures 1.2-5 and 1.2-6).

TA-39-6

Ten surface samples were collected from 10 locations and analyzed for HE, SVOCs, VOCs, PCBs, and dioxins/furans. Nineteen organic chemicals plus15 dioxin and furan congeners were detected in 1 or more samples and were retained as COPCs (Tables 1.2-5 and 1.2-6 and Figures 1.2-7 and 1.2-8).

1.2.4 Evaluation of Radionuclides

TA-36-8

Nineteen surface samples were collected from 19 locations and analyzed for isotopic uranium. Uranium-234, uranium-235/236, and uranium-238 were detected above BVs and were retained as COPCs (Table 1.2-7) (Figure 1.2-9).

TA-39-6

Ten surface samples were collected from 10 locations and analyzed for isotopic uranium. Uranium-234, uranium-235/236, and uranium-238 were not detected above BVs and were not retained as COPCs.

2.0 HUMAN HEALTH RISK SCREENING ASSESSMENT

2.1 Screening Evaluation

The exposure point concentrations (EPCs) are the 95% upper confidence limit (UCL) of the arithmetic mean or the maximum detected concentration if too few detected concentrations were reported. All the data were used to calculate the 95% UCLs for the risk-screening assessments, if appropriate.

The EPCs for the dioxin and furan congeners are the sums of the detected congeners weighted by the Toxic Equivalency Factors (TEFs) for mammals (humans and wildlife) (NMED 2012) and by the Van den Berg et al. (1998) TEFs for birds; the sum is expressed as the 2,3,7,8-tetrachlorodibenzodioxin (TCDD[2,3,7,8-]) equivalent concentration. The TEFs used are presented in Table 2.1-1. The results of the TEF calculations and the TCDD[2,3,7,8-] equivalent concentrations for the TA-36-8 OD unit samples are presented in Tables 2.1-2 and 2.1-3. The results of the TEF calculations and the TCDD[2,3,7,8-] equivalent concentrations for the TA-39-6 OD unit samples are presented in Tables 2.1-4 and 2.1-5.

The 95% UCLs were calculated as described in EPA guidance (EPA 2002). Tests for distributions were performed using ProUCL 5.0.00 (http://www.epa.gov/osp/hstl/tsc/software.htm) to determine the appropriate method for UCL calculations and the recommended UCLs were used. The ProUCL inputs and outputs are presented as Attachment 3 on CD. The EPCs (95% UCL or maximum detected concentration) for each COPC at each site are presented in Tables 2.1-6 and 2.1-7.

The EPC for each COPC was compared with the industrial and residential soil screening levels (SSLs) or screening action levels (SALs). The chemical SSLs used in the evaluations were obtained from New Mexico Environment Department (NMED) guidance (NMED 2012) or EPA regional screening tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm). The SSLs for carcinogens are equivalent to a 1×10^{-5} cancer risk and for noncarcinogens represent a hazard quotient (HQ) of 1. The comparisons with SSLs are conducted separately for carcinogens and noncarcinogens for industrial and residential receptors. Radionuclide SALs are used for comparison with radionuclide EPCs and were derived using the residual radioactive (RESRAD) model, Version 6.5 (LANL 2012a). The SALs are based on a total dose of 25-mrem/yr as authorized by DOE Order 458.1.

TA-36-8

The EPCs for noncarcinogenic COPCs were less than their respective industrial and residential SSLs. The hazard indexes (HIs) for the noncarcinogenic COPCs are approximately 0.04 and 0.2, respectively (Tables 2.1-8 and 2.1-9), which are less than the NMED target HI of 1 (NMED 2012).

The EPCs for carcinogenic COPCs were less than their respective industrial and residential SSLs. The total excess cancer risks from exposure to carcinogenic COPCs are approximately 9×10^{-7} and 9×10^{-6}, respectively (Tables 2.1-10 and 2.1-11), which are less than the NMED target risk level of 1×10^{-5} (NMED 2012).

The EPCs for radionuclide COPCs were less than their respective industrial and residential SALs. The total doses from exposure to radionuclide COPCs are 1 mrem/yr and 5.4 mrem/yr, respectively (Tables 2.1-12 and 2.1-13), which are below the U.S. Department of Energy (DOE) target dose limit of 25 mrem/yr as authorized by DOE Order 458.1.

TA-39-6

The EPCs for noncarcinogenic COPCs were less than their respective industrial and residential SSLs. The HIs for the noncarcinogenic COPCs are approximately 0.3 and 1.2, respectively (Tables 2.1-14 and 2.1-15), which are less than or equivalent to the NMED target HI of 1 (NMED 2012). The residential HI is in part from lead, which has an SSL based on the soil lead level that limits exposure of a child for a resident to no more than a 5% chance of exceeding a 10 µg/dL blood lead level. The HQ for lead is an indication of whether the blood lead level criterion is exceeded. The residential HI is approximately 1 with the lead HQ contributing approximately 0.4. Without lead, the residential HI is 0.8. Therefore, the lead EPC does not exceed the residential SSL (blood lead level criterion is not exceeded), and the noncarcinogenic HI without lead is below the NMED target level of 1.

The EPCs for carcinogenic COPCs were less than their respective industrial and residential SSLs. The total excess cancer risks from exposure to carcinogenic COPCs are approximately 1×10^{-6} and 5×10^{-6}, respectively (Tables 2.1-16 and 2.1-17), which are less than the NMED target risk level of 1×10^{-5} (NMED 2012).

No radionuclide COPCs were identified at this site.

2.2 Uncertainty Analysis

The analysis for human health is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity values. Each or all of these uncertainties may affect the assessment results.

2.2.1 Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Although concentrations used in this risk assessment were less than the estimated quantitation limits for some COPCs, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs does not affect the assessment.

Another data evaluation uncertainty relates to the use of the UCL as the EPC for each COPC. Use of the UCL may result in an overestimation of risk for analytes with elevated detection limits. Use of the maximum concentration also overestimates the exposure to contamination because receptors are not exposed to these concentrations across the site.

2.2.2 Exposure Assessment

The receptors evaluated by the assessments are subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the industrial SSLs are that the potentially exposed individual is a worker who is outside for 8 h/d for 225 d/yr (NMED 2012) and spends the entire work day on-site within the contaminated area. Assumptions for the residential SSLs are that the potentially exposed individual is a resident who is present 24 h/d for 350 d/yr (NMED 2012) and spends the entire 24 h on-site within the contaminated area. Because it is unlikely the worker or resident is within the contaminated area for the entire time, the screening assessments overestimate the exposure. As a result, risks/doses may be overestimated.

The data represent deposition from more than 50 yr of operation into 2011. Therefore, the data and subsequently the screening assessment results represent baseline conditions.

Assumptions underlying the exposure parameters, routes of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with NMED parameters and default values (NMED 2012). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the upper percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the reasonably expected range.

2.2.3 Toxicity Values

The primary uncertainty associated with the screening values is related to the derivation of toxicity values used in their calculation. Toxicity values (slope factors [SFs] and reference doses [RfDs]) were used to derive the risk-based screening values used in the screening evaluation (NMED 2012). Uncertainties were identified in four areas with respect to the toxicity values: (1) extrapolation from other animals to humans, (2) interindividual variability in the human population, (3) the derivation of RfDs and SFs, and (4) the chemical form of the COPC.

The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist between animals and humans in chemical absorption, metabolism, excretion, and toxic responses. Differences in body weight, surface area, and pharmacokinetic relationships between animals and humans are taken into account to address these uncertainties in the dose-response relationship. However, conservatism is usually incorporated in each of these steps, resulting in the overestimation of potential risk.

For noncarcinogenic effects, the degree of variability in human physical characteristics is important both in determining the risks that can be expected at low exposures and in defining the no observed adverse effect level (NOAEL). The NOAEL uncertainty factor approach incorporates a 10-fold factor to reflect individual variability within the human population that can contribute to uncertainty in the risk assessment. This factor of 10 is generally considered to result in a conservative estimate of risk to noncarcinogenic COPCs.

The RfDs and SFs for different chemicals are derived from experiments conducted by different laboratories that may have different accuracy and precision that could lead to an over- or underestimation of risk. The uncertainty associated with the toxicity factors for noncarcinogens is measured by the uncertainty factor, the modifying factor, and the confidence level. For carcinogens, the weight of evidence classification indicates the likelihood a contaminant is a human carcinogen.

The COPCs may be bound to the environmental matrix and not available for absorption into the human body. This is true of the COPCs evaluated in this risk-screening assessment. Metals and organic chemicals are typically tightly bound to soil particles and are not readily available for uptake by a receptor. However, the exposure scenarios default to the assumption that the COPCs are 100% bioavailable. This assumption can lead to an overestimation of the total risk.

2.2.4 Additive Approach

For noncarcinogens, the effects of exposure to multiple chemicals are generally unknown and possible interactions could be synergistic or antagonistic, resulting in either an overestimation or underestimation of the potential risk. Additionally, RfDs used in the risk calculations typically are not based on the same endpoints with respect to severity, effects, or target organs. Therefore, the potential for noncarcinogenic effects may be overestimated for individual COPCs that act by different mechanisms and on different target organs but are addressed additively.

2.3 Interpretation

Based on an industrial scenario, the HIs (0.04 and 0.3) are less than the NMED target level of 1 and the cancer risks (9×10^{-7} and 1×10^{-6}) are less than the NMED target level of 1×10^{-5}. For the residential scenario, the HIs (0.2 and 0.8) are less than the NMED target level of 1 and the cancer risks (9×10^{-6} and 5×10^{-6}) are less than the NMED target level of 1×10^{-5}. The lead EPC at TA-39-6 is less than the residential SSL (400 mg/kg). The total doses at the TA-36-8 OD unit are 1 mrem/yr and 5 mrem/yr for the industrial and residential scenarios, respectively, which are below the DOE target dose limit of 25 mrem/yr as authorized by DOE Order 458.1. No radionuclide COPCs were identified at the TA-39-6 OD unit. The results indicate there are no potential unacceptable risks or doses to human health at the OD units under both scenarios.

3.0 ECOLOGICAL RISK SCREENING ASSESSMENT

3.1 Screening Evaluation

The ecological risk-screening evaluation identifies chemicals of potential ecological concern (COPECs) and is based on the comparison of EPCs with ESLs in accordance with Laboratory guidance (LANL 2012b). The EPCs used in the assessment are presented in Tables 2.1-6 and 2.1-7, and the calculation is described in section 2.1. The ESLs obtained from the ECORISK Database, Version 3.1 (LANL 2012c) are presented in Table 3.1-1. The avian ESLs for TCDD[2,3,7,8-], which are also presented in Table 3.1-1, are from ECORISK Database, Version 2.0 (LANL 2003). The ESLs are based on similar species and are derived from experimentally determined NOAELs, lowest observed adverse effect levels (LOAELs), or doses determined to be lethal to 50% of the test population. Information relevant to the calculation of ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values are presented in the ECORISK Database, Versions 2.0 and 3.1 (LANL 2003; LANL 2012c).

The HQs calculated for each COPEC and screening receptor are the ratios of the EPC to the ESLs for each ecological receptor. The higher the contaminant levels relative to the ESLs, the higher the potential risk to receptors; conversely, the higher the ESLs relative to the contaminant levels, the lower the potential risk to receptors. The analysis begins with a comparison of the minimum ESL for each COPC with the EPC. HQs greater than 0.3 are used to identify COPECs requiring additional evaluation (LANL 2012b). Individual HQs for a receptor are summed to derive an HI; an HI greater than 1 is an indication further assessment may be needed to ensure exposure to multiple COPECs at a site will not lead to potential adverse impacts to a given receptor population. The HQ and HI analysis is a conservative indication of potential adverse effects and is designed to minimize the potential of overlooking possible COPECs at the site.

The HQs using the minimum ESLs exceeded 0.3 for bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, 2,4-dinitrotoluene, 1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), lead, triaminotrinitrobenzene (TATB), TCDD[2,3,7,8-], and uranium-238 at the TA-36-8 OD unit (Table 3.1-2). The HQs using the minimum ESLs exceeded 0.3 for antimony, Aroclor-1254, bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, 2,4-dinitrotoluene, di-n-octyl phthalate, lead, mercury, silver, TATB, TCDD[2,3,7,8-], and zinc at the TA-39-6 OD unit (Table 3.1-3). These COPCs were retained as COPECs. In addition, perchlorate was detected at both sites, but has no ESLs, and was retained as a COPEC. The HQ for each COPEC/receptor combination was calculated and summed to obtain an HI for each receptor at each site (Tables 3.1-4 and 3.1-5). The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. It is assumed for the purposes of ecological screening, nonradionuclides have common toxicological effects and HQs may be added. The calculations indicate all receptors at both sites have HIs greater than 1. The results are discussed further in the uncertainty section.

3.2 Uncertainty Analysis

3.2.1 Chemical Form

The assumptions used in the ESL derivations are conservative and are not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum body weight, and additive effects of multiple COPECs. These factors tend to result in conservative ESL estimates, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPCs was not determined as part of the investigation. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not typically found in the environment. Inorganic, organic, and radionuclide COPECs are generally not 100% bioavailable to receptors in the natural environment because of interference from other natural processes, such as the adsorption of chemical constituents to matrix surfaces (e.g., soil), rapid oxidation, or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2012b), and the values are biased toward overestimating the potential risk to receptors.

Antimony, copper, lead, mercury, silver, and zinc are naturally occurring and dependent on soil conditions for bioavailability. Lead concentrations at the TA-36-8 OD unit and the silver concentrations at the TA-39-6 OD unit are similar to naturally occurring levels found in uncontaminated soil (i.e., background). Lead concentrations slightly exceed the BV in four samples and the maximum background concentration in two samples, and silver concentrations are less than the BV, except for one elevated concentration (1.36 mg/kg), which is also the EPC. The metals adsorb to the soil particles and are comparatively unavailable for uptake. In addition, because most concentrations are similar to naturally occurring levels, plants and animals regulate uptake and elimination of these metals making them less toxic.

The presence of dioxins and furans in soil also does not determine exposure and risk to receptors. Dioxins and furans are relatively unavailable for uptake by plants and animals because these compounds are tightly bound to soil particles, are immobile, and insoluble (Umbreit et al. 1986). EPA reported the relative bioavailability of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofuran congeners in soil is less than 100% as compared with a lipid or organic solvent vehicle as the reference material (EPA 2010). Abiotic constituents, compound aging, and other associated soil factors may influence soil bioavailability (e.g., bioavailability appears to decrease with aging based on comparisons of laboratory spiked soil and soil contaminated in situ [Umbreit et al. 1986]). The difference between the toxicity represented by the ESL and the lack of adverse effects in the canyons may be related to the low bioavailability of dioxins and furans in soil.

Similarly, bis(2-ethylhexyl)phthalate and di-n-butyl phthalate are tightly bound to soil particles, are immobile, and are insoluble. Both undergo biodegradation over time. The bioavailability of these compounds is much less than the 100% assumed for the screening assessment. This relationship is supported by the lack of impacts to biota in the canyons around the Laboratory where bis(2-ethylhexyl)phthalate and di-n-butyl phthalate have been detected above ESLs during other investigations (LANL 2004; LANL 2006; LANL 2007; LANL 2009a; LANL 2009b). The difference between the toxicity represented by the ESLs and the lack of adverse effects in the canyons may be related to the low bioavailability of the phthalates from soil.

3.2.2 Exposure Assumptions

The EPCs used in the calculations of HQs are the 95% UCLs or maximum detected concentrations. These EPCs are conservative estimates of exposure to each COPEC. The sampling efforts focused on areas of known contamination, and the receptors were assumed to ingest 100% of their food and spend 100% of their time at the site. These assumptions related to the exposure for terrestrial receptors are likely to result in an overestimation of potential ecological exposure and risk.

The areas sampled include both OD units and the vicinity around each unit. The data and subsequently the screening assessment results represent baseline conditions for the sites, which are the result of more than 50 yr of operation.

3.2.3 Toxicity Values

The HQs were calculated using ESLs, which are based on NOAELs as threshold effect levels; actual risk for a given COPEC/receptor combination occurs at a higher level, possibly somewhere between the NOAEL-based threshold and the threshold based on the LOAEL. The use of NOAELs leads to an overestimation of potential risk to ecological receptors. ESLs are based on laboratory studies requiring extrapolation to wildlife receptors. Laboratory studies are typically based on “artificial” and maintained populations with genetically similar individuals and are limited to single chemical exposures in isolated and controlled conditions using a single-exposure pathway. Wild species are concomitantly exposed to a variety of chemical and environmental stressors, potentially rendering them more susceptible to chemical stress. On the other hand, wild populations are likely more genetically diverse than laboratory populations, making wild populations, as a whole, less sensitive to chemical exposure than laboratory populations. The uncertainties associated with the ESLs tend to lead to an overestimation of potential risk.

The avian ESLs for TCDD[2,3,7,8-] obtained from ECORISK Database, Version 2.0 (LANL 2003) are based on a toxicity value using intraperitoneal injections. This route of exposure does not occur naturally and assumes TCDD[2,3,7,8-] bioavailability and absorption from the gastrointestinal tract and the abdominal cavity are not significantly different. However, exposure by this route likely overestimates the potential absorption of TCDD[2,3,7,8-] by the receptor and thereby overestimates the potential effect on the receptor.

3.2.4 Area Use Factors

In addition to the direct comparison of the EPC with the ESLs, area use factors (AUFs) are used to account for the amount of time a receptor is likely to spend within the contaminated areas based on the size of the receptor’s home range (HR). The AUF for an individual organism is calculated by dividing the size of the site by the HR for that receptor. Because threatened and endangered species must be assessed on an individual basis (EPA 1999), the AUF is applicable for the Mexican spotted owl. The kestrel (top carnivore) is used as the surrogate receptor for the Mexican spotted owl. The site areas are approximately 8.3 hectares (ha) for the TA-36-8 OD unit and 0.8 ha for the TA-39-6 OD unit, and the HR for the Mexican spotted owl is 366 ha. Therefore, the AUFs for the Mexican spotted owl are 0.02 and 0.002, respectively (Table 3.2-1). Application of the AUFs for the Mexican spotted owl to the HQs for the kestrel (top carnivore) results in adjusted HIs of 2 and 0.1, respectively. The adjusted HI above 1 at the TA-36-8 OD unit is due primarily to bis(2-ethylhexyl)phthalate and to a lesser extent di-n-butyl phthalate. The EPCs for both COPECs are from one elevated detected concentration for each. Comparison of the

LOAEL-based ESLs for the kestrel (top carnivore) for these two COPECs (Table 3.2-2) results in a HI of 10 and an adjusted HI of 0.2 using the AUF (0.02). Therefore, no potential exists for adverse impacts to the Mexican spotted owl at both OD units.

3.2.5 Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of threatened and endangered species (EPA 1999). One approach to addressing the potential effects on populations is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for each receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002). Bowman et al. (2002) estimate the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used, the median dispersal distance becomes 3.6 times the square root of the HR (R^2 = 0.91) (Bowman et al. 2002). If it is assumed the receptors can disperse over the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area for each receptor can be derived by $\pi(3.6\sqrt{HR})^2$ or approximately 40HR.

The population area use factor (PAUF) is calculated by dividing the site area (approximately 8.3 ha and 0.8 ha for the OD units) by the population area of the receptor (Table 3.2-1). The HIs for each site are adjusted by multiplying by the respective PAUFs. The HQs and HIs for the earthworm and plant are not adjusted by a PAUF because these receptors do not have HRs.

The adjusted HIs are less than 1 for the kestrel, cottontail, and red fox at both sites (Tables 3.2-3 and 3.2-4). The adjusted HIs for the other receptors ranged from 7 to 96 at the TA-36-8 OD unit and 4 to 72 at the TA-39-6 OD unit (Tables 3.2-3 and 3.2-4). The elevated HIs at the TA-36-8 OD unit are from bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, and lead for the robin; bis(2-ethylhexyl)phthalate, copper, 2,4-dinitrotoluene, HMX, TATB, and TCDD[2,3,7,8-] for the deer mouse; and bis(2-ethylhexyl)phthalate, copper, and TCDD[2,3,7,8-] for the shrew. The HIs for the plant and earthworm are due to copper. The elevated HIs at the TA-39-6 OD unit are from bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, lead, and mercury for the robin; antimony, copper, 2,4-dinitrotoluene, di-n-octyl phthalate, lead, and TCDD[2,3,7,8-] for the deer mouse; and antimony, copper, and TCDD[2,3,7,8-] for the shrew. The HI for the plant is from antimony, copper, lead, and zinc, and the HI for the earthworm is from copper, mercury, and zinc.

3.2.6 LOAEL Analysis

The PAUF-adjusted HIs were greater than 1 for several receptors at both sites. To address these HIs, a LOAEL analysis was conducted using ESLs calculated based on a LOAEL rather than a NOAEL. The analysis addresses some of the uncertainties and conservativeness of the ESLs used in the initial screening assessments. The LOAEL-based ESLs were calculated based on toxicity information in the ECORISK Database, Version 3.1 (LANL 2012c), and are presented in Table 3.2-2. The LOAEL-based 2,3,7,8-TCDD ESLs for the robin were calculated by multiplying the NOAEL-based ESLs from ECORISK Database, Version 2.0 (LANL 2003) by an uncertainty factor of 10.

The LOAEL analysis resulted in HIs equivalent to 1 for the earthworm and plant, respectively, and HIs greater than 1 for the robin (all feeding guilds), deer mouse, and shrew at the TA-36-8 OD unit (Table 3.2-5). The LOAEL analysis resulted in HIs greater than 1 for the robin (all feeding guilds), deer mouse, shrew, earthworm, and plant at the TA-39-6 OD unit (Table 3.2-6). The PAUF-adjusted LOAEL HIs ranged from 2 to 13 at the TA-36-8 OD unit for the robin (all feeding guilds), deer mouse, and shrew (Table 3.2-7). The PAUF-adjusted LOAEL HIs ranged from 2 to 9 at the TA-39-6 OD unit for the robin (insectivore and omnivore), deer mouse, shrew, earthworm, and plant, but equivalent to 1 for the robin (herbivore) (Table 3.2-8). The elevated adjusted HIs at the TA-36-8 OD unit are from bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, and lead for the robin; copper, HMX, TATB, and TCDD[2,3,7,8-] for the deer mouse; and copper and TCDD[2,3,7,8-] for the shrew. The elevated adjusted HIs at the TA-39-6 OD unit are from copper and di-n-butyl phthalate for the robin, and copper for the deer mouse and shrew. The HI for the plant is from antimony and copper and the HI for the earthworm is from copper and mercury.

3.2.7 Field and Laboratory Investigations and Observations

Because the risk-screening assessments resulted in HIs above 1 for several receptors at both sites, field and laboratory studies have been or will be implemented to determine whether the screening results are reflected by impacts to biota. The studies include small mammal trapping and analysis of whole organisms as well as population measurements, monitoring of cavity-nesting birds in nest boxes, earthworm bioaccumulation tests (measures of growth and survival), and seedling-germination tests.

Small mammal trapping and analysis of whole organisms was conducted around both OD units in 2011. Field mice were collected around each OD site and analyzed for dioxins and furans, metals, HE, PCBs, and perchlorate (Fresquez 2011a). Small-mammal community and population parameters were also estimated across each site (Bennett and Robinson 2011).

Dioxin and furan congeners were not detected above the detection limit in any of the whole body field mice samples; 1 to 3 congeners were detected in each field mouse sample at TA-36-8 and 1 to 5 congeners were detected in each field mouse sample at TA-39-6 (Fresquez 2011a). Concentrations in whole body samples were well below the concentrations detected in the soil, had fewer congeners detected than in 40% to 70% of the soil samples, and were below the deer mouse ESL for TCDD (LANL 2012c). The dioxin and furan data are similar to other dioxin/furan field-mouse uptake studies at the Laboratory (Fresquez et al. 2013) and nationally (Krouskop et al. 1991) As noted above in section 3.2.1, dioxins and furans are relatively unavailable for uptake by plants and animals because these compounds are tightly bound to soil particles, are immobile, and are insoluble (Umbreit et al. 1986). The results of the whole animal analyses support this condition in that dioxins and furans at the concentrations detected in soil under natural field conditions are not significantly assimilated by field mice either by ingestion and/or by surface contact possibly because of the adsorption of the chemical to soil surfaces or because of oxidation/reduction changes. In addition, the samples analyzed included the pelt and carcass so it is unclear whether the congeners detected represent uptake or adherence of soil particles to the pelt. The difference between the potential toxicity represented by the ESLs and the lack of adverse effects in the field is likely related to the low bioavailability of dioxins and furans in the soil and sediment.

Based on the small-mammal data collected, the OD unit operations do not appear to be adversely affecting local small mammal populations (Bennett and Robinson 2011). The small-mammal population investigation revealed slight differences in the species composition, diversity, evenness, and capture rates between sites. It is likely differences in habitat quality and normal population variations were the reasons for the differences found. Sex ratios were either not statistically different from the assumption of equal proportions or were not found to be different from the expected ratio of equal proportions (sample sizes prevented statistical evaluation of all species). Reproductive status also appeared to be similar among species, but the sample size was too small to statistically evaluate this parameter. In addition, the reproductive structure of the animals captured may be an indication of the time of year (late summer) the study took place. Body weights showed no statistical difference between sites for the deer mouse and harvest mouse populations and measured were within the range of weights published for the species.

Other biota investigations conducted in Los Alamos/Pueblo Canyons (LANL 2004) and Pajarito Canyon (LANL 2009a) included small mammal trapping and analysis of whole organisms. The TCDD equivalent concentrations reported as part of these investigations were similar to the soil concentrations at the OD units. The TCDD equivalent concentrations reported in Kraig et al. (2002, Tables 5 and A-6) ranged from 4.7×10^{-7} mg/kg to 3.5×10^{-6} mg/kg in lower Los Alamos Canyon. These levels are similar to the TCDD equivalent concentrations in Los Alamos and Pueblo Canyons (LANL 2005), where the range of concentrations was 1.71×10^{-10} mg/kg to 4.96×10^{-6} mg/kg. In addition, TCDD equivalent concentrations ranged from 3.14×10^{-7} mg/kg to 3.09×10^{-6} mg/kg in Pajarito Canyon (LANL 2009a). In comparison, the TCDD[2,3,7,8-] equivalent concentrations across the TA-36-8 OD unit ranged from 1.05×10^{-7} mg/kg to 1.61×10^{-5} mg/kg, and across the TA-39-6 OD unit ranged from 7.4×10^{-8} mg/kg to 5.65×10^{-6} mg/kg. The concentrations at TA-36-8 exceed the upper end of the ranges of concentrations detected in Los Alamos, Pueblo, and Pajarito Canyons in one sample (next highest concentration at TA-36-8 is 4.38×10^{-6} mg/kg), while the concentrations at TA-39-6 are within the range of concentrations or comparable to those in the canyons. The studies conducted in the canyons found no effects on small mammal populations from exposure to TCDD.

Barium and lead were detected in two to three animals at each site above the regional statistical reference levels (RSRLs), which are the upper-bounds of concentrations (mean plus three standard deviations) calculated from field mice collected at regional locations away from the influence of the Laboratory (over 9 miles away) (Fresquez 2009 and 2011b). The barium concentrations were slightly above the RSRL, while lead concentrations were 6 times the RSRL. However, all barium and lead whole body concentrations were below the Laboratory soil BVs (LANL 1998) and the deer mouse ESLs (LANL 2012c). Barium was not detected above the soil BV at either site, while lead was detected above the soil BV at both sites. Lead soil concentrations and the lead EPC were below the deer mouse ESL at TA-36-8, while lead soil concentrations were above the deer mouse ESL in four samples and the lead EPC was only slightly above the deer mouse ESL at TA-39-6. Barium was not retained as a COPC at both sites (section 1.2.2) and lead was not found to be a significant contributor to the deer mouse HI at either site (Tables 3.2-7 and 3.2-8). Copper, which is a significant contributor to potential risk at both sites based on the risk-screening assessments, was not detected above the RSRL in any whole body samples at either site. Copper whole body concentrations were also below the deer mouse and shrew ESLs (LANL 2012c). No HE compounds were detected in any of the animals collected, and perchlorate concentrations were 1 or 2 orders of magnitude below the RSRL. The whole body samples analyzed for PCBs had detected concentrations. At TA-36-8, three samples had a total PCB concentration above the RSRL for nonurban sites, while the other two samples had a total PCB concentration below the RSRL for nonurban sites. All total PCB concentrations were below the RSRL for urban sites. At TA-39-6, two samples had total PCB concentrations above either of the RSRLs, while three other samples had a total PCB concentration similar to or below the RSRL for nonurban sites and below the RSRL for urban sites. In addition, the total PCB concentrations were well below the deer mouse ESLs for all Aroclors and the maximum soil concentrations of Aroclor-1254 and Aroclor-1260 detected at both sites were below the deer mouse ESLs (LANL 2012c). According to Fresquez et al. (2013) the concentrations are also below the average whole body concentration that resulted in population alterations and changes in organ function in field mice (Battey et al. 1990).

In addition to the elevated HIs for the small mammals, the risk screening resulted in elevated HIs for the robin from bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, and lead at TA-36-8, and copper and di-n-butyl phthalate at TA-39-6. As a result, nest boxes were added to the areas around each site in 2011 to measure potential effects of operations on avian populations. However, because of the extreme drought and the Las Conchas fire, no birds nested in the boxes at TA-36-8 and TA-39-6 in 2011. No birds nested in the boxes at TA-39-6 in 2012. Because TA-39 is at a lower elevation than TA-36 and other nest boxes in the LANL-wide network, this area has been much more affected by the drought, thus affecting nest occupancy. TA-36-8 had two nest boxes occupied in 2012; one ash-throated flycatcher nest did not hatch any eggs and one western bluebird nest hatched five eggs and successfully fledged the young. It should be noted there has been a substantial overall decrease in occupancy of the nest boxes within the Laboratory due to the drought to where only higher elevation sites are maintaining populations. In addition, the nest boxes at TA-36-8 were removed in 2012 while tree removal occurred as a fire precaution related to the drought. The nest boxes around TA-36-8 will be replaced for the 2013 breeding season and both areas will continue to be monitored.

In addition, avian surveys at the two open detonation sites were initiated to monitor patterns of bird abundance and diversity, and population trends at both sites (LANL 2013). This information will supplement or replace the nest box results, particularly if the drought continues to effect nest box occupancy. The monitoring will be conducted annually to establish trends over time. In 2013, a total of 590 birds representing 55 species were recorded. Of the 55 species detected, 54 are protected under the Migratory Bird Treaty Act. Results indicated that the avian abundance and diversity were comparable to or greater than that of the control sites (LANL 2013).

The earthworm and plant HIs for TA-39-6 were primarily driven by copper (87% and 52%, respectively). The copper 95% UCL was substantially biased by the maximum detected concentration (3410 mg/kg), which is the only concentration that exceeded the UCL. Without the maximum detected concentration the 95% UCL is reduced by 50% to 1047 mg/kg and the earthworm and plant HIs are reduced by 25% to 50% (3 and 6, respectively). The maximum detected concentration is approximately 40 ft to the west of the open detonation unit and the next highest concentration (1910 mg/kg) is located atop the control building approximately 15 ft to the east of the open detonation unit (Figure 1.2-4). Also the mean copper concentration for the site is 720 mg/kg versus a 95% UCL three times the mean. The distribution of copper indicates the highest concentrations are isolated and not indicative of a large area of contamination.

The TA-39-6 Open Detonation Unit is a relatively flat, sand-covered area and measures approximately 40 ft by 40 ft, and is located near the canyon bottom. Steep canyon walls rise to heights of 100 ft or more in the immediate vicinity of the TA-39-6 OD Unit, roughly forming a semicircle around the unit. Building TA-39-6 (the control building) is a reinforced concrete structure extending partially beneath the detonation area. Part of the unit lies above building TA-39-6 and sand has been placed above the control building, over the unit area, and over the semicircle surrounding the unit. The entire area in and around the OD unit consists of sand and does not contain soil native to the area and vegetation is kept sparse to non-existent to minimize fire danger. The type of vegetation further from the unit consists of native plants and grasses. The topography and aerial extent of the unit is shown on Figure 3.2-1.

Field observations made during the site visits revealed the plant community at each site is limited because of active maintenance related safety and fire prevention and the nature of the plant communities at the sites. In both cases, the areas around the open detonation units currently are vegetation free up to 150-200 ft from the units and the soil conditions are not conducive to plant growth and proliferation. The soil/fill at both sites is very sandy with little organic matter and the soil/fill within and around the open detonation units is not native soil and is not intended to promote plant growth. The soil/fill is also not conducive to earthworm growth and survival. In addition, the native plant communities that are present 150-200 ft from the units are naturally sparse as illustrated in the aerial photographs of each unit (Figures 3.2-1 and 3.2-2). However, the plant communities in the surrounding areas appear healthy; no evidence was found of any adverse impacts of contamination to the plant community. These observations support the conclusions that COPECs are not impacting soil invertebrates (as represented by the earthworm) and plants.

3.2.8 COPECs without ESLs

Several COPECs do not have ESLs for any receptor in the ECORISK Database, Version 3.1 (LANL 2012c). In an effort to address this uncertainty and provide a quantitative assessment of potential ecological risk, several online toxicity databases have been searched to determine if any relevant toxicity information is available. The online databases searched were EPA Ecotox Database, EPA Office of Pesticide Programs Aquatic Life Benchmarks, U.S. Army Corps of Engineers/EPA Environmental Residue-Effects, California Cal/Ecotox Database, Pesticide Action Network Pesticide Database, U.S. Army Wildlife Toxicity Assessment Program, U.S. Department of Agriculture Integrated Pesticide Management Database, American Bird Conservancy Pesticide Toxicity Database, and Oak Ridge National Laboratory Risk Assessment Information System. However, these COPECs did not have any relevant toxicity data in the online databases listed above.

In the absence of a chemical-specific ESL, COPEC concentrations were compared with the ESLs for a surrogate chemical. Comparison to surrogate ESLs provides an estimate of potential effects of a chemically related compound and a line of evidence to indicate the likelihood ecological receptors are potentially impacted.

Some COPECs without ESLs do not have chemical-specific toxicity data or surrogate chemicals to be used in the screening assessments and cannot be assessed quantitatively for potential ecological risk. These COPECs are often infrequently detected across the site. In these cases, comparisons to residential human health SSLs are presented as part of a qualitative assessment. The comparison of COPEC concentrations to residential human health SSLs is a viable alternative for several reasons. Animal studies are used to infer effects on humans and is the basic premise of modern toxicology (EPA 1989). In addition, toxicity values derived for the calculation of human health SSLs are often based on potential effects that are more sensitive than the ones used to derive ESLs (e.g., cellular effects for humans versus survival or reproductive effects for terrestrial animals). The EPA also applies uncertainty factors or modifying factors to ensure the toxicity values are protective (i.e., they are adjusted by uncertainty factors to values much lower than the study results). COPEC concentrations compared with these values are an order of magnitude or more below the SSLs, which corresponds to uncertainty factors of 10 or more. Therefore, it is assumed the differences in toxicity would not be more than an order of magnitude for any given chemical. The relative difference between values provides a weight of evidence that the potential toxicity of the COPC is likely to be low or very low to the receptor(s).

No ESLs are available in the ECORISK Database, Version 3.1 (LANL 2012c) for perchlorate, 2-chloronaphthalene, ethylbenzene, 4-isopropyltoluene, TATB, 1,2-xylene, and 1,3-xylene+1,4-xylene. In addition, no toxicity data were found as a result of the online database searches.

Perchlorate was detected in nine samples at the TA-36-8 OD Unit and five samples at the TA-39-6 OD Unit, with maximum detected concentrations of 0.00905 mg/kg and 0.00574 mg/kg, respectively. No background data are available for perchlorate. The NMED residential SSL for perchlorate is 54.8 mg/kg, indicating that potential toxicity is low. Because of the potential low toxicity, perchlorate is eliminated as a COPEC.

Surrogate ESLs based on structural similarity of chemicals were used to evaluate the potential ecological risks from 2-chloronaphthalene, ethylbenzene, 4-isopropyltoluene, TATB, 1,2-xylene, and 1,3-xylene+1,4-xylene. The ESLs used are presented in Table 3.1-1. TATB was identified as a COPEC at both sites using the surrogate ESLs.

4.0 CONCLUSIONS

The human health risk-screening assessment found potential risks and doses were below the NMED and DOE target levels for the industrial and residential scenarios. Therefore, no potential unacceptable risks and doses to human receptors exist under the industrial and residential scenarios at both OD units.

Literature-derived ESLs are conservative and overestimate the potential risk to receptors. The screening assessments resulted in adjusted HIs less than 1 for the kestrel, cottontail, and fox at both sites. Adjusted LOAEL-based HIs were above 1 for the robin, deer mouse, and shrew at both sites, and for the earthworm and plant at the TA-39-6 OD unit. The elevated adjusted LOAEL-based HIs were primarily from bis(2-ethylhexyl)phthalate, copper, di-n-butyl phthalate, and lead for the robin at the TA-36-8 OD unit; copper and di-n-butyl phthalate for the robin at the TA-39-6 OD unit; copper, HMX, TATB, and TCDD[2,3,7,8-] for the deer mouse at the TA-36-8 OD unit; copper for the deer mouse at the TA-39-6 OD unit; copper and TCDD[2,3,7,8-] for the shrew at the TA-36-8 OD unit; copper for the shrew at the TA-39-6 OD unit; antimony and copper for the plant at the TA-39-6 OD unit; and copper and mercury for the earthworm at the TA-39-6 OD unit.

The HIs exceed 1 for the robin, deer mouse, and shrew at both sites and for the earthworm and plant at the TA-39-6 OD unit. Recent field studies found no adverse impacts to the small-mammal population at either site. However, the available nest box data are limited. The drought has substantially affected the occupancy of all of the nest boxes on the Pajarito Plateau to where only higher elevation sites are maintaining populations. Despite this apparent change, the nest boxes around TA-36-8 and TA-39-6 will continue to be monitored. In addition, avian monitoring at the two open detonation sites was initiated to monitor patterns of bird abundance and diversity, and population trends at both sites. This information will supplement or replace the nest box results, particularly if the drought continues to effect nest box occupancy. Results for 2013 indicated that the avian abundance and diversity were comparable to or greater than that of the control sites.

The earthworm and plant HIs were also above 1 at TA-39-6. Field observations made during the site visit revealed the plant communities at each site are sparse because of active maintenance related safety and fire prevention and the type of non-native soil/fill present at the sites. However, the plant communities in the surrounding areas appear healthy. This line of evidence indicates there are no adverse ecological impacts to the soil invertebrate and plant communities.

5.0 REFERENCES

Battey, J., R.A. Leavitt, N. Biondao, and D. Polin, 1990. “An Ecotoxicological Study of a Population of the White-Footed Mouse (*Peromyscus leucopus*) Inhabiting a Polychlorinated Biphenyls-Contaminated Area,” *Archives of Environmental Contamination and Toxicology*, 19:283-290. (Battey et al. 1990)

Bennett, K., and R. Robinson, September 2008. “Small Mammal Sampling in Sandia Canyon, 2007,” Los Alamos National Laboratory report LA-14373, Los Alamos, New Mexico. (Bennett and Robinson 2008)

Bowman, J., J.A.G. Jaeger, and L. Fahrig, 2002. “Dispersal Distance of Mammals is Proportional to Home Range Size,” *Ecology,* Vol. 83, No. 7, pp. 2049–2055. (Bowman et al. 2002)

EPA (U.S. Environmental Protection Agency), 1993. “Wildlife Exposure Factors Handbook,” U.S. Environmental Protection Agency document EPA/600/P93/187A, Office of Research and Development, Washington, D.C. (EPA 1993)

EPA (U.S. Environmental Protection Agency), June 5, 1997. “Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final,” U.S. Environmental Protection Agency, Environmental Response Team, Edison NJ. (EPA 1997)

EPA (U.S. Environmental Protection Agency), October 7, 1999. “Issuance of Final Guidance: Ecological Risk Assessment and Risk Management Principles for Superfund Sites,” OSWER Directive No. 9285.7-28 P, Office of Solid Waste and Emergency Response, Washington, D.C. (EPA 1999)

EPA (U.S. Environmental Protection Agency), July 2002. “Calculating Exposure Point Concentrations at Hazardous Waste Sites,” draft, U.S. Environmental Protection Agency document OSWER 9285.6-10, Office of Emergency and Remedial Response, Washington, D.C. (EPA 2002)

EPA (U.S. Environmental Protection Agency), November 2003. “Guidance for Developing Ecological Soil Screening Levels, Evaluation of Dermal Contact and Inhalation Exposure Pathways for the Purpose of Setting Eco-SSLs, Attachment 1-3, U.S. Environmental Protection Agency document OSWER Directive 92857-55, Office of Solid Waste and Emergency Response. (EPA 2003)

EPA (U.S. Environmental Protection Agency), December 2010. “Final Report Bioavailability of Dioxins and Dioxin-Like Compounds in Soil,” Office of Superfund Remediation and Technology Innovation, Environmental Response Team, West Las Vegas, Nevada (http://epa.gov/superfund/health/contaminants/dioxin/pdfs/Final_dioxin_RBA_Report_12_20_10.pdf). (EPA 2010)

Fresquez, P.R., 2009. “The Concentration of Radionuclides, Heavy Metals, and Polychlorinated Biphenyls in Field Mice collected from Regional Background Areas” Los Alamos National Laboratory document LA-UR-09-07580, Los Alamos, New Mexico. (Fresquez 2009)

Fresquez, P.R., 2011. “The Concentration of Radionuclides, Heavy Metals, and Polychlorinated Biphenyls in Field Mice collected from Regional Background Areas: Revision 1” Los Alamos National Laboratory document LA-UR-11-11687, Los Alamos, New Mexico. (Fresquez 2011a)

Fresquez, P.R., 2011. “Chemical Concentrations in Field Mice Collected from Open-Detonation Firing Sites TA-36 Minie and TA-39 Point 6 at Los Alamos National Laboratory,” Los Alamos National Laboratory document LA-UR-11-10614, Los Alamos, New Mexico. (Fresquez 2011b)

Fresquez, P.R., L. Hansen, and C. Hathcock, 2013. “Chemical Concentrations in Field Mice/Voles Collected from an Open-Burn Site at Technical Area 16 at Los Alamos National Laboratory, Revision 1,” Los Alamos National Laboratory document LA-UR-13-200040, Los Alamos, New Mexico. (Fresquez et al. 2013)

Kraig, D., Ryti, R., Katzman, D., Buhl, T., Gallaher, B., and Fresquez, P., March 2002. "Radiological and Nonradiological Effects after the Cerro Grande Fire," Los Alamos National Laboratory document LA-13914, Los Alamos, New Mexico. (Kraig et al. 2002)

Krouskop, K.J., K.C. Ayers, and J.L. Proctor. 1991. “Multimedia Sampling for Dioxin at a Strip Mine Reclaimed with Sludge from Bleached Kraft Wastewater Treatment,” *Tappi Journal*, 74(4):235–240. (Krouskop et al. 1991)

LANL (Los Alamos National Laboratory), September 1998. "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998)

LANL (Los Alamos National Laboratory), November 2003. "ECORISK Database (Version 2.0)," on CD, Los Alamos, New Mexico. (LANL 2003)

LANL (Los Alamos National Laboratory), April 2004. "Los Alamos and Pueblo Canyons Investigation Report," Los Alamos National Laboratory document LA-UR-04-2714, Los Alamos, New Mexico. (LANL 2004)

LANL (Los Alamos National Laboratory), December 2005. "Los Alamos and Pueblo Canyons Supplemental Investigation Report," Los Alamos National Laboratory document LA-UR-05-9230, Los Alamos, New Mexico. (LANL 2005)

LANL (Los Alamos National Laboratory), October 2006. "Mortandad Canyon Investigation Report," Los Alamos National Laboratory document LA-UR-06-6752, Los Alamos, New Mexico. (LANL 2006)

LANL (Los Alamos National Laboratory), June 2007. "Revised Risk Assessments for Mortandad Canyon," Los Alamos National Laboratory document LA-UR-07-4010, Los Alamos, New Mexico. (LANL 2007)

LANL (Los Alamos National Laboratory), August 2009. "Pajarito Canyon Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-09-4670, Los Alamos, New Mexico. (LANL 2009a)

LANL (Los Alamos National Laboratory), October 2009. "Investigation Report for Sandia Canyon," Los Alamos National Laboratory document LA-UR-09-6450, Los Alamos, New Mexico. (LANL 2009b)

LANL (Los Alamos National Laboratory), October 2012. "Derivation and Use of Radionuclide Screening Action Levels, Revision 2," Los Alamos National Laboratory document LA-UR-12-23292, Los Alamos, New Mexico. (LANL 2012a)

LANL (Los Alamos National Laboratory), November 2012. "Screening-Level Ecological Risk Assessment Methods, Revision 3," Los Alamos National Laboratory document LA-UR-12-24152, Los Alamos, New Mexico. (LANL 2012b)

LANL (Los Alamos National Laboratory), October 2012. "ECORISK Database (Release 3.1)," on CD, LA-UR-12-24548, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012c)

LANL (Los Alamos National Laboratory), 2013. "Avian Monitoring at the TA-36 Minie Site, TA-39 Point 6, and TA-16 Burn Grounds," Los Alamos National Laboratory document LA-UR-13-27825, Los Alamos, New Mexico. (LANL 2013)

NMED (New Mexico Environment Department), February 2012 (updated June 2012). "Risk Assessment Guidance for Site Investigations and Remediation," New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. (NMED 2012)

Sample, B.E., Suter III, G.W., Efroymson, R.A., and Jones, D.A., May 1998. “A Guide to the ORNL Ecotoxicological Screening Benchmarks: Background, Development, and Application,” Oak Ridge National Laboratory, Environmental Sciences Division, Publication No. 4783, ORNL/TM13615, Oak Ridge, TN. (Sample et al. 1997)

Umbreit, T.H., Hesse, E.J., and Gallo, M.A., 1986. “Bioavailability of dioxin in soil from a 2,4,5-T manufacturing site,” Science 232:497–499. (Umbreit et al. 1986)

Van den Berg, M., Birnbaum, L., Bosveld, A.T., Brunström, B., Cook, P., Feeley, M., Giesy, J.P., Hanberg, A., Hasegawa, R., Kennedy, S.W., Kubiak, T., Larsen, J.C., van Leeuwen, F.X., Liem, A.K., Nolt, C., Peterson, R.E., Poellinger, L., Safe, S., Schrenk, D., Tillitt, D., Tysklind, M., Younes, M., Waern, F., and Zacharewski, T., 1998. “Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife,” Environ Health Perspect. 106(12):775–792. (Van den Berg et al. 1998)

Table 1.2-1
Inorganic Chemicals Detected or Detected above Background at the TA-36-8 OD Unit

Sample ID	Depth (ft)	Media	Cadmium (mg/kg)	Calcium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Perchlorate (mg/kg)	Zinc (mg/kg)
Soil BV[a] (mg/kg)			**0.4**	**6120**	**14.7**	**22.3**	**15.4**	**na[b]**	**48.8**
Industrial SSLs[c] (mg/kg)			**897**	**na**	**45400**	**800**	**22500**	**795**	**341000**
Residential SSLs[c] (mg/kg)			**70.3**	**na**	**3130**	**400**	**1560**	**54.8**	**23500**
RE36-11-4953	0-1	Soil	2.71	—[d]	49.1(J+)	—	—	—	66.7
RE36-11-4954	0-1	Soil	—	—	32(J+)	—	—	0.000717(J)	42.2
RE36-11-4955	0-1	Soil	3.17	—	99.2(J+)	22.4	—	—	50.1
RE36-11-4956	0-1	Soil	—	—	349(J+)	—	—	0.00905	45.1
RE36-11-4957	0-1	Soil	2.33	—	212(J+)	—	—	0.000669(J)	32.9
RE36-11-4958	0-1	Soil	—	—	88.7(J+)	30.7	—	—	55.4
RE36-11-4959	0-1	Soil	—	—	83.2(J+)	32.9	—	—	43
RE36-11-4960	0-1	Soil	—	—	55.9(J+)	23.8	—	0.000912(J)	42.8
RE36-11-4961	0-1	Soil	0.835	6210	32.5(J+)	—	—	0.000594(J)	37.2
RE36-11-4962	0-1	Soil	—	—	—	—	—	0.00166(J)	40.6
RE36-11-4963	0-1	Soil	1.19	—	1470(J+)	—	—	—	29.4
RE36-11-4964	0-1	Soil	1.11	—	49.9(J+)	—	—	—	40.6
RE36-11-4965	0-1	Soil	0.487(J)	—	34.1(J+)	—	—	—	50.1
RE36-11-4967	0-1	Soil	0.895	—	61.1(J+)	—	32.2(J-)	0.00272	46.5
RE36-11-4968	0-1	Soil	—	—	27.5(J+)	—	—	—	49.9
RE36-11-4969	0-1	Soil	0.645	—	31.9(J+)	—	—	0.000854(J)	46.6
RE36-11-4970	0-1	Soil	—	—	—	—	—	0.000585(J)	34.5
RE36-11-4971	0-1	Soil	—	—	22(J+)	—	—	—	35
RE36-11-4972	0-1	Soil	—	—	29.6(J+)	—	—	—	54.4

[a] Source of BVs Is LANL (1998).
[b] na = Not available.
[c] SSLs from NMED (2012).
[d] — = Not detected or not detected above BV.

Table 1.2-2
Inorganic Chemicals Detected or Detected above Background at the TA-39-6 OD Unit

Sample ID	Depth (ft)	Media	Antimony (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Perchlorate (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Soil BV[a] (mg/kg)			**0.83**	**295**	**0.4**	**14.7**	**22.3**	**0.1**	**na[b]**	**1**	**48.8**
Industrial SSLs[c] (mg/kg)			**454**	**223000**	**897**	**45400**	**800**	**341**	**795**	**5680**	**341000**
Residential SSLs[c] (mg/kg)			**31.3**	**15600**	**70.3**	**3130**	**400**	**23.5**	**54.8**	**391**	**23500**
RE39-11-4973	0-1	Soil	—[d]	298	—	312(J)	217	0.488	0.000948(J)	—	194
RE39-11-4974	0-1	Soil	3.36	—	0.739	1910(J)	50.5	—	—	—	—
RE39-11-4975	0-1	Soil	2.5	—	—	52.4(J)	53.8	—	0.00168(J)	—	—
RE39-11-4976	0-1	Soil	—	—	—	79.8(J)	51.2	—	0.00135(J)	—	56.8
RE39-11-4977	0-1	Soil	2.18	—	—	3410(J)	98	—	0.00574	—	91
RE39-11-4978	0-1	Soil	0.996(J)	—	0.463(J)	196(J)	91.9	—	—	—	49.4
RE36-11-4979	0-1	Soil	—	—	—	225(J)	139	—	—	—	—
RE39-11-4980	0-1	Soil	—	—	—	323(J)	259	—	0.00059(J)	—	60.2
RE39-11-4981	0-1	Soil	—	—	—	229(J)	83.1	—	—	—	—
RE39-11-4982	0-1	Soil	1.05	—	—	463(J)	150	—	—	1.36	50.5

[a] Source of BVs Is LANL (1998).
[b] na = Not available.
[c] SSLs from NMED (2012).
[d] — = Not detected or not detected above BV.

Table 1.2-3
Organic Chemicals Other than Dioxins/Furans Detected at the TA-36-8 OD Unit

Sample ID	Depth (ft)	Media	Acetone	Amino-2,6-dinitrotoluene[4-]	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]
Industrial SSLs[a]			**868000**	**1900[b]**	**183000**	**8.26**	**8.26**	**23.4**	**2.34**	**23.4**	**18300[c]**	**234**	**1370**	**375000**
Residential SSLs[a]			**66600**	**150[b]**	**17200**	**1.12**	**2.22**	**1.48**	**0.148**	**1.48**	**1720[c]**	**14.8**	**347**	**37100**
RE36-11-4953	0-1	Soil	—[d]	—	—	—	0.0017(J)	—	—	0.0238(J)	—	—	—	—
RE36-11-4954	0-1	Soil	—	—	—	—	—	—	—	—	—	—	0.132(J)	—
RE36-11-4955	0-1	Soil	—	—	—	—	0.0016(J)	—	—	0.0257(J)	0.0151(J)	—	—	—
RE36-11-4956	0-1	Soil	0.00331(J)	0.285(J)	0.016(J)	—	—	0.0259(J)	0.0505	0.0396	0.0559		0.128(J)	0.00161(J)
RE36-11-4957	0-1	Soil	—	—	—	—	—	—	—	—	—	—	8.4	—
RE36-11-4958	0-1	Soil	—	—	—	0.0018(J)	0.0027(J)	—	—	—	—	—	—	—
RE36-11-4959	0-1	Soil	—	—	—	—	—	—	—	—	—	—	0.289(J)	—
RE36-11-4960	0-1	Soil	—	—	—	—	—	—	—	—	—	—	0.247(J)	—
RE36-11-4961	0-1	Soil	—	—	—	—	—	—	—	—	—	—	—	—
RE36-11-4962	0-1	Soil	—	—	—	—	0.0013(J)	—	—	—	—	—	—	—
RE36-11-4963	0-1	Soil	—	—	—	—	—	—	—	—	—	—	0.0833(J)	—
RE36-11-4964	0-1	Soil	—	—	—	—	—	—	—	—	—	—	—	—
RE36-11-4965	0-1	Soil	—	—	—	—	—	—	—	0.0183(J)	—	—	—	—
RE36-11-4967	0-1	Soil	—	—	—	—	0.0207	—	—	—	—	—	—	—
RE36-11-4968	0-1	Soil	—	—	0.0134(J)	—	—	0.0723	0.0836	0.0915	0.0476	0.0343	—	—
RE36-11-4969	0-1	Soil	—	—	—	—	—	—	—	—	—	—	0.108(J)	—
RE36-11-4970	0-1	Soil	—	—	—	—	—	—	—	0.0157(J)	—	—	—	—
RE36-11-4971	0-1	Soil	—	—	—	—	—	—	—	—	—	—	—	—
RE36-11-4972	0-1	Soil	—	—	—	—	—	—	—	—	—	—	0.0889(J)	—

Table 1.2-3 (continued)

Sample ID	Depth (ft)	Media	Chloronaphthalene[2-]	Chrysene	Di-n-butyl phthalate	Dinitrotoluene[2,4-]	Dinitrotoluene[2,6-]	Diphenylamine	Fluoranthene	Fluorene	HMX	Indeno(1,2,3-cd)pyrene	Methylene chloride
Industrial SSLs[a]			**90800**	**2340**	**68400**	**61.8**	**684**	**15000[b]**	**24400**	**24400**	**56800**	**23.4**	**4700**
Residential SSLs[a]			**6260**	**148**	**6110**	**15.7**	**61.1**	**1500[b]**	**2290**	**2290**	**3910**	**1.48**	**409**
RE36-11-4953	0-1	Soil	—	—	0.147(J)	—	—	—	0.0162(J)	—	—	—	—
RE36-11-4954	0-1	Soil	—	—	0.31(J)	0.282(J)	—	—	—	—	0.974	—	—
RE36-11-4955	0-1	Soil	—	—	—	—	—	—	0.0106(J)	—	0.267(J)	—	—
RE36-11-4956	0-1	Soil	—	0.0242(J)	—	0.116(J)	—	—	0.0651	0.0194(J)	7.69	0.0232(J)	—
RE36-11-4957	0-1	Soil	—	—	—	—	—	—	—	—	2.41	—	—
RE36-11-4958	0-1	Soil	—	—	1.2	1.58	0.0696(J)	0.146(J)	—	—	0.222(J)	—	—
RE36-11-4959	0-1	Soil	—	—	—	—	—	—	—	—	2.27	—	—
RE36-11-4960	0-1	Soil	—	—	0.0884(J)	—	—	—	—	—	0.151(J)	—	—
RE36-11-4961	0-1	Soil	—	—	—	—	—	—	—	—	—	—	—
RE36-11-4962	0-1	Soil	—	—	—	—	—	—	—	—	—	—	—
RE36-11-4963	0-1	Soil	—	—	—	—	—	—	—	—	24.5	—	—
RE36-11-4964	0-1	Soil	—	—	—	—	—	—	—	—	67.4	—	—
RE36-11-4965	0-1	Soil	—	0.0109(J)	0.146(J)	—	—	—	0.0242(J)	—	—	—	—
RE36-11-4967	0-1	Soil	0.108	—	—	—	—	—	—	—	1.18	—	—
RE36-11-4968	0-1	Soil	—	0.0771	0.133(J)	—	—	—	0.142	—	0.419(J)	0.0452	0.00217(J)
RE36-11-4969	0-1	Soil	—	—	0.0827(J)	—	—	—	—	—	0.516	—	—
RE36-11-4970	0-1	Soil	—	—	—	—	—	—	0.0202(J)	—	—	—	—
RE36-11-4971	0-1	Soil	—	—	—	—	—	—	—	—	—	—	—
RE36-11-4972	0-1	Soil	—	—	0.176(J)	—	—	—	—	—	—	—	—

Table 1.2-3 (continued)

Sample ID	Depth (ft)	Media	Methylnaphthalene[2-]	Naphthalene	PETN	Phenanthrene	Pyrene	RDX	TATB	Toluene	Trinitrotoluene[2,4,6-]	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Industrial SSLs[a]			**2200[b]**	**241**	**4300[b]**	**20500**	**18300**	**3410**	**27000[b,e]**	**57700**	**568**	**4410**	**3980[f]**
Residential SSLs[a]			**230[b]**	**43**	**1200[b]**	**1830**	**1720**	**58.2**	**2200[b,e]**	**5270**	**39.1**	**898**	**814[f]**
RE36-11-4953	0-1	Soil	—	—	—	—	0.0121(J)	1.16	7.98(J)	—	—	0.000448(J)	0.00105(J)
RE36-11-4954	0-1	Soil	—	—	—	—	—	—	37.3(J)	—	—	—	0.00039(J)
RE36-11-4955	0-1	Soil	—	—	—	—	—	—	30.5(J)	—	—	—	—
RE36-11-4956	0-1	Soil	0.00784(J)	0.0136(J)	—	0.058	0.122	2.61	30.8(J)	0.000853(J)	0.701	—	0.000823(J)
RE36-11-4957	0-1	Soil	—	—	—	0.013(J)	—	0.189(J)	29.1(J)	—	0.111(J)	—	—
RE36-11-4958	0-1	Soil	—	—	—	—	—	0.105(J)	24.4(J)	—	—	—	—
RE36-11-4959	0-1	Soil	—	—	—	—	—	0.138(J)	34.9(J)	—	—	—	—
RE36-11-4960	0-1	Soil	—	—	—	—	—	0.144(J)	31.1(J)	—	—	—	—
RE36-11-4961	0-1	Soil	—	—	—	—	—	—	11.4(J)	—	—	—	—
RE36-11-4962	0-1	Soil	—	—	—	—	—	—	1.35	—	—	—	—
RE36-11-4963	0-1	Soil	—	—	12.8	—	—	—	23.7(J)	—	—	—	—
RE36-11-4964	0-1	Soil	—	—	—	—	—	—	27.9(J)	—	—	—	—
RE36-11-4965	0-1	Soil	—	—	—	—	0.0211(J)	—	33.8(J)	—	—	—	—
RE36-11-4967	0-1	Soil	—	—	—	—	—	—	16.9	0.000535(J)	—	—	0.000565(J)
RE36-11-4968	0-1	Soil	—	—	—	0.0774	0.137	0.608	3.52(J)	0.000897(J)	—	—	0.00101(J)
RE36-11-4969	0-1	Soil	—	—	—	—	—	—	7.73(J)	—	—	—	—
RE36-11-4970	0-1	Soil	—	—	—	—	0.0285(J)	—	1.14(J)	—	—	—	—
RE36-11-4971	0-1	Soil	—	—	—	—	—	—	1.74	—	—	—	—
RE36-11-4972	0-1	Soil	—	—	—	—	—	—	19.8	—	—	—	—

Note: units are mg/kg.
[a] SSLs from NMED (2012), unless otherwise noted.
[b] SSLs from EPA regional screening tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).
[c] Pyrene used a surrogate based on structural similarity.
[d] — = Not detected.
[e] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[f] Xylenes used as a surrogate based on structural similarity.

Table 1.2-4
Dioxin and Furan Congener Concentrations in Samples Collected at the TA-36-8 OD Unit

Congener	RE-11-4953 (mg/kg)	RE-11-4954 (mg/kg)	RE-11-4955 (mg/kg)	RE-11-4956 (mg/kg)	RE-11-4957 (mg/kg)	RE-11-4958 (mg/kg)	RE-11-4959 (mg/kg)	RE-11-4960 (mg/kg)	RE-11-4961 (mg/kg)	RE-11-4962 (mg/kg)
2,3,7,8-TCDD	1.27E-07	Not detected	1.25E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	6.51E-07	Not detected	7.07E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	1.34E-06	Not detected	1.63E-06	Not detected	5.92E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	2.62E-06	5.77E-07	3.05E-06	Not detected	1.22E-06	Not detected	Not detected	7.86E-07	7.58E-07	Not detected
1,2,3,7,8,9-HxCDD	2.79E-06	6.45E-07	2.84E-06	Not detected	1.15E-06	Not detected	Not detected	6.65E-07	7.13E-07	Not detected
1,2,3,4,6,7,8-HpCDD	1.27E-04	1.87E-05	1.34E-04	7.34E-06	4.88E-05	1.69E-05	9.02E-06	2.60E-05	2.35E-05	9.01E-06
OCDD	1.07E-03	1.51E-04	1.01E-03	6.44E-05	3.28E-04	1.44E-04	7.28E-05	2.60E-04	1.56E-04	5.95E-05
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	6.70E-07	Not detected	6.40E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	5.62E-07	Not detected	6.38E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	8.01E-07	Not detected	8.57E-07	Not detected	5.54E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.09E-05	2.51E-06	9.35E-06	1.10E-06	4.04E-06	2.67E-06	1.18E-06	3.49E-06	2.05E-06	1.10E-06
1,2,3,4,7,8,9-HpCDF	6.84E-07	Not detected	6.79E-07	Not detected	5.73E-07	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	3.20E-05	6.65E-06	2.93E-05	2.76E-06	1.03E-05	8.33E-06	3.49E-06	1.23E-05	4.40E-06	2.19E-06

Table 1.2-4 (continued)

Congener	RE-11-4963 (mg/kg)	RE-11-4964 (mg/kg)	RE-11-4965 (mg/kg)	RE-11-4967 (mg/kg)	RE-11-4968 (mg/kg)	RE-11-4969 (mg/kg)	RE-11-4970 (mg/kg)	RE-11-4971 (mg/kg)	RE-11-4972 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	1.63E-07	1.84E-07	1.68E-07	Not detected	Not detected	Not detected	3.79E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	9.47E-07	8.58E-07	7.46E-07	Not detected	Not detected	Not detected	3.04E-06
1,2,3,4,7,8-HxCDD	6.14E-07	5.93E-07	2.25E-06	1.82E-06	1.98E-06	1.05E-06	Not detected	Not detected	7.20E-06
1,2,3,6,7,8-HxCDD	1.05E-06	1.20E-06	4.29E-06	3.65E-06	2.96E-06	2.00E-06	7.37E-07	Not detected	1.50E-05
1,2,3,7,8,9-HxCDD	9.10E-07	1.16E-06	3.95E-06	3.59E-06	3.13E-06	2.11E-06	6.89E-07	Not detected	1.51E-05
1,2,3,4,6,7,8-HpCDD	3.52E-05	4.41E-05	1.55E-04	1.38E-04	1.37E-04	6.78E-05	2.62E-05	1.38E-05	6.02E-04
OCDD	2.25E-04	2.97E-04	9.93E-04	9.88E-04	1.05E-03	4.07E-04	1.97E-04	1.03E-04	4.75E-03
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.94E-07
1,2,3,4,7,8-HxCDF	Not detected	Not detected	5.21E-07	7.11E-07	6.82E-07	Not detected	Not detected	Not detected	2.34E-06
1,2,3,6,7,8-HXCDF	Not detected	Not detected	6.22E-07	6.36E-07	5.92E-07	Not detected	Not detected	Not detected	1.87E-06
2,3,4,6,7,8-HxCDF	Not detected	Not detected	9.10E-07	1.04E-06	8.62E-07	Not detected	Not detected	Not detected	3.14E-06
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	6.41E-07
1,2,3,4,6,7,8-HpCDF	3.11E-06	3.44E-06	1.42E-05	1.25E-05	1.05E-05	4.59E-06	2.52E-06	1.42E-06	4.17E-05
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	1.06E-06	9.20E-07	7.05E-07	Not detected	Not detected	Not detected	2.85E-06
OCDF	6.75E-06	8.39E-06	4.56E-05	3.64E-05	3.10E-05	1.22E-05	8.18E-06	3.40E-06	1.07E-04

Table 1.2-5
Organic Chemicals Detected Other than Dioxins/Furans at the TA-39-6 OD Unit

Sample ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate	Di-n-butyl phthalate	Dinitrotoluene[2,4-]	Di-n-octyl phthalate	Diphenylamine	Ethylbenzene	HMX	Isopropyltoluene[4-]	Naphthalene
Industrial SSLs[a]			**8.26**	**8.26**	**1370**	**9100[b]**	**68400**	**61.8**	**68400[c]**	**15000[b]**	**378**	**56800**	**14500[d]**	**241**
Residential SSLs[a]			**1.12**	**2.22**	**347**	**2600[b]**	**6110**	**15.7**	**6110[c]**	**1500[b]**	**68.4**	**3910**	**2430[d]**	**43**
RE39-11-4973	0-1	Soil	0.0381	0.0177	0.101(J)	—[e]	0.414	—	—	—	0.000336(J)	—	0.00133	0.0234(J)
RE39-11-4974	0-1	Soil	0.002(J)	0.0016(J)	0.403	—	—	—	—	—	—	—	—	—
RE39-11-4975	0-1	Soil	0.0031(J)	0.0028(J)	—	—	—	—	—	—	—	—	—	—
RE39-11-4976	0-1	Soil	0.0084	0.0052	—	—	—	—	—	—	—	—	—	—
RE39-11-4977	0-1	Soil	0.007	0.0054	2.42	—	6.76(J)	15.7(J)	3.81	1.3	—	0.458(J)	—	—
RE39-11-4978	0-1	Soil	0.005	0.0026(J)	0.144(J)	—	3.68	4.52(J)	—	0.309(J)	—	—	—	—
RE39-11-4979	0-1	Soil	0.0108	0.0063	—	—	1.12	2.79	—	0.182(J)	—	—	—	—
RE39-11-4980	0-1	Soil	0.0113	0.0135	0.291(J)	0.09(J)	0.527(J)	5.18	—	—	—	—	—	—
RE39-11-4981	0-1	Soil	0.0028(J)	—	0.915	—	1.6	3.69(J)	—	0.0717(J)	—	—	—	—
RE39-11-4982	0-1	Soil	0.0058	0.0026(J)	0.437	0.137(J)	1.47	3.54	—	0.143(J)	—	—	—	—

Table 1.2-5 (continued)

Sample ID	Depth (ft)	Media	RDX	Styrene	TATB	Toluene	Trinitrotoluene[2,4,6-]	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Industrial SSLs[a]			**3410**	**50000**	**27000[b,f]**	**57700**	**568**	**4410**	**3980[g]**
Residential SSLs[a]			**58.2**	**7280**	**2200[b,f]**	**5270**	**39.1**	**898**	**814[g]**
RE39-11-4973	0-1	Soil	—	0.000388(J)	5.19	0.00124	—	0.000336(J)	0.00165(J)
RE39-11-4974	0-1	Soil	—	—	0.435(J)	—	—	—	—
RE39-11-4975	0-1	Soil	—	—	—	—	—	—	—
RE39-11-4976	0-1	Soil	—	—	—	—	—	—	—
RE39-11-4977	0-1	Soil	—	—	0.592(J)	—	—	—	—
RE39-11-4978	0-1	Soil	—	—	9.71	—	—	—	—
RE39-11-4979	0-1	Soil	—	—	—	—	—	—	—
RE39-11-4980	0-1	Soil	—	—	2.07	—	—	—	—
RE39-11-4981	0-1	Soil	0.116(J)	—	3.69	—	0.312(J)	—	—
RE39-11-4982	0-1	Soil	—	—	1.98	—	—	—	—

Note: units are mg/kg.

[a] SSLs from NMED (2012), unless otherwise noted.

[b] SSLs from EPA regional screening tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).

[c] Di-n-butyl phthalate used as a surrogate based on structural similarity.

[d] Isopropylbenzene used as a surrogate based on structural similarity.

[e] — = Not detected.

[f] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

[g] Xylenes used as a surrogate based on structural similarity.

Table 1.2-6
Dioxin and Furan Congener Concentrations in Samples Collected at the TA-39-6 OD Unit

Congener	RE-11-4973 (mg/kg)	RE-11-4974 (mg/kg)	RE-11-4975 (mg/kg)	RE-11-4976 (mg/kg)	RE-11-4977 (mg/kg)	RE-11-4978 (mg/kg)	RE-11-4979 (mg/kg)	RE-11-4980 (mg/kg)	RE-11-4981 (mg/kg)	RE-11-4982 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	2.16E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	5.63E-07	Not detected	Not detected	Not detected	1.04E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	9.81E-07	Not detected	Not detected	Not detected	2.12E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	3.00E-06	Not detected	Not detected	Not detected	4.57E-06	5.35E-07	Not detected	1.11E-06	Not detected	5.34E-07
1,2,3,7,8,9-HxCDD	2.45E-06	Not detected	5.69E-07	Not detected	4.89E-06	Not detected	Not detected	1.03E-06	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	1.21E-04	1.78E-05	1.74E-05	1.04E-05	1.81E-04	1.71E-05	9.84E-06	4.30E-05	5.28E-06	1.50E-05
OCDD	8.72E-04	1.63E-04	1.38E-04	7.58E-05	1.47E-03	1.31E-04	6.36E-05	3.52E-04	3.79E-05	1.27E-04
2,3,7,8-TCDF	3.11E-06	Not detected	Not detected	Not detected	2.03E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	7.87E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	4.75E-07	Not detected	Not detected
2,3,4,7,8-PeCDF	1.30E-06	Not detected	Not detected	5.16E-07	8.38E-07	Not detected	4.76E-07	8.60E-07	Not detected	5.26E-07
1,2,3,4,7,8-HxCDF	1.33E-06	Not detected	Not detected	Not detected	1.26E-06	Not detected	Not detected	7.27E-07	Not detected	Not detected
1,2,3,6,7,8-HXCDF	8.16E-07	Not detected	Not detected	Not detected	9.91E-07	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	1.02E-06	Not detected	Not detected	Not detected	1.48E-06	Not detected	Not detected	5.85E-07	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.01E-05	2.06E-06	1.70E-06	1.31E-06	1.44E-05	1.86E-06	1.12E-06	4.06E-06	9.43E-07	1.89E-06
1,2,3,4,7,8,9-HpCDF	7.93E-07	Not detected	Not detected	Not detected	7.16E-07	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	2.48E-05	4.99E-06	2.16E-06	1.52E-06	2.44E-05	2.99E-06	1.61E-06	6.81E-06	1.48E-06	3.78E-06

Table 1.2-7
Radionuclides Detected above Background at the TA-36-8 OD Unit

Sample ID	Depth (ft)	Media	Uranium-234 (pCi/g)	Uranium-235 (pCi/g)	Uranium-238 (pCi/g)
Soil BV[a] (pCi/g)			**2.59**	**0.2**	**2.29**
Industrial SALs[b] (pCi/g)			**1500**	**87**	**430**
Residential SALs[b] (pCi/g)			**170**	**17**	**87**
RE36-11-4953	0-1	Soil	3.62	0.515	19.4
RE36-11-4954	0-1	Soil	—[c]	—	—
RE36-11-4955	0-1	Soil	13.8(J+)	1.83(J+)	105(J+)
RE36-11-4956	0-1	Soil	—	—	—
RE36-11-4957	0-1	Soil	3.02	0.446	18.6
RE36-11-4958	0-1	Soil	—	—	4.09
RE36-11-4959	0-1	Soil	—	—	—
RE36-11-4960	0-1	Soil	—	—	—
RE36-11-4961	0-1	Soil	4.09	0.558	26.4
RE36-11-4962	0-1	Soil	—	—	5.29
RE36-11-4963	0-1	Soil	—	0.274	15.6
RE36-11-4964	0-1	Soil	3.04	0.418	19.8
RE36-11-4965	0-1	Soil	—	0.259	10.6
RE36-11-4967	0-1	Soil	5.11	0.648	31.7
RE36-11-4968	0-1	Soil	—	—	9.21
RE36-11-4969	0-1	Soil	—	0.32	12.1
RE36-11-4970	0-1	Soil	—	—	5.81
RE36-11-4971	0-1	Soil	—	—	3.9
RE36-11-4972	0-1	Soil	2.87	0.314	16.3

[a] Source of BVs Is LANL (1998).
[b] SALs from LANL (2012a).
[c] — = Not detected or not detected above BV.

Table 2.1-1
TEFs Used for Calculating TCDD Equivalent Concentrations

Dioxin and Furan Congeners	Mammalian TEF[a]	Avian TEF[b]
Tetrachlorodibenzodioxin[2,3,7,8-]	1	1
Pentachlorodibenzodioxin[1,2,3,7,8-]	1	1
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	0.1	0.05
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	0.1	0.01
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	0.1	0.1
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.01	0.001
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.0003	0.0001
Tetrachlorodibenzofuran[2,3,7,8-]	0.1	1
Pentachlorodibenzofuran[1,2,3,7,8-]	0.03	0.1
Pentachlorodibenzofuran[2,3,4,7,8-]	0.3	1
Hexachlorodibenzofuran[1,2,3,4,7,8-]	0.1	1
Hexachlorodibenzofuran[1,2,3,6,7,8-]	0.1	0.1
Hexachlorodibenzofuran[1,2,3,7,8,9-]	0.1	0.1
Hexachlorodibenzofuran[2,3,4,6,7,8-]	0.1	0.1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.01	0.01
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	0.01	0.01
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.0003	0.0001

[a] NMED (2012).
[b] Van den Berg et al. (1998).

Table 2.1-2

Dioxin and Furan Congener Concentrations Converted Using Mammalian TEFs at the TA-36-8 OD Unit

Congener	RE-11-4953 (mg/kg)	RE-11-4954 (mg/kg)	RE-11-4955 (mg/kg)	RE-11-4956 (mg/kg)	RE-11-4957 (mg/kg)	RE-11-4958 (mg/kg)	RE-11-4959 (mg/kg)	RE-11-4960 (mg/kg)	RE-11-4961 (mg/kg)	RE-11-4962 (mg/kg)
2,3,7,8-TCDD	1.27E-07	Not detected	1.25E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	6.51E-07	Not detected	7.07E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	1.34E-07	Not detected	1.63E-07	Not detected	5.92E-08	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	2.62E-07	5.77E-08	3.05E-07	Not detected	1.22E-07	Not detected	Not detected	7.86E-08	7.58E-08	Not detected
1,2,3,7,8,9-HxCDD	2.79E-07	6.45E-08	2.84E-07	Not detected	1.15E-07	Not detected	Not detected	6.65E-08	7.13E-08	Not detected
1,2,3,4,6,7,8-HpCDD	1.27E-06	1.87E-07	1.34E-06	7.34E-08	4.88E-07	1.69E-07	9.02E-08	2.60E-07	2.35E-07	9.01E-08
OCDD	3.21E-07	4.53E-08	3.03E-07	1.93E-08	9.84E-08	4.32E-08	2.18E-08	7.80E-08	4.68E-08	1.79E-08
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	6.70E-08	Not detected	6.40E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	5.62E-08	Not detected	6.38E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	8.01E-08	Not detected	8.57E-08	Not detected	5.54E-08	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.09E-07	2.51E-08	9.35E-08	1.10E-08	4.04E-08	2.67E-08	1.18E-08	3.49E-08	2.05E-08	1.10E-08
1,2,3,4,7,8,9-HpCDF	6.84E-09	Not detected	6.79E-09	Not detected	5.73E-09	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	9.60E-09	2.00E-09	8.79E-09	8.28E-10	3.09E-09	2.50E-09	1.05E-09	3.69E-09	1.32E-09	6.57E-10
TCDD[2,3,7,8-] equivalent concentration	3.37E-06	3.82E-07	3.55E-06	1.05E-07	1.04E-06	2.41E-07	1.25E-07	5.22E-07	4.51E-07	1.20E-07

Table 2.1-2 (continued)

Congener	RE-11-4963 (mg/kg)	RE-11-4964 (mg/kg)	RE-11-4965 (mg/kg)	RE-11-4967 (mg/kg)	RE-11-4968 (mg/kg)	RE-11-4969 (mg/kg)	RE-11-4970 (mg/kg)	RE-11-4971 (mg/kg)	RE-11-4972 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	1.63E-07	1.84E-07	1.68E-07	Not detected	Not detected	Not detected	3.79E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	9.47E-07	8.58E-07	7.46E-07	Not detected	Not detected	Not detected	3.04E-06
1,2,3,4,7,8-HxCDD	6.14E-08	5.93E-08	2.25E-07	1.82E-07	1.98E-07	1.05E-07	Not detected	Not detected	7.20E-07
1,2,3,6,7,8-HxCDD	1.05E-07	1.20E-07	4.29E-07	3.65E-07	2.96E-07	2.00E-07	7.37E-08	Not detected	1.50E-06
1,2,3,7,8,9-HxCDD	9.10E-08	1.16E-07	3.95E-07	3.59E-07	3.13E-07	2.11E-07	6.89E-08	Not detected	1.51E-06
1,2,3,4,6,7,8-HpCDD	3.52E-07	4.41E-07	1.55E-06	1.38E-06	1.37E-06	6.78E-07	2.62E-07	1.38E-07	6.02E-06
OCDD	6.75E-08	8.91E-08	2.98E-07	2.96E-07	3.15E-07	1.22E-07	5.91E-08	3.09E-08	1.43E-06
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	2.68E-07
1,2,3,4,7,8-HxCDF	Not detected	Not detected	5.21E-08	7.11E-08	6.82E-08	Not detected	Not detected	Not detected	2.34E-07
1,2,3,6,7,8-HXCDF	Not detected	Not detected	6.22E-08	6.36E-08	5.92E-08	Not detected	Not detected	Not detected	1.87E-07
2,3,4,6,7,8-HxCDF	Not detected	Not detected	9.10E-08	1.04E-07	8.62E-08	Not detected	Not detected	Not detected	3.14E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	6.41E-08
1,2,3,4,6,7,8-HpCDF	3.11E-08	3.44E-08	1.42E-07	1.25E-07	1.05E-07	4.59E-08	2.52E-08	1.42E-08	4.17E-07
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	1.06E-08	9.20E-09	7.05E-09	Not detected	Not detected	Not detected	2.85E-08
OCDF	2.03E-09	2.52E-09	1.37E-08	1.09E-08	9.30E-09	3.66E-09	2.45E-09	1.02E-09	3.21E-08
TCDD[2,3,7,8-] equivalent concentration	7.10E-07	8.62E-07	4.38E-06	4.01E-06	3.74E-06	1.37E-06	4.91E-07	1.84E-07	1.61E-05

Table 2.1-3

Dioxin and Furan Congener Concentrations Converted Using Avian TEFs at the TA-36-8 OD Unit

Congener	RE-11-4953 (mg/kg)	RE-11-4954 (mg/kg)	RE-11-4955 (mg/kg)	RE-11-4956 (mg/kg)	RE-11-4957 (mg/kg)	RE-11-4958 (mg/kg)	RE-11-4959 (mg/kg)	RE-11-4960 (mg/kg)	RE-11-4961 (mg/kg)	RE-11-4962 (mg/kg)
2,3,7,8-TCDD	1.27E-07	Not detected	1.25E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	6.51E-07	Not detected	7.07E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	6.70E-08	Not detected	8.15E-08	Not detected	2.96E-08	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	2.62E-08	5.77E-09	3.05E-08	Not detected	1.22E-08	Not detected	Not detected	7.86E-09	7.58E-09	Not detected
1,2,3,7,8,9-HxCDD	2.79E-07	6.45E-08	2.84E-07	Not detected	1.15E-07	Not detected	Not detected	6.65E-08	7.13E-08	Not detected
1,2,3,4,6,7,8-HpCDD	1.27E-07	1.87E-08	1.34E-07	7.34E-09	4.88E-08	1.69E-08	9.02E-08	2.60E-08	2.35E-08	9.01E-09
OCDD	1.07E-07	1.51E-08	1.01E-07	6.44E-09	3.28E-08	1.44E-08	7.28E-09	2.60E-08	1.56E-08	5.95E-09
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	6.70E-07	Not detected	6.40E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	5.62E-08	Not detected	6.38E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	8.01E-08	Not detected	8.57E-08	Not detected	5.54E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.09E-07	2.51E-08	9.35E-08	1.10E-08	4.04E-08	2.67E-08	1.18E-08	3.49E-08	2.05E-08	1.10E-08
1,2,3,4,7,8,9-HpCDF	6.84E-09	Not detected	6.79E-09	Not detected	5.73E-09	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	3.20E-09	6.65E-10	2.93E-09	2.76E-10	1.03E-09	8.33E-10	3.49E-10	1.23E-09	4.40E-10	2.19E-10
TCDD[2,3,7,8-] equivalent concentration	2.31E-06	1.30E-07	2.36E-06	2.51E-08	8.94E-07	5.88E-08	2.84E-08	1.62E-07	1.39E-07	2.62E-08

Table 2.1-3 (continued)

Congener	RE-11-4963 (mg/kg)	RE-11-4964 (mg/kg)	RE-11-4965 (mg/kg)	RE-11-4967 (mg/kg)	RE-11-4968 (mg/kg)	RE-11-4969 (mg/kg)	RE-11-4970 (mg/kg)	RE-11-4971 (mg/kg)	RE-11-4972 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	1.63E-07	1.84E-07	1.68E-07	Not detected	Not detected	Not detected	3.79E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	9.47E-07	8.58E-07	7.46E-07	Not detected	Not detected	Not detected	3.04E-06
1,2,3,4,7,8-HxCDD	3.07E-08	2.97E-08	1.13E-07	9.10E-08	9.90E-08	5.25E-08	Not detected	Not detected	3.60E-07
1,2,3,6,7,8-HxCDD	1.05E-08	1.20E-08	4.29E-08	3.65E-08	2.96E-08	2.00E-08	7.37E-09	Not detected	1.50E-07
1,2,3,7,8,9-HxCDD	9.10E-08	1.16E-07	3.95E-07	3.59E-07	3.13E-07	2.11E-07	6.89E-08	Not detected	1.51E-07
1,2,3,4,6,7,8-HpCDD	3.52E-08	4.41E-08	1.55E-07	1.38E-07	1.37E-07	6.78E-08	2.62E-08	1.38E-08	6.02E-07
OCDD	2.25E-08	2.97E-08	9.93E-08	9.88E-08	1.05E-07	4.07E-08	1.97E-08	1.03E-08	4.75E-07
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.94E-07
1,2,3,4,7,8-HxCDF	Not detected	Not detected	5.21E-07	7.11E-07	6.82E-07	Not detected	Not detected	Not detected	2.34E-06
1,2,3,6,7,8-HXCDF	Not detected	Not detected	6.22E-08	6.36E-08	5.92E-08	Not detected	Not detected	Not detected	1.87E-07
2,3,4,6,7,8-HxCDF	Not detected	Not detected	9.10E-08	1.04E-07	8.62E-08	Not detected	Not detected	Not detected	3.14E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	6.41E-08
1,2,3,4,6,7,8-HpCDF	3.11E-08	3.44E-08	1.42E-07	1.25E-07	1.05E-07	4.59E-08	2.52E-08	1.42E-08	4.17E-07
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	1.06E-08	9.20E-09	7.05E-09	Not detected	Not detected	Not detected	2.85E-08
OCDF	6.75E-10	8.39E-10	4.56E-09	3.64E-09	3.10E-09	1.22E-09	8.18E-10	3.40E-10	1.07E-08
TCDD[2,3,7,8-] equivalent concentration	2.22E-07	2.67E-07	2.75E-06	2.78E-06	2.54E-06	4.39E-07	1.48E-07	3.86E-08	1.08E-05

Table 2.1-4

Dioxin and Furan Congener Concentrations Converted Using Mammalian TEFs at the TA-39-6 OD Unit

Congener	RE-11-4973 (mg/kg)	RE-11-4974 (mg/kg)	RE-11-4975 (mg/kg)	RE-11-4976 (mg/kg)	RE-11-4977 (mg/kg)	RE-11-4978 (mg/kg)	RE-11-4979 (mg/kg)	RE-11-4980 (mg/kg)	RE-11-4981 (mg/kg)	RE-11-4982 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	2.16E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	5.63E-07	Not detected	Not detected	Not detected	1.04E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	9.81E-08	Not detected	Not detected	Not detected	2.12E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	3.00E-07	Not detected	Not detected	Not detected	4.57E-07	5.35E-08	Not detected	1.11E-07	Not detected	5.34E-08
1,2,3,7,8,9-HxCDD	2.45E-07	Not detected	5.69E-08	Not detected	4.89E-07	Not detected	Not detected	1.03E-07	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	1.21E-06	1.78E-07	1.74E-07	1.04E-07	1.81E-06	1.71E-07	9.84E-08	4.30E-07	5.28E-08	1.50E-07
OCDD	2.62E-07	4.89E-08	4.14E-08	2.27E-08	4.41E-07	3.93E-08	1.91E-08	1.06E-07	1.14E-08	3.81E-08
2,3,7,8-TCDF	3.11E-07	Not detected	Not detected	Not detected	2.03E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	2.36E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.43E-08	Not detected	Not detected
2,3,4,7,8-PeCDF	3.90E-07	Not detected	Not detected	1.55E-07	2.51E-07	Not detected	1.43E-07	2.58E-07	Not detected	1.58E-07
1,2,3,4,7,8-HxCDF	1.33E-07	Not detected	Not detected	Not detected	1.26E-07	Not detected	Not detected	7.27E-08	Not detected	Not detected
1,2,3,6,7,8-HXCDF	8.16E-08	Not detected	Not detected	Not detected	9.91E-08	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	1.02E-07	Not detected	Not detected	Not detected	1.48E-07	Not detected	Not detected	5.85E-08	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.01E-07	2.06E-08	1.70E-08	1.31E-08	1.44E-07	1.86E-08	1.12E-08	4.06E-08	9.43E-09	1.89E-08
1,2,3,4,7,8,9-HpCDF	7.93E-09	Not detected	Not detected	Not detected	7.16E-09	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	7.44E-09	1.50E-09	6.48E-10	4.56E-10	7.32E-09	8.97E-10	4.83E-10	2.04E-09	4.44E-10	1.13E-09
TCDD[2,3,7,8-] equivalent concentration	3.84E-06	2.49E-07	2.90E-07	2.95E-07	5.65E-06	2.83E-07	2.72E-07	1.20E-06	7.40E-08	4.19E-07

Table 2.1-5
Dioxin and Furan Congener Concentrations Converted Using Avian TEFs at the TA-39-6 OD Unit

Congener	RE-11-4973 (mg/kg)	RE-11-4974 (mg/kg)	RE-11-4975 (mg/kg)	RE-11-4976 (mg/kg)	RE-11-4977 (mg/kg)	RE-11-4978 (mg/kg)	RE-11-4979 (mg/kg)	RE-11-4980 (mg/kg)	RE-11-4981 (mg/kg)	RE-11-4982 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	2.16E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	5.63E-07	Not detected	Not detected	Not detected	1.04E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	4.91E-08	Not detected	Not detected	Not detected	1.06E-07	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	3.00E-08	Not detected	Not detected	Not detected	4.57E-08	5.35E-09	Not detected	1.11E-08	Not detected	5.34E-09
1,2,3,7,8,9-HxCDD	2.45E-07	Not detected	5.69E-08	Not detected	4.89E-07	Not detected	Not detected	1.03E-07	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	1.21E-07	1.78E-08	1.74E-08	1.04E-08	1.81E-07	1.71E-08	9.84E-09	4.30E-08	5.28E-09	1.50E-08
OCDD	8.72E-08	1.63E-08	1.38E-08	7.58E-09	1.47E-07	1.31E-08	6.36E-09	3.52E-08	3.79E-09	1.27E-08
2,3,7,8-TCDF	3.11E-06	Not detected	Not detected	Not detected	2.03E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	7.87E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	4.75E-08	Not detected	Not detected
2,3,4,7,8-PeCDF	1.30E-06	Not detected	Not detected	5.16E-07	8.38E-07	Not detected	4.76E-07	8.60E-07	Not detected	5.26E-07
1,2,3,4,7,8-HxCDF	1.33E-06	Not detected	Not detected	Not detected	1.26E-06	Not detected	Not detected	7.27E-07	Not detected	Not detected
1,2,3,6,7,8-HXCDF	8.16E-08	Not detected	Not detected	Not detected	9.91E-08	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	1.02E-07	Not detected	Not detected	Not detected	1.48E-07	Not detected	Not detected	5.85E-08	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.01E-07	2.06E-08	1.70E-08	1.31E-08	1.44E-07	1.86E-08	1.12E-08	4.06E-08	9.43E-09	1.89E-08
1,2,3,4,7,8,9-HpCDF	7.93E-09	Not detected	Not detected	Not detected	7.16E-09	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	2.48E-09	4.99E-10	2.16E-10	1.52E-10	2.44E-09	2.99E-10	1.61E-10	6.81E-10	1.48E-10	3.78E-10
TCDD[2,3,7,8-] equivalent concentration	7.21E-06	5.52E-08	1.05E-07	5.47E-07	6.75E-06	5.44E-08	5.04E-07	1.93E-06	1.86E-08	5.78E-07

Table 2.1-6
EPCs for the Industrial and Residential Scenarios and Ecological Receptors at the TA-36-8 OD Unit

COPC	Number of Detects	Distribution	EPC (mg/kg)	EPC Method
Acetone	1	n/a*	0.00331	Maximum detected concentration
Amino-2,6-dinitrotoluene[4-]	1	n/a	0.285	Maximum detected concentration
Anthracene	2	n/a	0.016	Maximum detected concentration
Aroclor-1254	1	n/a	0.0018	Maximum detected concentration
Aroclor-1260	5	Nonparametric	0.0055	95% KM (BCA)
Benzo(a)anthracene	2	n/a	0.0723	Maximum detected concentration
Benzo(a)pyrene	2	n/a	0.0836	Maximum detected concentration
Benzo(b)fluoranthene	6	Nonparametric	0.0347	95% KM (t)
Benzo(g,h,i)perylene	3	n/a	0.0559	Maximum detected concentration
Benzo(k)fluoranthene	1	n/a	0.0343	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	8	Nonparametric	2.56	95% KM (Chebyshev)
Butanone[2-]	1	n/a	0.00161	Maximum detected concentration
Chloronaphthalene[2-]	1	n/a	0.108	Maximum detected concentration
Chrysene	3	n/a	0.0771	Maximum detected concentration
Copper	19	Nonparametric	475.7	95% Chebyshev (Mean, Sd)
Di-n-butyl phthalate	8	Nonparametric	0.319	95% KM (t)
Dinitrotoluene[2,4-]	1	n/a	1.58	Maximum detected concentration
Dinitrotoluene[2,6-]	1	n/a	0.0696	Maximum detected concentration
Diphenylamine	1	n/a	0.146	Maximum detected concentration
Fluoranthene	6	Nonparametric	0.0402	95% KM (t)
Fluorene	1	n/a	0.0194	Maximum detected concentration
HMX	12	Nonparametric	22	95% KM (Chebyshev)
Indeno(1,2,3-cd)pyrene	2	n/a	0.0452	Maximum detected concentration
Lead	19	Normal	20.9	95% Student's-t
Methylene chloride	1	n/a	0.00217	Maximum detected concentration
Methylnaphthalene[2-]	1	n/a	0.00784	Maximum detected concentration

Table 2.1-6 (continued)

COPC	Number of Detects	Distribution	EPC (mg/kg)	EPC Method
Naphthalene	1	n/a	0.0136	Maximum detected concentration
Perchlorate	9	Nonparametric	0.0022	95% KM (t)
PETN	1	n/a	12.8	Maximum detected concentration
Phenanthrene	3	n/a	0.0774	Maximum detected concentration
Pyrene	5	Nonparametric	0.0484	95% KM (t)
RDX	7	Nonparametric	0.604	95% KM (t)
TATB	19	Normal	24.8	95% Student's-t
TCDD[2,3,7,8-] (mammalian)	n/a	n/a	0.00000415	95% Adjusted Gamma
TCDD[2,3,7,8-] (avian)	n/a	n/a	0.00000298	95% Adjusted Gamma
Toluene	3	n/a	0.000897	Maximum detected concentration
Trinitrotoluene[2,4,6-]	2	n/a	0.701	Maximum detected concentration
Xylene[1,2-]	1	n/a	0.000448	Maximum detected concentration
Xylene+1,4-Xylene[1,3-]	5	Nonparametric	0.000989	95% KM (t)
Uranium-234 (pCi/g)	19	Gamma	4.01	95% Adjusted Gamma
Uranium-235 (pCi/g)	16	Nonparametric	0.514	95% KM (BCA)
Uranium-238 (pCi/g)	19	Gamma	28	95% Adjusted Gamma

* n/a = Not applicable.

Table 2.1-7
EPCs for the Industrial and Residential Scenarios and Ecological Receptors at the TA-39-6 OD Unit

COPC	Number of Detects	Distribution	EPC (mg/kg)	EPC Method
Antimony	9	Nonparametric	1.9	95% KM (t)
Aroclor-1254	10	Gamma	0.019	95% Adjusted Gamma
Aroclor-1260	9	Nonparametric	0.0092	95% KM (t)
Bis(2-ethylhexyl)phthalate	7	Nonparametric	0.948	95% KM (t)
Butylbenzylphthalate	2	n/a*	0.137	Maximum detected concentration
Copper	10	Nonparametric	2220	95% Chebyshev (Mean, Sd)
Di-n-butyl phthalate	7	Nonparametric	2.89	95% KM (t)
Dinitrotoluene[2,4-]	6	Nonparametric	6.47	95% KM (t)
Di-n-octyl phthalate	1	n/a	3.81	Maximum detected concentration
Diphenylamine	5	Nonparametric	0.521	95% KM (t)
Ethylbenzene	1	n/a	0.000336	Maximum detected concentration
HMX	1	n/a	0.458	Maximum detected concentration
Isopropyltoluene4-	1	n/a	0.00133	Maximum detected concentration
Lead	10	Normal	161	95% Student's-t
Mercury	7	Nonparametric	0.271	95% KM (Chebyshev)
Naphthalene	1	n/a	0.0234	Maximum detected concentration
Perchlorate	5	Nonparametric	0.00257	95% KM (t)
RDX	1	n/a	0.116	Maximum detected concentration
Silver	4	n/a	1.36	Maximum detected concentration
Styrene	1	n/a	0.000388	Maximum detected concentration
TATB	7	Nonparametric	4.3	95% KM (t)
TCDD[2,3,7,8-] (mammalian)	n/a	n/a	0.00000389	95% Chebyshev (Mean,Sd)
TCDD[2,3,7,8-] (avian)	n/a	n/a	0.00000684	95% Adjusted Gamma
Toluene	1	n/a	0.00124	Maximum detected concentration
Trinitrotoluene[2,4,6-]	1	n/a	0.312	Maximum detected concentration
Xylene[1,2-]	1	n/a	0.000336	Maximum detected concentration
Xylene+1,4-Xylene[1,3-]	1	n/a	0.00165	Maximum detected concentration
Zinc	10	Normal	95.2	95% Student's-t

* n/a = Not applicable.

Table 2.1-8
Industrial Screening Evaluation of Noncarcinogenic COPCs at the TA-36-8 OD Unit

COPC	EPC (mg/kg)	Industrial SSL (mg/kg)[a]	HQ
Acetone	0.00331	868000	0.0000000038
Amino-2,6-dinitrotoluene[4-]	0.285	1900[b]	0.00015
Anthracene	0.016	183000	0.000000087
Benzo(g,h,i)perylene	0.0559	18300[c]	0.0000031
Butanone[2-]	0.00161	375000	0.0000000043
Chloronaphthalene[2-]	0.108	90800	0.0000012
Copper	475.7	45400	0.01
Di-n-butylphthalate	0.319	68400	0.0000047
Dinitrotoluene[2,6-]	0.0696	684	0.0001
Diphenylamine	0.146	15000[b]	0.0000097
Fluoranthene	0.0402	24400	0.0000016
Fluorene	0.0194	24400	0.0000008
HMX	22	56800	0.00039
Lead	20.9	800	0.026
Methylnaphthalene[2-]	0.00784	2200[b]	0.0000036
Perchlorate	0.0022	795	0.0000028
Phenanthrene	0.0774	20500	0.0000038
Pyrene	0.0484	18300	0.0000026
TATB	24.8	27000[b,d]	0.00092
Toluene	0.000897	57700	0.000000016
Trinitrotoluene[2,4,6-]	0.701	568	0.0012
Xylene1,2-	0.000448	4410	0.0000001
Xylene+1,4-Xylene[1,3-]	0.000989	3980[e]	0.00000025
		HI	**0.04**

[a] SSLs are from NMED (2012) unless otherwise noted.
[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).
[c] Pyrene used as a surrogate based on structural similarity.
[d] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[e] Xylenes used as a surrogate based on structural similarity.

Table 2.1-9
Residential Screening Evaluation of Noncarcinogenic COPCs at the TA-36-8 OD Unit

COPC	EPC (mg/kg)	Residential SSL (mg/kg)[a]	HQ
Acetone	0.00331	66600	0.00000005
Amino-2,6-dinitrotoluene[4-]	0.285	150[b]	0.0019
Anthracene	0.016	17200	0.00000093
Aroclor-1254	0.0018	1.12	0.0016
Benzo(g,h,i)perylene	0.0559	1720[c]	0.000033
Butanone[2-]	0.00161	37100	0.000000043
Chloronaphthalene[2-]	0.108	6260	0.000017
Copper	475.7	3130	0.15
Di-n-butylphthalate	0.319	6110	0.000052
Dinitrotoluene[2,6-]	0.0696	61.1	0.0011
Diphenylamine	0.146	1500[b]	0.000097
Fluoranthene	0.0402	2290	0.000018
Fluorene	0.0194	2290	0.0000085
HMX	22	3910	0.0056
Lead	20.9	400	0.052
Methylene chloride	0.00217	409	0.000000000053
Methylnaphthalene[2-]	0.00784	230[b]	0.000034
Perchlorate	0.0022	54.8	0.00004
Phenanthrene	0.0774	1830	0.000042
Pyrene	0.0484	1720	0.000028
TATB	24.8	2200[b,d]	0.011
Toluene	0.000897	5270	0.00000017
Trinitrotoluene[2,4,6-]	0.701	39.1	0.018
Xylene[1,2-]	0.000448	898	0.00000005
Xylene+1,4-Xylene[1,3-]	0.000989	814[e]	0.0000012
		HI	**0.2**

[a] SSLs are from NMED (2012) unless otherwise noted.
[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).
[c] Pyrene used as a surrogate based on structural similarity.
[d] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[e] Xylenes used as a surrogate based on structural similarity.

Table 2.1-10
Industrial Screening Evaluation of Carcinogenic COPCs at the TA-36-8 OD Unit

COPC	EPC (mg/kg)	Industrial SSL (mg/kg)[a]	Cancer Risk
Aroclor-1254	0.0018	8.26	2.2E-09
Aroclor-1260	0.0055	8.26	6.7E-09
Benzo(a)anthracene	0.0723	23.4	3.1E-08
Benzo(a)pyrene	0.0836	2.34	3.6E-07
Benzo(b)fluoranthene	0.0347	23.4	1.5E-08
Benzo(k)fluoranthene	0.0343	234	1.5E-09
Bis(2-ethylhexyl)phthalate	2.56	1370	1.9E-08
Chrysene	0.0771	2340	3.3E-10
Dinitrotoluene[2,4-]	1.58	61.8	2.6E-07
Indeno(1,2,3-cd)pyrene	0.0452	23.4	1.9E-08
Methylene chloride	0.00217	4700	4.6E-12
Naphthalene	0.0136	241	5.6E-10
PETN	12.8	4300[b]	3.0E-08
RDX	0.604	3410	1.8E-09
TCDD[2,3,7,8-]	0.00000415	0.000204	2.0E-07
		Total Excess Cancer Risk	**9E-07**

[a] SSLs are from NMED (2012) unless otherwise noted.
[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).

Table 2.1-11
Residential Screening Evaluation of Carcinogenic COPCs at the TA-36-8 OD Unit

COPC	EPC (mg/kg)	Residential SSL (mg/kg)[a]	Cancer Risk
Aroclor-1260	0.0052	2.22	2.5E-08
Benzo(a)anthracene	0.0723	1.48	4.9E-07
Benzo(a)pyrene	0.0836	0.148	5.6E-06
Benzo(b)fluoranthene	0.0347	1.48	2.3E-07
Benzo(k)fluoranthene	0.0343	14.8	2.3E-08
Bis(2-ethylhexyl)phthalate	2.56	347	7.4E-08
Chrysene	0.0771	148	5.2E-09
Dinitrotoluene[2,4-]	1.58	15.7	1.0E-06
Indeno(1,2,3-cd)pyrene	0.0452	1.48	3.1E-07
Naphthalene	0.0136	43	3.2E-09
PETN	12.8	1200[b]	1.1E-07
RDX	0.604	58.2	1.0E-07
TCDD[2,3,7,8-]	0.00000415	0.000045	9.2E-07
		Total Excess Cancer Risk	**9E-06**

[a] SSLs are from NMED (2012) unless otherwise noted.
[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).

Table 2.1-12
Industrial Screening Evaluation of Radionuclide COPCs at the TA-36-8 OD Unit

COPC	EPC (pCi/g)	Industrial SAL (pCi/g)*	Dose (mrem/yr)
Uranium-234	4.01	3000	0.03
Uranium-235	0.514	150	0.09
Uranium-238	28	750	0.9
		Total Dose	**1**

* SALs are from LANL (2012a).

Table 2.1-13
Residential Screening Evaluation of Radionuclide COPCs at the TA-36-8 OD Unit

COPC	EPC (pCi/g)	Residential SAL (pCi/g)*	Dose (mrem/yr)
Uranium-234	4.01	270	0.4
Uranium-235	0.514	39	0.3
Uranium-238	28	150	4.7
		Total Dose	**5.4**

* SALs are from LANL (2012a).

Table 2.1-14
Industrial Screening Evaluation of Noncarcinogenic COPCs at the TA-39-6 OD Unit

COPC	EPC (mg/kg)	Industrial SSL (mg/kg)[a]	HQ
Antimony	1.9	454	0.0042
Copper	2220	45400	0.049
Di-n-butyl phthalate	2.89	68400	0.000042
Di-n-octyl phthalate	3.81	6200[b]	0.00061
Diphenylamine	0.521	15000[b]	0.000035
HMX	0.458	56800	0.0000081
Isopropyltoluene[4-]	0.00133	14500[c]	0.000000092
Lead	161	800	0.2
Mercury	0.271	341	0.00079
Perchlorate	0.00257	795	0.0000032
Silver	1.36	5680	0.00024
Styrene	0.000388	50000	0.0000000078
TATB	4.3	27000[b,d]	0.00016
Toluene	0.00124	57700	0.000000021
Trinitrotoluene[2,4,6-]	0.312	568	0.00055
Xylene[1,2-]	0.000336	4410	0.000000076
Xylene+1,4-Xylene[1,3-]	0.00165	3980[e]	0.00000041
Zinc	95.2	341000	0.00028
		HI	**0.3**

[a] SSLs are from NMED (2012) unless otherwise noted.
[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).
[c] Isopropylbenzene used as a surrogate based on structural similarity.
[d] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[e] Xylenes used as a surrogate based on structural similarity.

Table 2.1-15
Residential Screening Evaluation of Noncarcinogenic COPCs at the TA-39-6 OD Unit

COPC	EPC (mg/kg)	Residential SSL (mg/kg)[a]	HQ
Antimony	1.9	31.3	0.061
Aroclor-1254	0.019	1.12	0.017
Copper	2220	3130	0.71
Di-n-butyl phthalate	2.89	6110	0.00047
Di-n-octyl phthalate	3.81	610[b]	0.0062
Diphenylamine	0.521	1500[b]	0.00035
HMX	0.458	3910	0.00012
Isopropyltoluene[4-]	0.00133	2430[c]	0.00000055
Lead	161	400	0.4
Mercury	0.271	23.5	0.011
Perchlorate	0.00257	54.8	0.000047
Silver	1.36	391	0.0035
Styrene	0.000388	7280	0.000000053
TATB	4.3	2200[b,d]	0.002
Toluene	0.00124	5270	0.00000024
Trinitrotoluene[2,4,6-]	0.312	39.1	0.008
Xylene[1,2-]	0.000336	898	0.00000037
Xylene+1,4-Xylene[1,3-]	0.00165	814[e]	0.000002
Zinc	95.2	23500	0.0041
		HI	**1**

[a] SSLs are from NMED (2012) unless otherwise noted.
[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).
[c] Isopropylbenzene used as a surrogate based on structural similarity.
[d] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[e] Xylenes used as a surrogate based on structural similarity.

Table 2.1-16
Industrial Screening Evaluation of Carcinogenic COPCs at the TA-39-6 OD Unit

COPC	EPC (mg/kg)	Industrial SSL (mg/kg)[a]	Cancer Risk
Aroclor-1254	0.019	8.26	2.3E-08
Aroclor-1260	0.0092	8.26	1.1E-08
Bis(2-ethylhexyl)phthalate	0.948	1370	6.9E-09
Butylbenzylphthalate	0.137	9100[b]	1.5E-10
Dinitrotoluene[2,4-]	6.47	61.8	1.1E-06
Ethylbenzene	0.000336	378	8.9E-12
Naphthalene	0.0234	241	9.7E-10
RDX	0.116	3410	3.4E-10
TCDD[2,3,7,8-]	0.00000389	0.000204	1.9E-07
		Total Excess Cancer Risk	**1E-06**

[a] SSLs are from NMED (2012) unless otherwise noted.

[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).

Table 2.1-17
Residential Screening Evaluation of Carcinogenic COPCs at the TA-39-6 OD Unit

COPC	EPC (mg/kg)	Residential SSL (mg/kg)[a]	Cancer Risk
Aroclor-1260	0.0092	2.22	4.1E-08
Bis(2-ethylhexyl)phthalate	0.948	347	2.7E-08
Butylbenzylphthalate	0.137	2600[b]	5.3E-10
Dinitrotoluene[2,4-]	6.47	15.7	4.1E-06
Ethylbenzene	0.000336	68.4	4.9E-12
Naphthalene	0.0234	43	5.4E-09
RDX	0.116	58.2	2.0E-08
TCDD[2,3,7,8-]	0.00000389	0.000045	8.6E-07
		Total Excess Cancer Risk	**5E-06**

[a] SSLs are from NMED (2012) unless otherwise noted.

[b] SSL from EPA regional tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).

Table 3.1-1
ESLs for Terrestrial Receptors

Chemical	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Acetone	1200	30000	7.5	170	14	1.2	1.4	na[a]	na	15	2900
4-Amino-2,6-dinitrotoluene	na	na	na	na	na	3.6	5.2	na	80	7.6	1600
Anthracene	na	na	na	na	na	310	1100	na	6.8	210	5800
Antimony	na	na	na	na	na	0.48	2.9	78	0.05	0.26	45
Aroclor-1254	0.17	0.22	1.3	0.041	0.08	0.88	52	na	160	0.44	0.15
Aroclor-1260	3.7	4.6	46	0.88	1.7	20	3000	na	na	10	0.14
Benzo(a)anthracene	6.9	9.8	0.8	1	0.91	3.4	6.2	na	18	3	32
Benzo(a)pyrene	na	na	na	na	na	85	280	na	na	53	380
Benzo(b)fluoranthene	na	na	na	na	na	52	130	na	18	38	250
Benzo(g,h,i)perylene	na	na	na	na	na	47	540	na	na	24	94
Benzo(k)fluoranthene	na	na	na	na	na	100	350	na	na	62	400
Bis(2-ethylhexyl)phthalate	0.045	0.033	20	0.02	0.04	1.1	2700	na	na	0.59	1.2
2-Butanone	na	na	na	na	na	360	420	na	na	2600	420000
Butylbenzylphthalate	na	na	na	na	na	160	2300	na	na	90	1900
2-Chloronaphthalene[b]	100	590	3.4	16	5.7	9.7	12	na	1	27	1200
Chrysene	na	na	na	na	na	3.1	6.5	na	na	2.4	25
Copper	110	1600	38	15	22	64	270	80	70	38	3800
Di-n-butyl phthalate	0.068	0.24	0.39	0.011	0.021	370	16000	na	160	180	5000
Dinitrotoluene[2,4-]	na	na	na	na	na	2.5	3.1	na	na	13	760
Dinitrotoluene[2,6-]	na	na	na	na	na	1.8	2.3	na	na	7.1	580
Di-n-octyl phthalate	na	na	na	na	na	1.8	13000	na	na	0.91	13
Diphenylamine	73	6700	84	10	18	na	na	na	na	na	na

Table 3.1-1 (continued)

Chemical	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Ethylbenzene[c]	na	na	na	na	na	24	35	na	na	47	7600
Fluoranthene	na	na	na	na	na	38	260	10	na	22	360
Fluorene	na	na	na	na	na	340	1100	3.7	na	250	9300
HMX	na	na	na	na	na	27	29	140	2700	3100	29000
Indeno(1,2,3-cd)pyrene	na	na	na	na	na	110	590	na	na	62	270
Isopropyltoluene[4-][d]	na	na	na	na	na	25	61	na	200	23	3100
Lead	120	810	21	14	16	120	370	1700	120	72	3700
Mercury	0.082	0.28	0.07	0.013	0.022	3	22	0.05	34	1.7	46
Methylene chloride	na	na	na	na	na	2.6	3.4	na	1600	9	1700
Methylnaphthalene[2-]	na	na	na	na	na	24	100	na	na	16	850
Naphthalene	100	590	3.4	16	5.7	9.7	12	na	1	27	1200
PETN	na	na	na	na	na	100	110	na	na	870	7600
Phenanthrene	na	na	na	na	na	15	59	5.5	na	10	290
Pyrene	190	460	71	34	46	32	110	10	na	22	360
RDX	200	1100	12	22	16	130	210	7.5	na	150	6800
Silver	19	840	11	2.6	4.3	24	150	na	560	14	4100
Styrene	na	na	na	na	na	na	na	1.2	3.2	na	na
TATB[e]	na	na	na	na	na	6.6	7.3	na	na	400	3900
TCDD[2,3,7,8-]	0.000014[f]	0.000014[f]	0.00024[f]	0.0000041[f]	0.0000081[f]	0.00000058	0.000048	5	na	0.00000029	0.0000012
Toluene	na	na	na	na	na	25	61	na	200	23	3100
Trinitrotoluene[2,4,6-]	1400	2700	6.4	140	12	80	90	32	62	920	17000
Uranium-234	120000	190000	48000	14000	14000	91000	96000	51	14000	94000	45000
Uranium-235	10000	10000	9000	6400	6400	5100	5100	55	4000	5100	4800

Table 3.1-1 (continued)

Chemical	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Uranium-238	4100	4200	3900	3400	3400	2100	2100	55	1800	2100	2000
Xylene[1,2-][g]	280	3200	90	41	56	2	7	na	100	1.4	130
Xylene+1,4-Xylene[1,3-][g]	280	3200	90	41	56	2	7	na	100	1.4	130
Zinc	320	2400	350	48	85	170	1800	120	160	98	6000

Note: ESLs from ECORISK Database, Version 3.1 (LANL 2012c), unless otherwise noted. Units are mg/kg for chemicals and pCi/g for radionuclides.

[a] na = Not available.

[b] Naphthalene used as a surrogate based on structural similarity.

[c] Benzene used as a surrogate based on structural similarity.

[d] Toluene used as a surrogate based on structural similarity.

[e] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

[f] Avian ESLs for TCDD from ECORISK Database, Version 2.0 (LANL 2003).

[g] Xylene used as a surrogate based on structural similarity.

Table 3.1-2
Comparison of EPCs with the Minimum ESLs at the TA-36-8 OD Unit

COPC	EPC (mg/kg)	Minimum ESL[a] (mg/kg)	Receptor	Hazard Quotient
Acetone	0.00331	1.2	Deer mouse	0.0028
Amino-2,6-dinitrotoluene[4-]	0.285	3.6	Deer mouse	0.079
Anthracene	0.016	6.8	Plant	0.0024
Aroclor-1254	0.0018	0.041	Robin insectivore	0.044
Aroclor-1260	0.0055	0.14	Red fox	0.039
Benzo(a)anthracene	0.0723	0.8	Robin herbivore	0.09
Benzo(a)pyrene	0.0836	53	Montane shrew	0.0016
Benzo(b)fluoranthene	0.0347	18	Plant	0.0019
Benzo(g,h,i)perylene	0.0559	24	Montane shrew	0.0023
Benzo(k)fluoranthene	0.0343	62	Montane shrew	0.00055
Bis(2-ethylhexyl)phthalate	2.56	0.02	Robin insectivore	**128**
Butanone[2-]	0.00161	360	Deer mouse	0.0000045
Chloronaphthalene[2-]	0.108	1[b]	Plant	0.11
Chrysene	0.0771	2.4	Montane shrew	0.032
Copper	475.7	15	Robin insectivore	**31.7**
Di-n-butyl phthalate	0.319	0.011	Robin insectivore	**29**
Dinitrotoluene[2,4-]	1.58	2.5	Deer mouse	**0.63**
Dinitrotoluene[2,6-]	0.0696	1.8	Deer mouse	0.039
Diphenylamine	0.146	10	Robin insectivore	0.015
Fluoranthene	0.0402	10	Earthworm	0.004
Fluorene	0.0194	3.7	Earthworm	0.0052
HMX	22	27	Deer mouse	**0.81**
Indeno(1,2,3-cd)pyrene	0.0452	62	Montane shrew	0.00073
Lead	20.9	14	Robin insectivore	**1.5**
Methylene chloride	0.00217	2.6	Deer mouse	0.00083
Methylnaphthalene[2-]	0.00784	16	Montane shrew	0.00049
Naphthalene	0.0136	1	Plant	0.014
PETN	12.8	100	Deer mouse	0.13
Phenanthrene	0.0774	5.5	Earthworm	0.014
Pyrene	0.0484	10	Earthworm	0.0048
RDX	0.604	7.5	Earthworm	0.081
TATB	24.8	6.6[c]	Deer mouse	**3.8**
TCDD[2,3,7,8-] (mammalian)	0.00000415	0.00000029	Montane shrew	**14.3**
TCDD[2,3,7,8-] (avian)	0.00000298	0.0000041[d]	Robin insectivore	**0.73**
Toluene	0.000897	23	Montane shrew	0.000039
Trinitrotoluene[2,4,6-]	0.701	6.4	Robin herbivore	0.11
Xylene[1,2-]	0.000448	1.4[e]	Montane shrew	0.00032
Xylene+1,4-Xylene[1,3-]	0.000989	1.4[e]	Montane shrew	0.00071
Uranium-234 (pCi/g)	4.01	51	Earthworm	0.079
Uranium-235 (pCi/g)	0.514	55	Earthworm	0.0093
Uranium-238 (pCi/g)	28	55	Earthworm	**0.51**

Note: Bolded values indicate HQs greater than 0.3.
[a] ESLs from ECORISK Database, Version 3.1 (LANL 2012c).
[b] Naphthalene used as a surrogate based on structural similarity.
[c] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[d] ESL from ECORISK Database, Version 2.0 (LANL 2003).
[e] Xylene used as a surrogate based on structural similarity.

Table 3.1-3
Comparison of EPCs with the Minimum ESLs at the TA-39-6 OD Unit

COPC	EPC (mg/kg)	Minimum ESL[a] (mg/kg)	Receptor	Hazard Quotient
Antimony	1.9	0.05	Plant	**38**
Aroclor-1254	0.019	0.041	Robin insectivore	**0.46**
Aroclor-1260	0.0092	0.14	Red fox	0.066
Bis(2-ethylhexyl)phthalate	0.948	0.02	Robin insectivore	**47.4**
Butylbenzylphthalate	0.137	90	Montane shrew	0.0015
Copper	2220	15	Robin insectivore	**148**
Di-n-butyl phthalate	2.89	0.011	Robin insectivore	**263**
Dinitrotoluene[2,4-]	6.47	2.5	Deer mouse	**2.6**
Di-n-octyl phthalate	3.81	0.91	Montane shrew	**4.2**
Diphenylamine	0.521	10	Robin insectivore	0.052
Ethylbenzene	0.000336	24[b]	Deer mouse	0.000014
HMX	0.458	27	Deer mouse	0.017
Isopropyltoluene[4-]	0.00133	23[c]	Montane shrew	0.000058
Lead	161	14	Robin insectivore	**11.5**
Mercury	0.271	0.013	Robin insectivore	**20.8**
Naphthalene	0.0234	1	Plant	0.023
RDX	0.116	7.5	Earthworm	0.015
Silver	1.36	2.6	Robin insectivore	**0.52**
Styrene	0.000388	1.2	Earthworm	0.00032
TATB	4.3	6.6[d]	Deer mouse	**0.65**
TCDD[2,3,7,8-] (mammalian)	0.00000389	0.00000029	Montane shrew	**13.4**
TCDD[2,3,7,8-] (avian)	0.00000684	0.0000041[e]	Robin insectivore	**1.7**
Toluene	0.00124	23	Montane shrew	0.000054
Trinitrotoluene[2,4,6-]	0.312	6.4	Robin herbivore	0.049
Xylene[1,2-]	0.000336	1.4[f]	Montane shrew	0.00024
Xylene+1,4-Xylene[1,3-]	0.00165	1.4[f]	Montane shrew	0.0012
Zinc	95.2	48	Robin insectivore	**1.98**

Note: Bolded values indicate HQs greater than 0.3.
[a] ESLs from ECORISK Database, Version 3.1 (LANL 2012c).
[b] Benzene used as a surrogate based on structural similarity.
[c] Toluene used as a surrogate based on structural similarity.
[d] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[e] ESL from ECORISK Database, Version 2.0 (LANL 2003).
[f] Xylene used as a surrogate based on structural similarity.

Table 3.1-4
HI Analysis at the TA-36-8 OD Unit

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Bis(2-ethylhexyl)phthalate	2.56	**56.9**	**77.6**	0.13	**128**	**64**	**2.33**	0.0009	na	na	**4.34**	**2.13**
Copper	475.7	**4.32**	0.3	**12.5**	**31.7**	**21.6**	**7.43**	**1.76**	**5.95**	**6.8**	**12.5**	0.13
Di-n-butyl phthalate	0.319	**4.69**	**1.33**	**0.82**	**29**	**15.2**	0.00086	0.00002	na	0.002	0.0018	0.000064
Dinitrotoluene[2,4-]	1.58	na	na	na	na	na	**0.63**	**0.51**	na	na	0.12	0.0021
HMX	22	na	na	na	na	na	**0.81**	**0.76**	0.16	0.008	0.007	0.0008
Lead	20.9	0.17	0.026	**1**	**1.49**	**1.31**	0.17	0.056	0.012	0.17	0.29	0.0056
TATB[b]	24.8	na	na	na	na	na	**3.76**	**3.4**	na	na	0.062	0.0064
TCDD[2,3,7,8-] (mammalian)	0.00000415	n/a[c]	n/a	n/a	n/a	n/a	**7.16**	0.086	0.00000083	na	**14.3**	**3.46**
TCDD[2,3,7,8-] (avian)	0.00000298	0.21	0.21	0.012	**0.73**	**0.37**	n/a	n/a	n/a	na	n/a	n/a
Uranium-238	28 pCi/g	0.0068	0.0067	0.0072	0.0082	0.0082	0.013	0.013	**0.51**	0.016	0.013	0.014
	HI	**66**	**79**	**14**	**191**	**102**	**22**	**7**	**7**	**7**	**32**	**6**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] na = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] n/a = Not applicable.

Table 3.1-5
HI Analysis at the TA-39-6 OD Unit

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Antimony	1.9	na[a]	na	na	na	na	**3.96**	**0.66**	0.024	**38**	**7.31**	0.042
Aroclor-1254	0.019	0.11	0.086	0.015	**0.46**	0.24	0.022	0.00037	na	0.00012	0.043	0.13
Bis(2-ethylhexyl)phthalate	0.948	**21.1**	**28.7**	0.047	**47.4**	**23.7**	**0.86**	0.00035	na	na	**1.61**	**0.79**
Copper	2220	**20.2**	**1.39**	**58.4**	**148**	**101**	**34.7**	**8.22**	**27.8**	**31.7**	**58.4**	**0.58**
Di-n-butyl phthalate	2.89	**42.5**	**12**	**7.41**	**263**	**138**	0.0078	0.00018	na	0.018	0.016	0.00058
Dinitrotoluene[2,4-]	6.47	na	na	na	na	na	**2.59**	**2.09**	na	na	**0.5**	0.0085
Di-n-octyl phthalate	3.81	na	na	na	na	na	**2.12**	0.00029	na	na	**4.19**	0.29
Lead	161	**1.34**	0.2	**7.67**	**11.5**	**10.1**	**1.34**	**0.44**	0.095	**1.34**	**2.24**	0.044
Mercury	0.271	**3.3**	**0.97**	**3.87**	**20.8**	**12.3**	0.09	0.012	**5.42**	0.008	0.16	0.0059
Silver	1.36	0.072	0.0016	0.12	**0.52**	**0.32**	0.057	0.0091	na	0.0024	0.097	0.00033
TATB[b]	4.3	na	na	na	na	na	**0.65**	**0.59**	na	na	0.011	0.0011
TCDD[2,3,7,8-] (mammalian)	0.00000389	n/a[c]	n/a	n/a	n/a	n/a	**6.71**	0.081	0.00000079	na	**13.4**	**3.24**
TCDD[2,3,7,8-] (avian)	0.00000684	**0.49**	**0.49**	0.029	**1.67**	**0.84**	n/a	n/a	n/a	n/a	n/a	n/a
Zinc	95.2	0.3	0.04	0.27	**1.98**	**1.12**	**0.56**	0.053	**0.79**	**0.6**	**0.97**	0.016
	HI	**89**	**44**	**78**	**495**	**288**	**53**	**12**	**34**	**72**	**89**	**5**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] na = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] n/a = Not applicable.

Table 3.2-1
PAUFs for Ecological Receptors

Receptor	Home Range[a] (ha)	Population Area[b] (ha)	PAUF at TA-36-8 OD Unit [c]	PAUF at TA-39-6 OD Unit [d]
Robin	0.42	16.8	0.5	0.05
Kestrel	106	4240	0.002	0.0002
Deer mouse	0.077	3.0	1	0.3
Desert cottontail	3.1	124	0.07	0.006
Montane shrew	0.39	15.6	0.5	0.05
Red fox	1038	41,520	0.0002	0.00002
Mexican spotted owl	366	n/a[e]	0.02	0.002

[a] Values from EPA 1993.
[b] Derived by 40HR.
[c] PAUF is calculated as the area of the site (8.3 ha) divided by the population area.
[d] PAUF is calculated as the area of the site (0.8 ha) divided by the population area.
[e] n/a = Not applicable.

Table 3.2-2
LOAEL-Based ESLs for Terrestrial Receptors

COPEC	Receptor	LOAEL–Based ESL (mg/kg)
Antimony	Deer mouse	4.8
	Montane shrew	2.6
	Plant	0.5
Bis(2-ethylhexyl)phthalate	Robin insectivore	0.2
	Robin omnivore	0.4
	Deer mouse	11
	Montane shrew	5.9
Copper	Robin herbivore	110
	Robin insectivore	46
	Robin omnivore	66
	Deer mouse	100
	Montane shrew	63
	Earthworm	530
	Plant	490
Di-n-butyl phthalate	Robin herbivore	3.9
	Robin insectivore	0.11
	Robin omnivore	0.21
Dinitrotoluene[2,4-]	Deer mouse	25
Di-n-octyl phthalate	Deer mouse	18
HMX	Deer mouse	72
Lead	Robin herbivore	42
	Robin insectivore	28
	Robin omnivore	33
	Deer mouse	230
	Plant	570

Table 3.2-2 (continued)

COPEC	Receptor	LOAEL–Based ESL (mg/kg)
Mercury	Robin insectivore	0.13
	Robin omnivore	0.22
	Earthworm	0.5
TATB[b]	Deer mouse	66
TCDD[2,3,7,8-]	Deer mouse	0.0000039
	Montane shrew	0.0000019
	Robin insectivore	0.000041[c]
Zinc	Earthworm	930
	Plant	810
Uranium-238	Earthworm	550 pCi/g

[a] ESLs from ECORISK Database, Version 3.1 (LANL 2012c).
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] ESL from ECORISK Database, Version 2.0 (LANL 2003).

Table 3.2-3
Adjusted HI Analysis at the TA-36-8 OD Unit

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Bis(2-ethylhexyl)phthalate	2.56	0.11	0.16	0.065	**64**	**32**	**3.1**	0.000063	na[a]	na	**2.17**	0.00043
Copper	475.7	0.0086	0.00059	**6.26**	**15.9**	**10.8**	**7.43**	0.12	**5.95**	**6.8**	**6.26**	0.000025
Di-n-butyl phthalate	0.319	0.0094	0.0027	**0.41**	**14.5**	**7.6**	0.00086	0.0000014	na	0.002	0.00089	0.000000013
Dinitrotoluene[2,4-]	1.58	na	na	na	na	na	**0.63**	0.036	na	na	0.061	0.00000042
HMX	22	na	na	na	na	na	**0.81**	0.029	0.16	0.008	0.0035	0.00000016
Lead	20.9	0.00034	0.000052	**0.5**	**0.75**	**0.66**	0.17	0.0039	0.012	0.17	0.15	0.0000011
TATB[b]	24.8	na	na	na	na	na	**3.76**	0.24	na	na	0.031	0.0000013
TCDD[2,3,7,8-] (mammalian)	0.00000415	n/a[c]	n/a	n/a	n/a	n/a	**7.16**	0.006	0.00000083	na	**7.15**	0.00065
TCDD[2,3,7,8-] (avian)	0.00000298	0.00042	0.00042	0.006	**0.37**	0.19	n/a	n/a	n/a	na	n/a	n/a
Uranium-238	28 pCi/g	0.000014	0.000014	0.0036	0.0041	0.0041	0.013	0.00091	**0.51**	0.016	0.0065	0.0000028
Adjusted HI		0.1	0.2	**7**	**96**	**51**	**23**	0.4	**7**	**7**	**16**	0.001

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.

[a] na = Not available.

[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

[c] n/a = Not applicable.

Table 3.2-4
Adjusted HI Analysis at the TA-39-6 OD Unit

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Antimony	1.9	na[a]	na	na	na	na	**1.19**	0.004	0.024	**38**	**0.37**	0.00000084
Aroclor-1254	0.019	0.000022	0.000017	0.00073	0.023	0.012	0.0064	0.0000022	na	0.00011	0.0025	0.0000022
Bis(2-ethylhexyl)phthalate	0.948	0.0042	0.0057	0.0024	**2.37**	**1.19**	0.26	0.0000021	na	na	0.08	0.000016
Copper	2220	0.004	0.00028	**2.92**	**7.4**	**5.05**	**10.4**	0.049	**27.8**	**31.7**	**2.92**	0.000012
Di-n-butyl phthalate	2.89	0.0085	0.0024	**0.37**	**13.1**	**6.88**	0.0023	0.0000011	na	0.018	0.0008	0.000000012
Dinitrotoluene[2,4-]	6.47	na	na	na	na	na	**0.78**	0.013	na	na	0.025	0.00000017
Di-n-octyl phthalate	3.81	na	na	na	na	na	**0.64**	0.0000017	na	na	0.21	0.00000058
Lead	161	0.00027	0.00004	**0.38**	**0.58**	**0.5**	**0.4**	0.0026	0.095	**1.34**	0.11	0.00000088
Mercury	0.271	0.00066	0.00019	0.19	**1.04**	**0.62**	0.027	0.000072	**5.42**	0.008	0.008	0.00000088
Silver	1.36	0.000014	0.00000032	0.0062	0.026	0.016	0.017	0.000055	na	0.0024	0.0049	0.0000000066
TATB[b]	4.3	na	na	na	na	na	0.2	0.0035	na	na	0.00055	0.000000022
TCDD[2,3,7,8-] (mammalian)	0.00000389	n/a[c]	n/a	n/a	n/a	n/a	**2.01**	0.00049	0.00000096	na	**0.67**	0.000065
TCDD[2,3,7,8-] (avian)	0.00000684	0.000098	0.000098	0.0015	0.084	0.042	n/a	n/a	n/a	na	n/a	n/a
Zinc	95.2	0.00006	0.0000079	0.014	0.099	0.056	0.17	0.00032	**0.79**	**0.6**	0.05	0.00000032
	Adjusted HI	0.02	0.009	**4**	**25**	**14**	**16**	0.07	**34**	**72**	**4**	0.00009

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] na = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] n/a = Not applicable.

Table 3.2-5
HI Analysis Using LOAEL-Based ESLs at the TA-36-8 OD Unit

COPEC	EPC (mg/kg)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer Mouse	Montane Shrew	Earthworm	Plant
Bis(2-ethylhexyl)phthalate	2.56	n/a[a]	**12.8**	**6.4**	0.23	**0.43**	na[b]	na
Copper	475.7	**4.32**	**10.3**	**7.21**	**4.76**	**7.55**	**0.9**	**0.97**
Di-n-butyl phthalate	0.319	0.082	**2.9**	**1.52**	n/a	n/a	na	n/a
Dinitrotoluene[2,4-]	1.58	na	na	na	0.063	n/a	na	na
HMX	22	na	na	na	**0.31**	n/a	n/a	n/a
Lead	20.9	**0.5**	**0.75**	**0.63**	n/a	n/a	n/a	n/a
TATB[c]	24.8	na	na	na	**0.38**	n/a	na	na
TCDD[2,3,7,8-] (mammalian)	0.00000415	n/a	n/a	n/a	**1.06**	**2.18**	n/a	na
TCDD[2,3,7,8-] (avian)	0.00000298	n/a	0.073	n/a	n/a	n/a	n/a	na
Uranium-238	28 pCi/g	n/a	n/a	n/a	n/a	n/a	0.051	n/a
HI		**5**	**27**	**16**	**7**	**10**	1	1

Note: Bolded values indicate HQ greater than 0.3 or HI greater than 1.
[a] n/a = Not applicable.
[b] na = Not available.
[c] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 3.2-6
HI Analysis Using LOAEL-Based ESLs at the TA-39-6 OD Unit

COPEC	EPC (mg/kg)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer Mouse	Montane Shrew	Earthworm	Plant
Antimony	1.9	na[a]	na	na	**0.4**	**0.73**	n/a[b]	**3.8**
Bis(2-ethylhexyl)phthalate	0.948	n/a	**4.74**	**2.37**	n/a	n/a	na	na
Copper	2220	**20.2**	**48.3**	**33.6**	**22.2**	**35.2**	**4.19**	**4.53**
Di-n-butyl phthalate	2.89	**0.74**	**26.3**	**13.8**	n/a	n/a	na	n/a
Dinitrotoluene[2,4-]	6.47	na	na	na	0.26	n/a	na	na
Di-n-octyl phthalate	3.81	na	na	na	0.21	n/a	na	na
Lead	161	**3.83**	**5.75**	**4.88**	**0.7**	n/a	n/a	0.28
Mercury	0.271	n/a	**2.08**	**1.23**	n/a	n/a	**0.54**	n/a
TCDD[2,3,7,8-] (mammalian)	0.00000389	n/a	n/a	n/a	**1**	**2.05**	n/a	na
Zinc	95.2	n/a	n/a	n/a	n/a	n/a	0.1	0.12
	HI	**25**	**87**	**56**	**25**	**38**	**5**	**9**

Note: Bolded values indicate HQ greater than 0.3 or HI greater than 1.
[a] na = Not available.
[b] n/a = Not applicable.

Table 3.2-7
Adjusted HI Analysis Using LOAEL-Based ESLs at the TA-36-8 OD Unit

COPEC	EPC (mg/kg)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer Mouse	Montane Shrew
Bis(2-ethylhexyl)phthalate	2.56	n/a[a]	**6.4**	**3.2**	0.23	0.22
Copper	475.7	**2.16**	**5.15**	**3.61**	**4.76**	**3.78**
Di-n-butyl phthalate	0.319	0.041	**1.45**	**0.76**	n/a	n/a
Dinitrotoluene[2,4-]	1.58	na[b]	na	na	0.063	n/a
HMX	22	na	na	na	**0.31**	n/a
Lead	20.9	0.25	**0.38**	**0.32**	n/a	n/a
TATB[c]	24.8	na	na	na	**0.38**	n/a
TCDD[2,3,7,8-] (mammalian)	0.00000415	n/a	n/a	n/a	**1.06**	**1.09**
	Adjusted HI	**2**	**13**	**8**	**7**	**5**

Note: Bolded values indicate HQ greater than 0.3 or HI greater than 1.

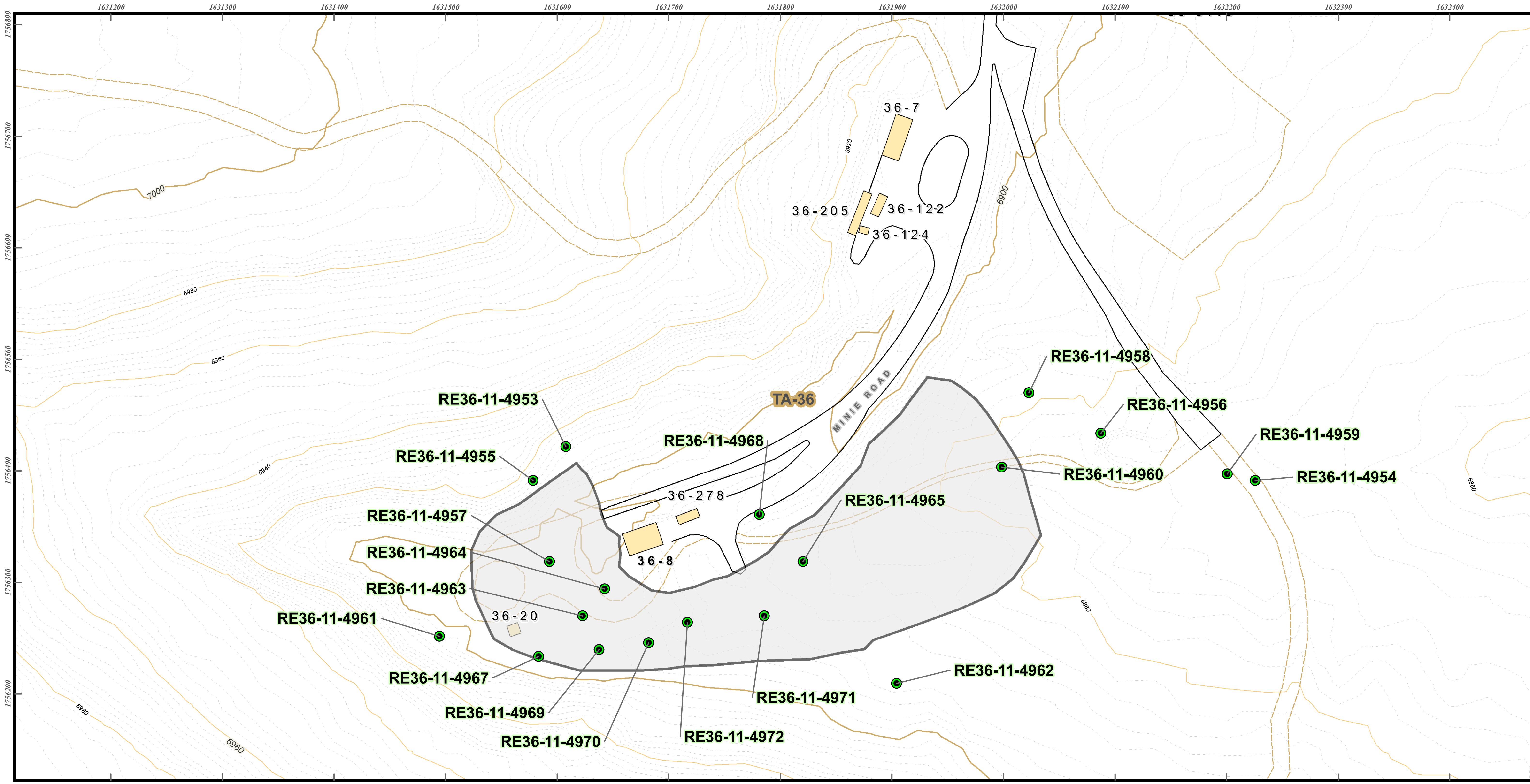
[a] na = Not available.
[b] n/a = Not applicable.
[c] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 3.2-8
Adjusted HI Analysis Using LOAEL-Based ESLs at the TA-39-6 OD Unit

COPEC	EPC (mg/kg)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer Mouse	Montane Shrew	Earthworm	Plant
Antimony	1.9	na[a]	na	na	0.12	0.037	n/a[b]	**3.8**
Bis(2-ethylhexyl)phthalate	0.948	n/a	0.24	0.12	n/a	n/a	na	na
Copper	2220	**1.01**	**2.42**	**1.68**	**6.66**	**1.76**	**4.19**	**4.53**
Di-n-butyl phthalate	2.89	0.04	**1.32**	**0.69**	n/a	n/a	na	n/a
Dinitrotoluene[2,4-]	6.47	na	na	na	0.08	n/a	na	na
Di-n-octyl phthalate	3.81	na	na	na	0.064	n/a	na	na
Lead	161	0.19	0.29	0.24	0.21	n/a	n/a	0.28
Mercury	0.271	n/a	0.1	0.062	n/a	n/a	**0.54**	n/a
TCDD[2,3,7,8-] (mammalian)	0.00000389	n/a	n/a	n/a	0.3	0.1	n/a	na
Zinc	95.2	n/a	n/a	n/a	n/a	n/a	0.1	0.12
Adjusted HI		1	**4**	**3**	**7**	**2**	**5**	**9**

Note: Bolded values indicate HQ greater than 0.3 or HI greater than 1.
[a] na = Not available.
[b] n/a = Not applicable.

This page intentionally left blank.



Unit boundary

Structures

2011 Grab Samples

Roads, paved

Roads, dirt

Contours, 2 ft

Contours, 20 ft

Contours, 100 ft

Figure 1.2-1. TA-36-8 Open Detonation Unit Soil Sample Locations

0 50 100 200 Feet

0 15 30 60 Meters

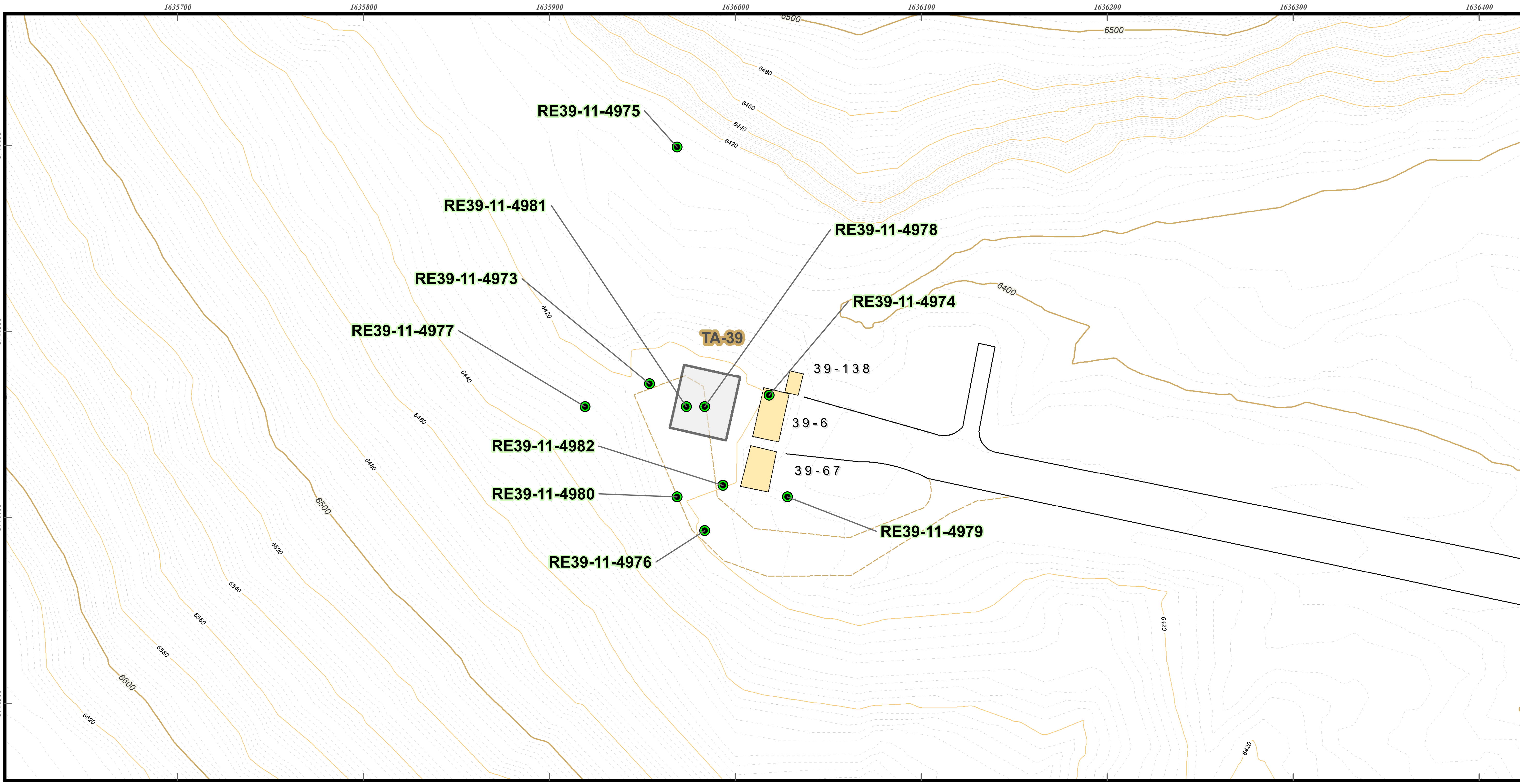
1:1,000

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary

Structures

2011 Grab Samples

Roads, paved

Roads, dirt

Contours, 2 ft

Contours, 20 ft

Contours, 100 ft

Figure 1.2-2. TA-39-6 Open Detonation Unit Soil Sample Locations

N

0 30 60 120 Feet

0 10 20 40 Meters

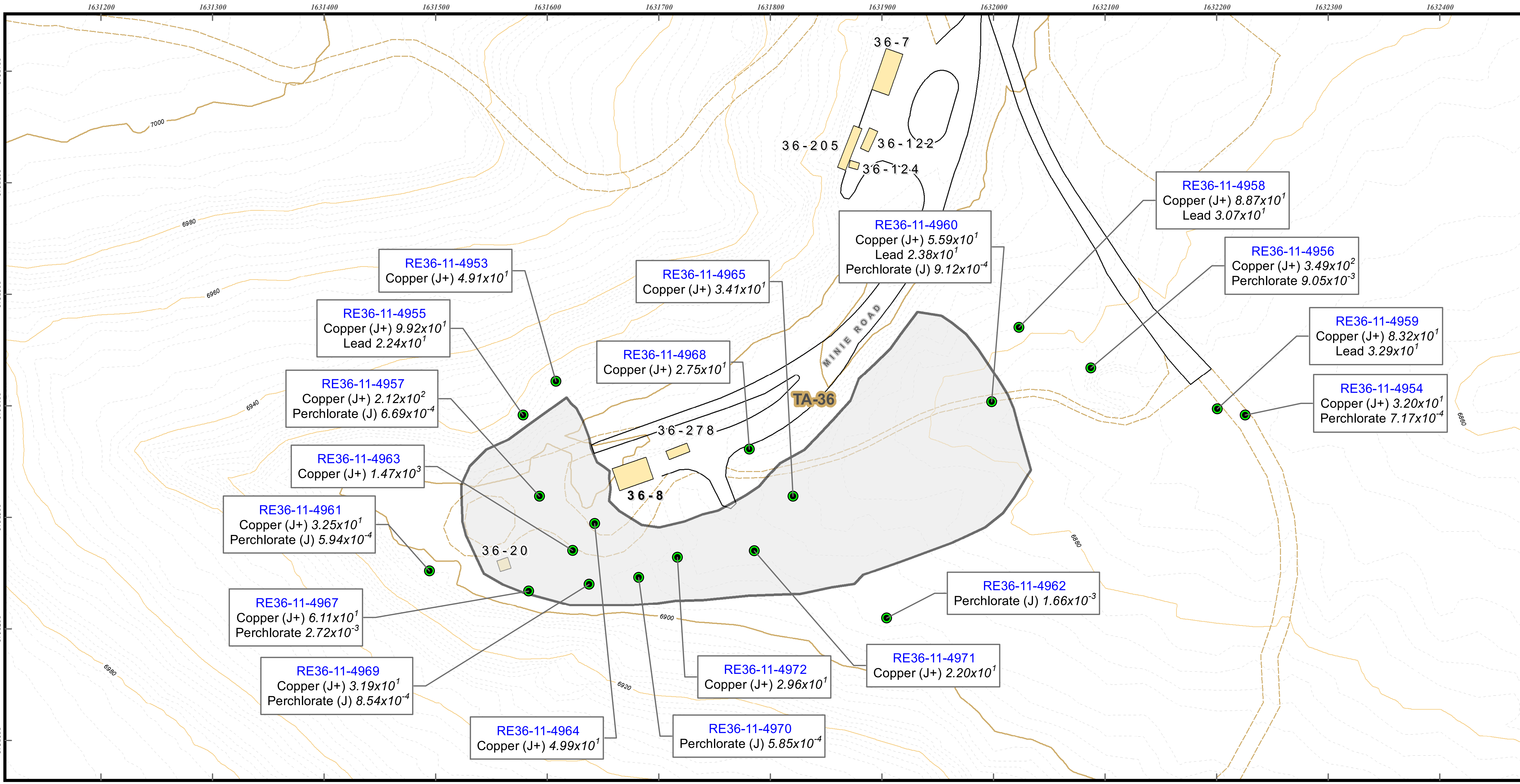
1:600

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-01

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary

Structures

2011 Grab Samples

Roads, paved

Roads, dirt

Contours, 2 ft

Contours, 20 ft

Contours, 100 ft

Figure 1.2-3. TA-36-8 Open Detonation Unit Soil Concentrations for Metals above Background Values and Perchlorate (No Background Value)

Notes: All concentration values are in milligrams per kilogram (mg/kg) and concentrations indicated with "J" or "J+" are estimated concentrations.

0 50 100 200 Feet

0 15 30 60 Meters

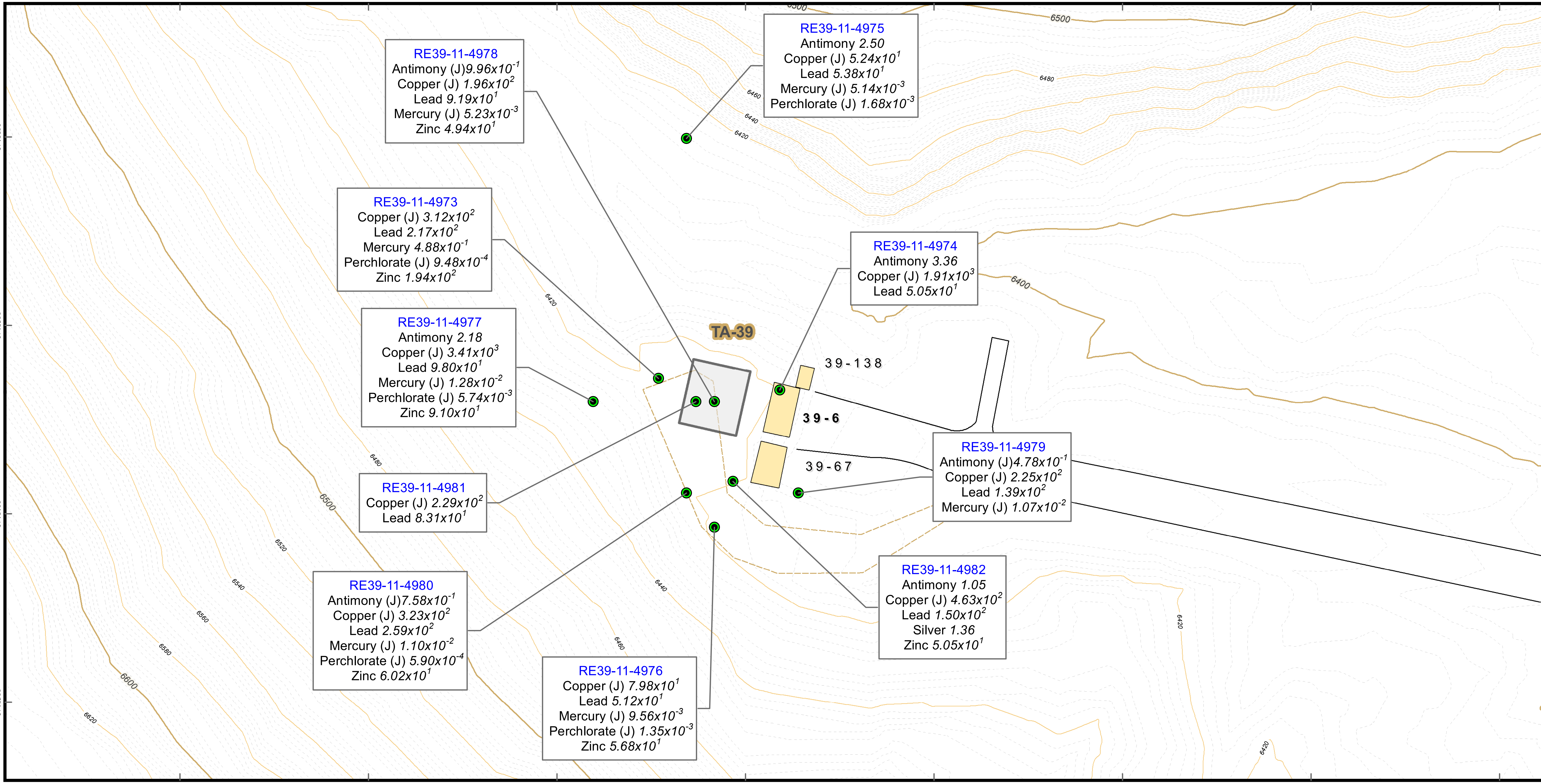
1:1,000

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-02

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary
Structures
2011 Grab Samples
Roads, paved
Roads, dirt
Contours, 2 ft
Contours, 20 ft
Contours, 100 ft

Figure 1.2-4. TA-39-6 Open Detonation Unit Soil Concentrations for Metals above Background Values and Perchlorate (No Background Value)

Notes: All concentration values are in milligrams per kilogram (mg/kg) and concentrations indicated with "J" or "J+" are estimated concentrations.

0 30 60 120 Feet

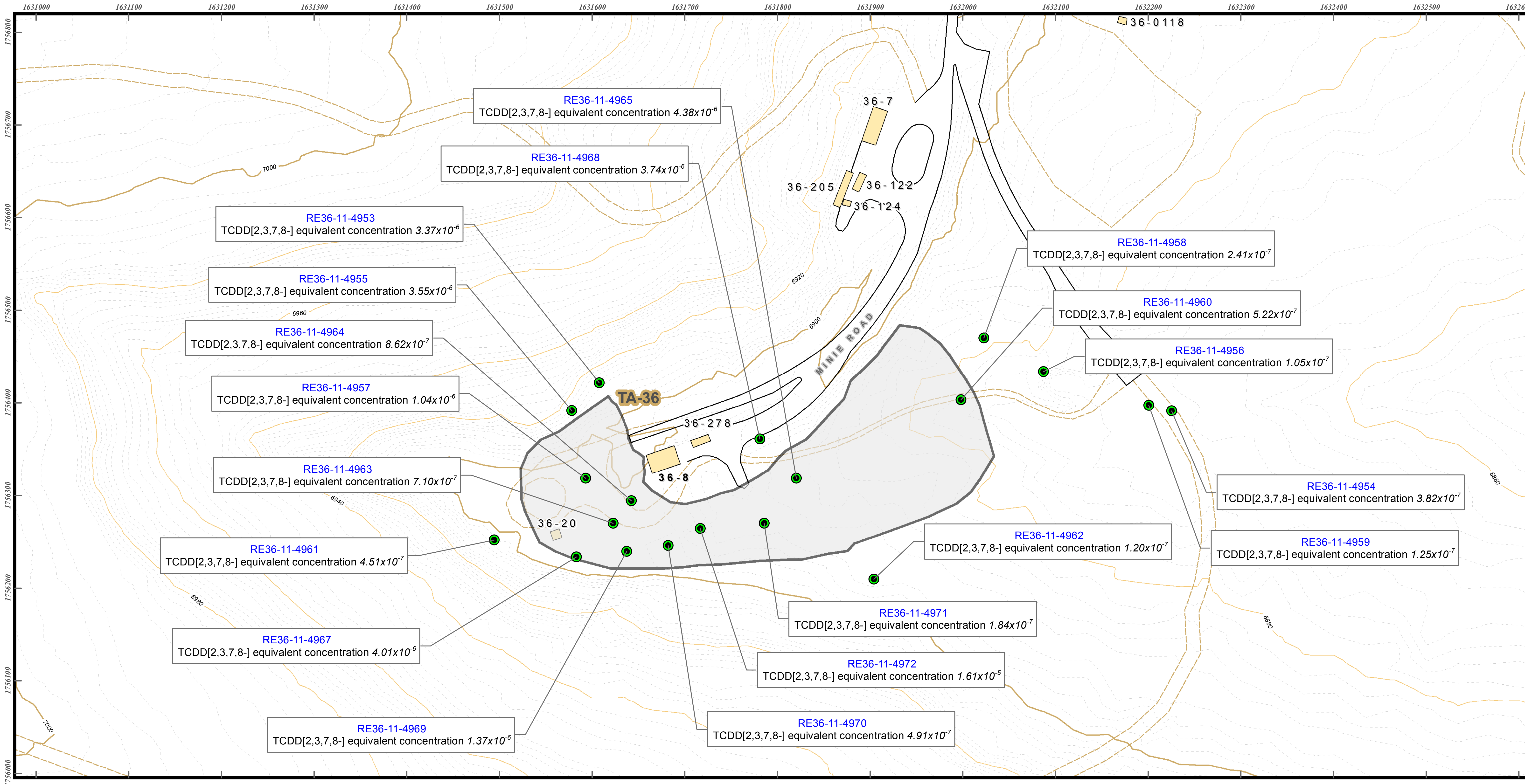
0 10 20 40 Meters

1:600

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929
Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-03

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary
Structures
2011 Grab Samples
Roads, paved
Roads, dirt
Contours, 2 ft
Contours, 20 ft
Contours, 100 ft

Figure 1.2-5. TA-36-8 Open Detonation Unit Soil Concentrations for Dioxins/Furans

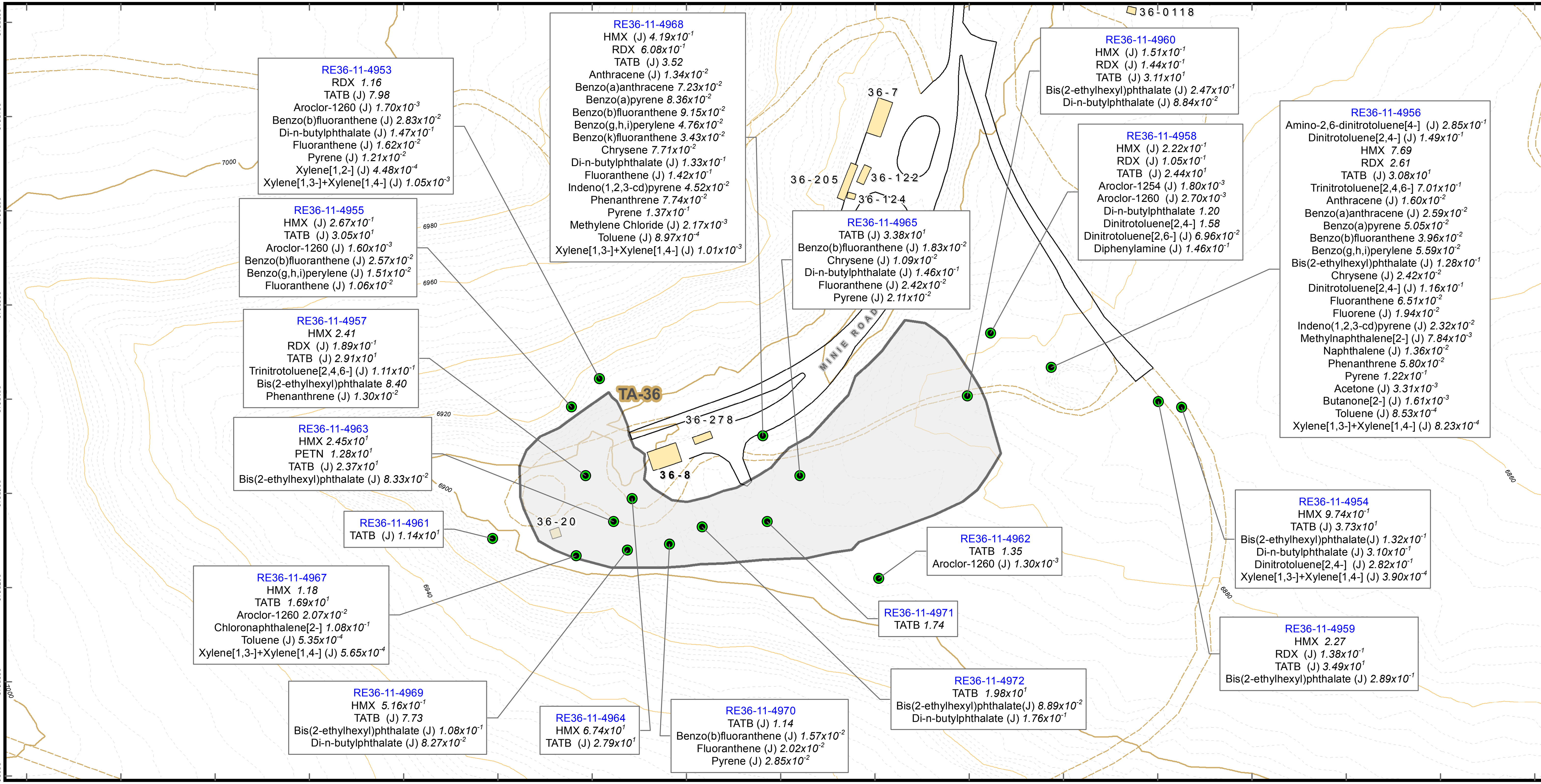
Notes: Concentration values are in milligrams per kilogram (mg/kg) and represent the TCDD toxicity equivalent concentrations for all dioxin/furan congeners detected at the sample location.

0 50 100 200 Feet
0 20 40 80 Meters
1:1,200

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929
Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-06

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary

Structures

2011 Grab Samples

Roads, paved

Roads, dirt

Contours, 2 ft

Contours, 20 ft

Contours, 100 ft

Figure 1.2-6. TA-36-8 Open Detonation Unit Soil Concentrations for Organic Chemicals Other than Dioxins/Furans

Notes: All concentration values are in milligrams per kilogram (mg/kg) and concentrations indicated with "J" or "J+" are estimated concentrations.

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-04

0 60 120 240 Feet

0 20 40 80 Meters

1:1,200

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479

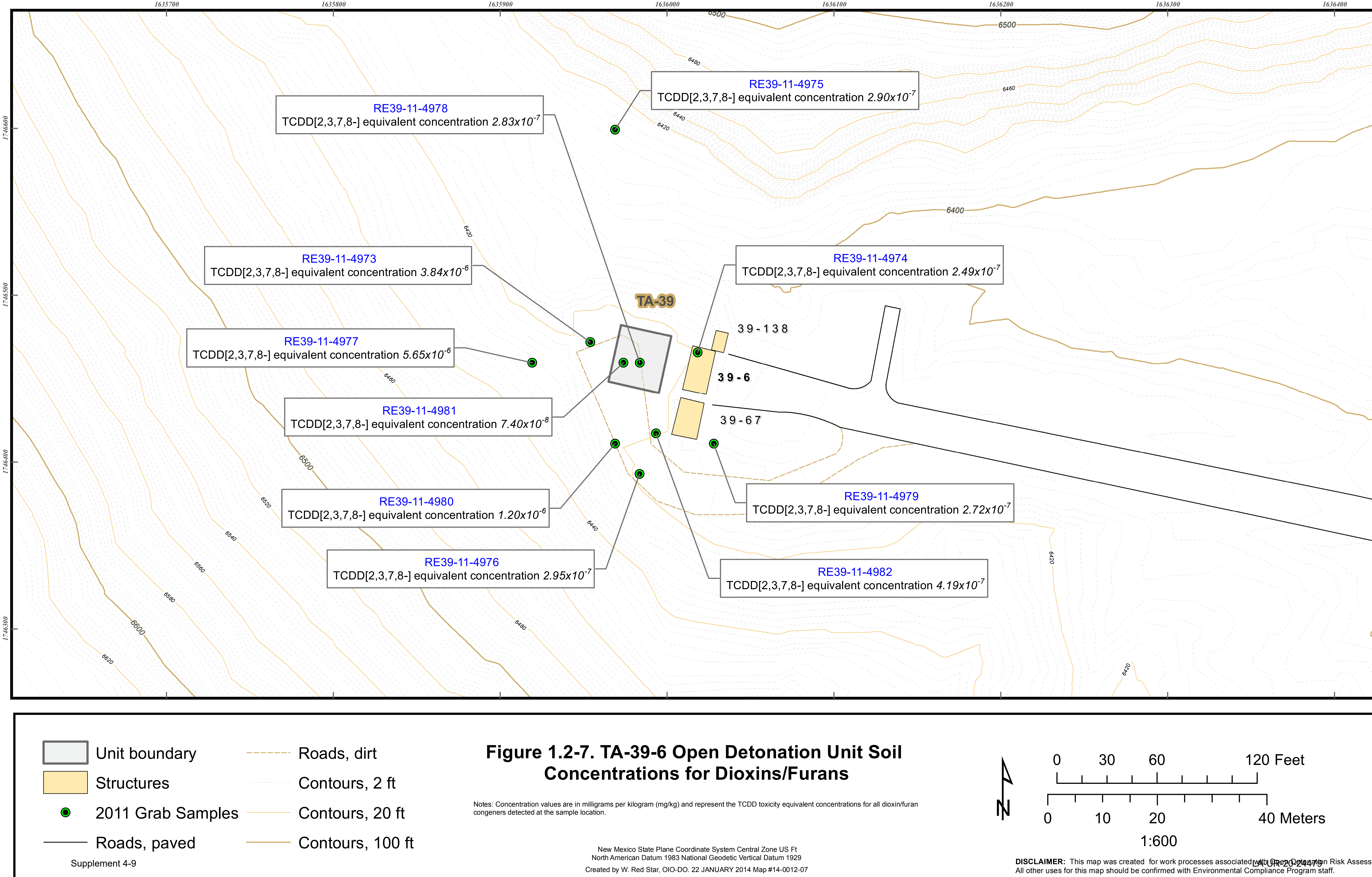


Figure 1.2-7. TA-39-6 Open Detonation Unit Soil Concentrations for Dioxins/Furans

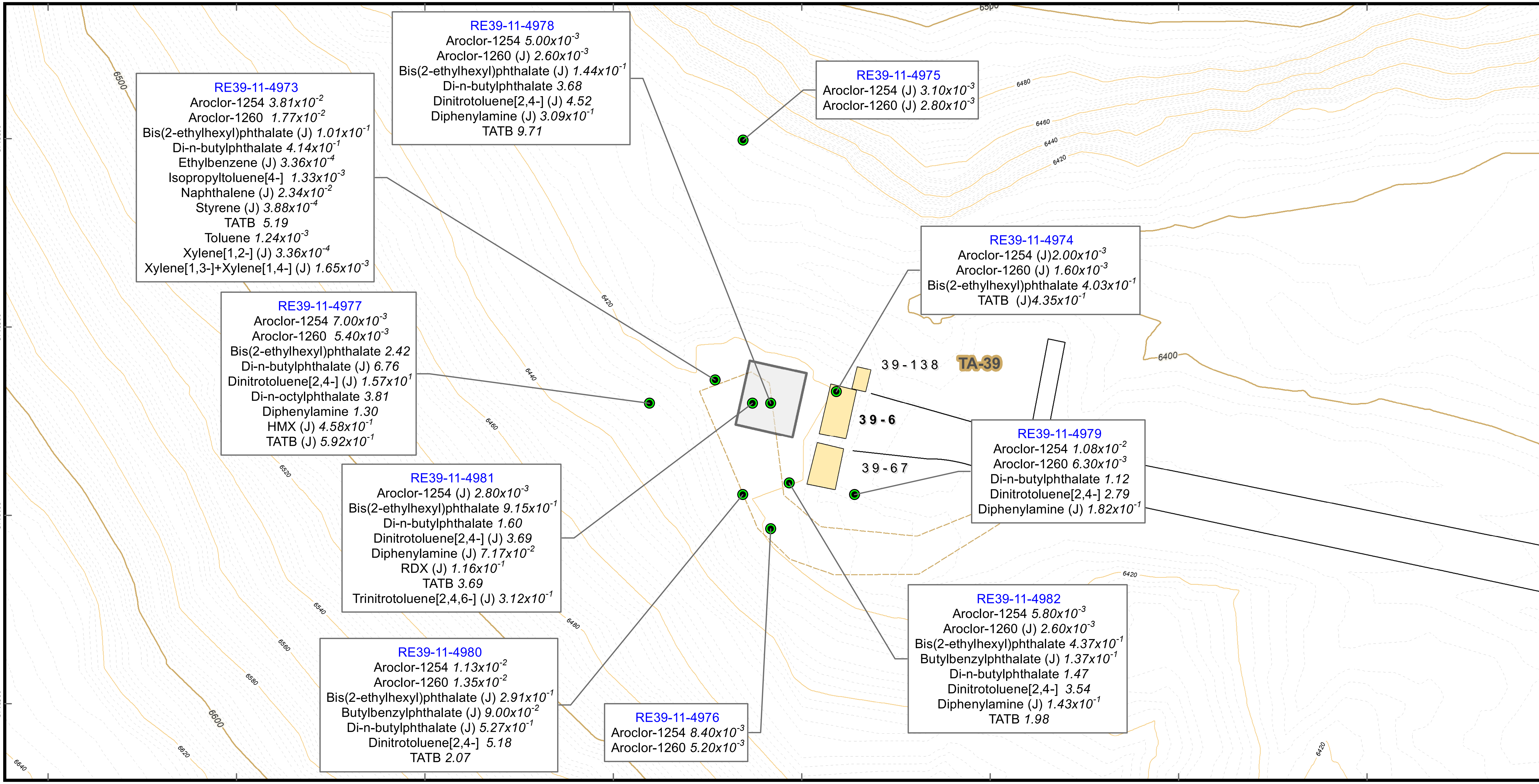
Notes: Concentration values are in milligrams per kilogram (mg/kg) and represent the TCDD toxicity equivalent concentrations for all dioxin/furan congeners detected at the sample location.

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-07

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary
Structures
2011 Grab Samples
Roads, paved
Roads, dirt
Contours, 2 ft
Contours, 20 ft
Contours, 100 ft

Figure 1.2-8. TA-39-6 Open Detonation Unit Soil Concentrations for Organic Chemicals Other than Dioxins/Furans

Notes: All concentration values are in milligrams per kilogram (mg/kg) and concentrations indicated with "J" or "J+" are estimated concentrations.

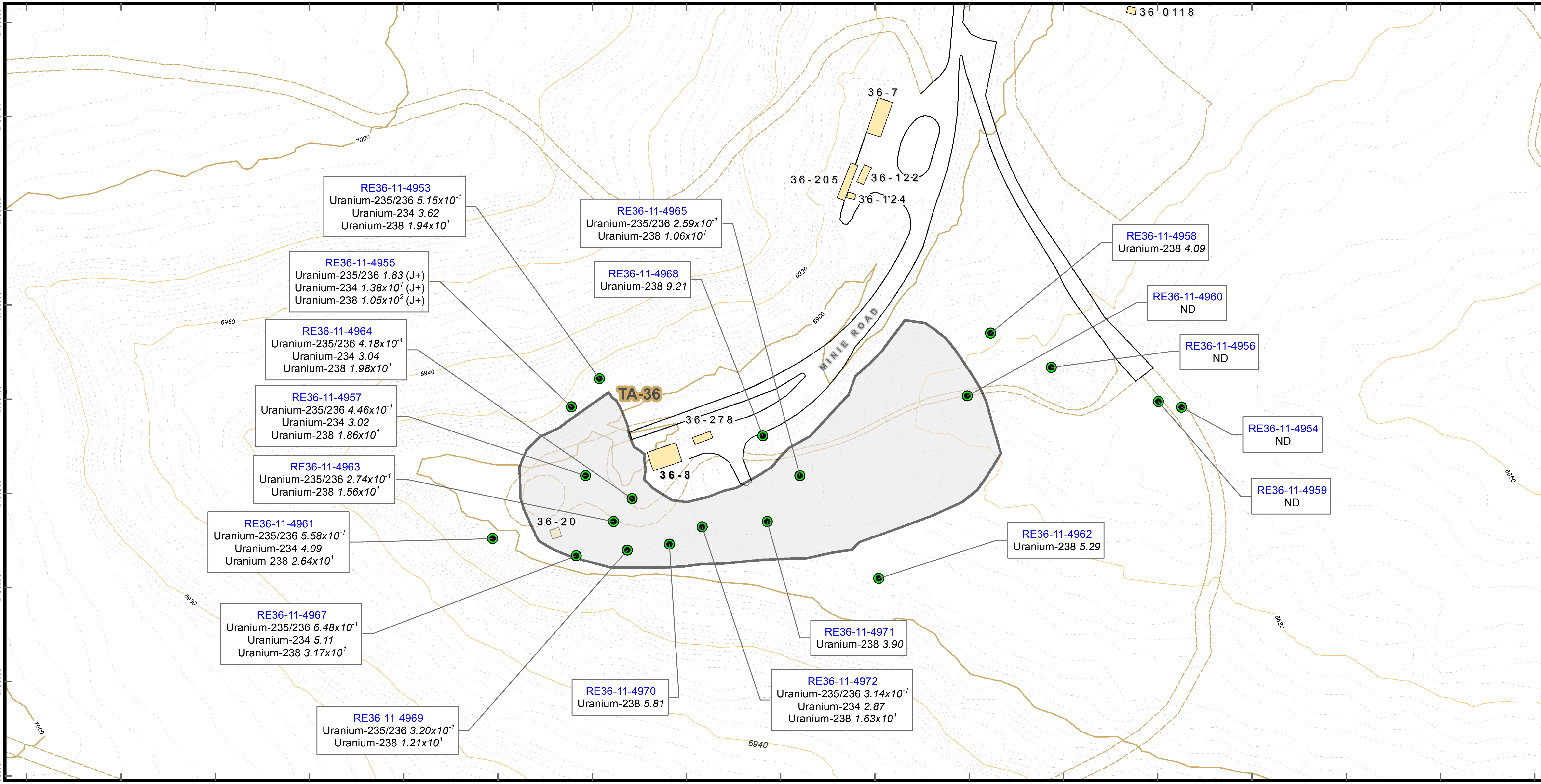
New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-05

0 30 60 120 Feet
0 10 20 40 Meters
1:600

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479



Unit boundary
Structures
2011 Grab Samples
Roads, paved
Roads, dirt
Contours, 2 ft
Contours, 20 ft
Contours, 100 ft

Figure 1.2-9. TA-36-8 Open Detonation Unit Soil Concentrations for Uranium Isotopes above Background Values

Notes: All concentration values are in picoCuries per gram (pCi/g). Concentrations indicated with "J+" are estimated concentrations. "ND" indicates that uranium isotopes were not detected at the sample location.

0 50 100 200 Feet
0 20 40 80 Meters
1:1,200

New Mexico State Plane Coordinate System Central Zone US Ft
North American Datum 1983 National Geodetic Vertical Datum 1929

Created by W. Red Star, OIO-DO. 22 JANUARY 2014 Map #14-0012-08

DISCLAIMER: This map was created for work processes associated with Open Detonation Risk Assessment. All other uses for this map should be confirmed with Environmental Compliance Program staff.

LA-UR-20-24479

UCL Statistics for Data Sets with Non-Detects			
User Selected Options			
Date/Time of Computation	3/12/2014 9:58:53 AM		
From File	UCL 36-8 OD Input Data_030514.xls		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
Aroclor-1260			
General Statistics			
Total Number of Observations	19	Number of Distinct Observations	17
Number of Detects	5	Number of Non-Detects	14
Number of Distinct Detects	5	Number of Distinct Non-Detects	12
Minimum Detect	0.0013	Minimum Non-Detect	0.0167
Maximum Detect	0.0207	Maximum Non-Detect	0.0351
Variance Detects	7.1530E-5	Percent Non-Detects	73.68%
Mean Detects	0.0056	SD Detects	0.00846
Median Detects	0.0017	CV Detects	1.51
Skewness Detects	2.215	Kurtosis Detects	4.921
Mean of Logged Detects	-5.85	SD of Logged Detects	1.135
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.605	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.434	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.396	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00294	Standard Error of Mean	0.00124
SD	0.00447	95% KM (BCA) UCL	0.00553
95% KM (t) UCL	0.00508	95% KM (Percentile Bootstrap) UCL	0.00523
95% KM (z) UCL	0.00497	95% KM Bootstrap t UCL	0.022
90% KM Chebyshev UCL	0.00664	95% KM Chebyshev UCL	0.00832
97.5% KM Chebyshev UCL	0.0107	99% KM Chebyshev UCL	0.0152
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.907	Anderson-Darling GOF Test	
5% A-D Critical Value	0.695	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.393	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.365	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.881	k star (bias corrected MLE)	0.486
Theta hat (MLE)	0.00636	Theta star (bias corrected MLE)	0.0115
nu hat (MLE)	8.808	nu star (bias corrected)	4.857
MLE Mean (bias corrected)	0.0056	MLE Sd (bias corrected)	0.00804
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.431	nu hat (KM)	16.38
Approximate Chi Square Value (16.38, α)	8.233	Adjusted Chi Square Value (16.38, β)	7.731
95% Gamma Approximate KM-UCL (use when n>=50)	0.00584	95% Gamma Adjusted KM-UCL (use when n<50)	0.00622
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0013	Mean	0.00884
Maximum	0.0207	Median	0.01
SD	0.00446	CV	0.504
k hat (MLE)	2.598	k star (bias corrected MLE)	2.223
Theta hat (MLE)	0.0034	Theta star (bias corrected MLE)	0.00398
nu hat (MLE)	98.71	nu star (bias corrected)	84.46
MLE Mean (bias corrected)	0.00884	MLE Sd (bias corrected)	0.00593
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (84.46, α)	64.28	Adjusted Chi Square Value (84.46, β)	62.74
95% Gamma Approximate UCL (use when n>=50)	0.0116	95% Gamma Adjusted UCL (use when n<50)	0.0119
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.322	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00297	Mean in Log Scale	-6.126
SD in Original Scale	0.00432	SD in Log Scale	0.593
95% t UCL (assumes normality of ROS data)	0.00469	95% Percentile Bootstrap UCL	0.00493
95% BCA Bootstrap UCL	0.00595	95% Bootstrap t UCL	0.0152
95% H-UCL (Log ROS)	0.0035		

	A	B	C	D	E	F	G	H	I	J	K	L
86												
87	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
88					KM Mean (logged)	-6.199					95% H-UCL (KM -Log)	0.00343
89					KM SD (logged)	0.635					95% Critical H Value (KM-Log)	2.148
90					KM Standard Error of Mean (logged)	0.211						
91												
92	DL/2 Statistics											
93	DL/2 Normal						DL/2 Log-Transformed					
94					Mean in Original Scale	0.00883					Mean in Log Scale	-4.959
95					SD in Original Scale	0.00519					SD in Log Scale	0.795
96					95% t UCL (Assumes normality)	0.0109					95% H-Stat UCL	0.0149
97	DL/2 is not a recommended method, provided for comparisons and historical reasons											
98												
99	Nonparametric Distribution Free UCL Statistics											
100	Detected Data appear Approximate Lognormal Distributed at 5% Significance Level											
101												
102	Suggested UCL to Use											
103					95% KM (BCA) UCL	0.00553						
104	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
105	Recommendations are based upon data size, data distribution, and skewness.											
106	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
107	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
108												

Benzo(b)fluoranthene

General Statistics

Total Number of Observations	19	Number of Distinct Observations	17
Number of Detects	6	Number of Non-Detects	13
Number of Distinct Detects	6	Number of Distinct Non-Detects	11
Minimum Detect	0.0157	Minimum Non-Detect	0.0334
Maximum Detect	0.0915	Maximum Non-Detect	0.038
Variance Detects	7.9647E-4	Percent Non-Detects	68.42%
Mean Detects	0.0365	SD Detects	0.0282
Median Detects	0.027	CV Detects	0.773
Skewness Detects	1.994	Kurtosis Detects	4.184
Mean of Logged Detects	-3.5	SD of Logged Detects	0.634

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.758	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.29	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0266	Standard Error of Mean	0.00471
SD	0.0165	95% KM (BCA) UCL	0.0348
95% KM (t) UCL	0.0347	95% KM (Percentile Bootstrap) UCL	0.035
95% KM (z) UCL	0.0343	95% KM Bootstrap t UCL	0.0392
90% KM Chebyshev UCL	0.0407	95% KM Chebyshev UCL	0.0471
97.5% KM Chebyshev UCL	0.056	99% KM Chebyshev UCL	0.0734

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.449	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.702	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.247	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.335	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.783	k star (bias corrected MLE)	1.503
Theta hat (MLE)	0.0131	Theta star (bias corrected MLE)	0.0243
nu hat (MLE)	33.4	nu star (bias corrected)	18.03
MLE Mean (bias corrected)	0.0365	MLE Sd (bias corrected)	0.0298

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	2.585	nu hat (KM)	98.23
Approximate Chi Square Value (98.23, α)	76.37	Adjusted Chi Square Value (98.23, β)	74.68
95% Gamma Approximate KM-UCL (use when n>=50)	0.0342	95% Gamma Adjusted KM-UCL (use when n<50)	0.035

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0145	Mean	0.026
Maximum	0.0915	Median	0.021
SD	0.0169	CV	0.651
k hat (MLE)	4.877	k star (bias corrected MLE)	4.142
Theta hat (MLE)	0.00532	Theta star (bias corrected MLE)	0.00627
nu hat (MLE)	185.3	nu star (bias corrected)	157.4
MLE Mean (bias corrected)	0.026	MLE Sd (bias corrected)	0.0128
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (157.38, α)	129.4	Adjusted Chi Square Value (157.38, β)	127.2
95% Gamma Approximate UCL (use when n>=50)	0.0316	95% Gamma Adjusted UCL (use when n<50)	0.0321

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.918	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.207	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.362	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0265	Mean in Log Scale	-3.723
SD in Original Scale	0.0166	SD in Log Scale	0.383
95% t UCL (assumes normality of ROS data)	0.0331	95% Percentile Bootstrap UCL	0.0336
95% BCA Bootstrap UCL	0.0373	95% Bootstrap t UCL	0.0508
95% H-UCL (Log ROS)	0.0309		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.736	95% H-UCL (KM -Log)	0.0314
KM SD (logged)	0.414	95% Critical H Value (KM-Log)	1.932
KM Standard Error of Mean (logged)	0.147		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0235	Mean in Log Scale	-3.875

	A	B	C	D	E	F	G	H	I	J	K	L
194	SD in Original Scale					0.0174	SD in Log Scale					0.426
195	95% t UCL (Assumes normality)					0.0304	95% H-Stat UCL					0.0276
196	DL/2 is not a recommended method, provided for comparisons and historical reasons											
197												
198	Nonparametric Distribution Free UCL Statistics											
199	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
200												
201	Suggested UCL to Use											
202	95% KM (t) UCL					0.0347	95% KM (Percentile Bootstrap) UCL					0.035
203												
204	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
205	Recommendations are based upon data size, data distribution, and skewness.											
206	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
207	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
208												

Bis(2-ethylhexyl)phthalate

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
Number of Detects	8	Number of Non-Detects	11
Number of Distinct Detects	8	Number of Distinct Non-Detects	11
Minimum Detect	0.0833	Minimum Non-Detect	0.334
Maximum Detect	8.4	Maximum Non-Detect	0.38
Variance Detects	8.506	Percent Non-Detects	57.89%
Mean Detects	1.185	SD Detects	2.916
Median Detects	0.13	CV Detects	2.462
Skewness Detects	2.825	Kurtosis Detects	7.984
Mean of Logged Detects	-1.465	SD of Logged Detects	1.519

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.44	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.496	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.588	Standard Error of Mean	0.453
SD	1.843	95% KM (BCA) UCL	1.465
95% KM (t) UCL	1.372	95% KM (Percentile Bootstrap) UCL	1.444
95% KM (z) UCL	1.332	95% KM Bootstrap t UCL	11.47
90% KM Chebyshev UCL	1.945	95% KM Chebyshev UCL	2.56
97.5% KM Chebyshev UCL	3.414	99% KM Chebyshev UCL	5.09

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.772	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.779	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.444	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.313	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.402	k star (bias corrected MLE)	0.335
Theta hat (MLE)	2.945	Theta star (bias corrected MLE)	3.539
nu hat (MLE)	6.435	nu star (bias corrected)	5.355
MLE Mean (bias corrected)	1.185	MLE Sd (bias corrected)	2.047

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.102	nu hat (KM)	3.866
Approximate Chi Square Value (3.87, α)	0.669	Adjusted Chi Square Value (3.87, β)	0.567
95% Gamma Approximate KM-UCL (use when n>=50)	3.395	95% Gamma Adjusted KM-UCL (use when n<50)	4.01

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.505
Maximum	8.4	Median	0.01
SD	1.914	CV	3.793
k hat (MLE)	0.27	k star (bias corrected MLE)	0.262
Theta hat (MLE)	1.869	Theta star (bias corrected MLE)	1.923
nu hat (MLE)	10.26	nu star (bias corrected)	9.971
MLE Mean (bias corrected)	0.505	MLE Sd (bias corrected)	0.985
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (9.97, α)	3.923	Adjusted Chi Square Value (9.97, β)	3.597
95% Gamma Approximate UCL (use when n>=50)	1.282	95% Gamma Adjusted UCL (use when n<50)	1.398

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.678	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.316	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.596	Mean in Log Scale	-1.649
SD in Original Scale	1.89	SD in Log Scale	0.961
95% t UCL (assumes normality of ROS data)	1.348	95% Percentile Bootstrap UCL	1.461
95% BCA Bootstrap UCL	1.903	95% Bootstrap t UCL	24.27
95% H-UCL (Log ROS)	0.544		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.601	Mean in Log Scale	-1.62
SD in Original Scale	1.889	SD in Log Scale	0.958
95% t UCL (Assumes normality)	1.353	95% H-Stat UCL	0.557

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

	A	B	C	D	E	F	G	H	I	J	K	L
294	Data do not follow a Discernible Distribution at 5% Significance Level											
295												
296	Suggested UCL to Use											
297	97.5% KM (Chebyshev) UCL					3.414						
298												
299	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
300	Recommendations are based upon data size, data distribution, and skewness.											
301	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
302	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
303												
304												

Copper

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	7.09	Mean	144.6
Maximum	1470	Median	49.1
SD	331.1	Std. Error of Mean	75.96
Coefficient of Variation	2.289	Skewness	3.966

Normal GOF Test

Shapiro Wilk Test Statistic	0.407	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.397	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	276.4	95% Adjusted-CLT UCL (Chen-1995)	343.4
		95% Modified-t UCL (Johnson-1978)	287.9

Gamma GOF Test

A-D Test Statistic	1.932	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.79	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.283	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.208	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.637	k star (bias corrected MLE)	0.571
Theta hat (MLE)	227.1	Theta star (bias corrected MLE)	253.2
nu hat (MLE)	24.2	nu star (bias corrected)	21.71
MLE Mean (bias corrected)	144.6	MLE Sd (bias corrected)	191.4
		Approximate Chi Square Value (0.05)	12.12
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	11.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	259.1	95% Adjusted Gamma UCL (use when n<50)	273.1

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.919	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.155	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.203	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.959	Mean of logged Data	4.012
Maximum of Logged Data	7.293	SD of logged Data	1.197

Assuming Lognormal Distribution

95% H-UCL	256.7	90% Chebyshev (MVUE) UCL	207.5
95% Chebyshev (MVUE) UCL	253.1	97.5% Chebyshev (MVUE) UCL	316.4
99% Chebyshev (MVUE) UCL	440.9		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	269.6	95% Jackknife UCL	276.4
95% Standard Bootstrap UCL	265.6	95% Bootstrap-t UCL	811.7
95% Hall's Bootstrap UCL	692.3	95% Percentile Bootstrap UCL	286
95% BCA Bootstrap UCL	358		
90% Chebyshev(Mean, Sd) UCL	372.5	95% Chebyshev(Mean, Sd) UCL	475.7
97.5% Chebyshev(Mean, Sd) UCL	619	99% Chebyshev(Mean, Sd) UCL	900.4

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	475.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Di-n-butylphthalate

General Statistics

Total Number of Observations	19	Number of Distinct Observations	17
Number of Detects	8	Number of Non-Detects	11
Number of Distinct Detects	8	Number of Distinct Non-Detects	9
Minimum Detect	0.0827	Minimum Non-Detect	0.334
Maximum Detect	1.2	Maximum Non-Detect	0.38
Variance Detects	0.142	Percent Non-Detects	57.89%
Mean Detects	0.285	SD Detects	0.376
Median Detects	0.147	CV Detects	1.318
Skewness Detects	2.643	Kurtosis Detects	7.155
Mean of Logged Detects	-1.688	SD of Logged Detects	0.86

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.574	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.364	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.21	Standard Error of Mean	0.0633
SD	0.243	95% KM (BCA) UCL	0.332
95% KM (t) UCL	0.319	95% KM (Percentile Bootstrap) UCL	0.32
95% KM (z) UCL	0.314	95% KM Bootstrap t UCL	0.642
90% KM Chebyshev UCL	0.4	95% KM Chebyshev UCL	0.486
97.5% KM Chebyshev UCL	0.605	99% KM Chebyshev UCL	0.839

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.014	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.731	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.33	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.3	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.293	k star (bias corrected MLE)	0.892
Theta hat (MLE)	0.221	Theta star (bias corrected MLE)	0.32
nu hat (MLE)	20.69	nu star (bias corrected)	14.27
MLE Mean (bias corrected)	0.285	MLE Sd (bias corrected)	0.302

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.743	nu hat (KM)	28.25
Approximate Chi Square Value (28.25, α)	17.12	Adjusted Chi Square Value (28.25, β)	16.36
95% Gamma Approximate KM-UCL (use when n>=50)	0.346	95% Gamma Adjusted KM-UCL (use when n<50)	0.362

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0523	Mean	0.205
Maximum	1.2	Median	0.142
SD	0.25	CV	1.218
k hat (MLE)	1.821	k star (bias corrected MLE)	1.568
Theta hat (MLE)	0.113	Theta star (bias corrected MLE)	0.131
nu hat (MLE)	69.19	nu star (bias corrected)	59.6
MLE Mean (bias corrected)	0.205	MLE Sd (bias corrected)	0.164
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (59.60, α)	42.85	Adjusted Chi Square Value (59.60, β)	41.61
95% Gamma Approximate UCL (use when n>=50)	0.285	95% Gamma Adjusted UCL (use when n<50)	0.294

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.824	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.273	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.21	Mean in Log Scale	-1.8
SD in Original Scale	0.245	SD in Log Scale	0.568
95% t UCL (assumes normality of ROS data)	0.308	95% Percentile Bootstrap UCL	0.318
95% BCA Bootstrap UCL	0.381	95% Bootstrap t UCL	0.692
95% H-UCL (Log ROS)	0.256		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.843	95% H-UCL (KM -Log)	0.263
KM SD (logged)	0.622	95% Critical H Value (KM-Log)	2.134
KM Standard Error of Mean (logged)	0.196		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.222	Mean in Log Scale	-1.719

	A	B	C	D	E	F	G	H	I	J	K	L
465					SD in Original Scale	0.241					SD in Log Scale	0.538
466					95% t UCL (Assumes normality)	0.318					95% H-Stat UCL	0.269
467	DL/2 is not a recommended method, provided for comparisons and historical reasons											
468												
469	Nonparametric Distribution Free UCL Statistics											
470	Detected Data appear Lognormal Distributed at 5% Significance Level											
471												
472	Suggested UCL to Use											
473					95% KM (t) UCL	0.319					95% KM (% Bootstrap) UCL	0.32
474												
475	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
476	Recommendations are based upon data size, data distribution, and skewness.											
477	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
478	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
479												

Fluoranthene

General Statistics			
Total Number of Observations	19	Number of Distinct Observations	17
Number of Detects	6	Number of Non-Detects	13
Number of Distinct Detects	6	Number of Distinct Non-Detects	11
Minimum Detect	0.0106	Minimum Non-Detect	0.0334
Maximum Detect	0.142	Maximum Non-Detect	0.038
Variance Detects	0.00257	Percent Non-Detects	68.42%
Mean Detects	0.0464	SD Detects	0.0507
Median Detects	0.0222	CV Detects	1.093
Skewness Detects	1.79	Kurtosis Detects	2.942
Mean of Logged Detects	-3.496	SD of Logged Detects	0.968
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.755	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.336	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0268	Standard Error of Mean	0.00772
SD	0.0295	95% KM (BCA) UCL	0.0403
95% KM (t) UCL	0.0402	95% KM (Percentile Bootstrap) UCL	0.0408
95% KM (z) UCL	0.0395	95% KM Bootstrap t UCL	0.0601
90% KM Chebyshev UCL	0.05	95% KM Chebyshev UCL	0.0605
97.5% KM Chebyshev UCL	0.0751	99% KM Chebyshev UCL	0.104
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.485	Anderson-Darling GOF Test	
5% A-D Critical Value	0.71	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.31	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.339	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.317	k star (bias corrected MLE)	0.77
Theta hat (MLE)	0.0352	Theta star (bias corrected MLE)	0.0603
nu hat (MLE)	15.81	nu star (bias corrected)	9.237
MLE Mean (bias corrected)	0.0464	MLE Sd (bias corrected)	0.0529
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.826	nu hat (KM)	31.41
Approximate Chi Square Value (31.41, α)	19.6	Adjusted Chi Square Value (31.41, β)	18.79
95% Gamma Approximate KM-UCL (use when n>=50)	0.043	95% Gamma Adjusted KM-UCL (use when n<50)	0.0448
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.026
Maximum	0.142	Median	0.0156
SD	0.0306	CV	1.176
k hat (MLE)	1.888	k star (bias corrected MLE)	1.625
Theta hat (MLE)	0.0138	Theta star (bias corrected MLE)	0.016
nu hat (MLE)	71.73	nu star (bias corrected)	61.74
MLE Mean (bias corrected)	0.026	MLE Sd (bias corrected)	0.0204
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (61.74, α)	44.66	Adjusted Chi Square Value (61.74, β)	43.4
95% Gamma Approximate UCL (use when n>=50)	0.036	95% Gamma Adjusted UCL (use when n<50)	0.037
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.92	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.259	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0273	Mean in Log Scale	-3.848
SD in Original Scale	0.03	SD in Log Scale	0.589
95% t UCL (assumes normality of ROS data)	0.0392	95% Percentile Bootstrap UCL	0.0396
95% BCA Bootstrap UCL	0.0472	95% Bootstrap t UCL	0.0965
95% H-UCL (Log ROS)	0.0339		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.891	95% H-UCL (KM -Log)	0.0338
KM SD (logged)	0.619	95% Critical H Value (KM-Log)	2.13
KM Standard Error of Mean (logged)	0.204		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0266	Mean in Log Scale	-3.873

	A	B	C	D	E	F	G	H	I	J	K	L
565	SD in Original Scale					0.0301	SD in Log Scale					0.575
566	95% t UCL (Assumes normality)					0.0386	95% H-Stat UCL					0.0325
567	DL/2 is not a recommended method, provided for comparisons and historical reasons											
568												
569	Nonparametric Distribution Free UCL Statistics											
570	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
571												
572	Suggested UCL to Use											
573	95% KM (t) UCL					0.0402	95% KM (Percentile Bootstrap) UCL					0.0408
574												
575	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
576	Recommendations are based upon data size, data distribution, and skewness.											
577	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
578	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
579												

HMX

General Statistics

Total Number of Observations	19	Number of Distinct Observations	14
Number of Detects	12	Number of Non-Detects	7
Number of Distinct Detects	12	Number of Distinct Non-Detects	2
Minimum Detect	0.151	Minimum Non-Detect	0.0346
Maximum Detect	67.4	Maximum Non-Detect	0.5
Variance Detects	385.8	Percent Non-Detects	36.84%
Mean Detects	9	SD Detects	19.64
Median Detects	1.077	CV Detects	2.183
Skewness Detects	2.851	Kurtosis Detects	8.384
Mean of Logged Detects	0.42	SD of Logged Detects	1.913

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.523	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.381	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.256	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	5.755	Standard Error of Mean	3.723
SD	15.54	95% KM (BCA) UCL	13.41
95% KM (t) UCL	12.21	95% KM (Percentile Bootstrap) UCL	12.38
95% KM (z) UCL	11.88	95% KM Bootstrap t UCL	49.32
90% KM Chebyshev UCL	16.92	95% KM Chebyshev UCL	21.98
97.5% KM Chebyshev UCL	29.01	99% KM Chebyshev UCL	42.8

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.01	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.809	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.287	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.263	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.374	k star (bias corrected MLE)	0.336
Theta hat (MLE)	24.05	Theta star (bias corrected MLE)	26.76
nu hat (MLE)	8.982	nu star (bias corrected)	8.07
MLE Mean (bias corrected)	9	MLE Sd (bias corrected)	15.52

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.137	nu hat (KM)	5.213
Approximate Chi Square Value (5.21, α)	1.252	Adjusted Chi Square Value (5.21, β)	1.093
95% Gamma Approximate KM-UCL (use when n>=50)	23.97	95% Gamma Adjusted KM-UCL (use when n<50)	27.46

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	5.688
Maximum	67.4	Median	0.267
SD	15.99	CV	2.811
k hat (MLE)	0.228	k star (bias corrected MLE)	0.227
Theta hat (MLE)	25	Theta star (bias corrected MLE)	25.09
nu hat (MLE)	8.645	nu star (bias corrected)	8.613
MLE Mean (bias corrected)	5.688	MLE Sd (bias corrected)	11.95
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (8.61, α)	3.095	Adjusted Chi Square Value (8.61, β)	2.812
95% Gamma Approximate UCL (use when n>=50)	15.83	95% Gamma Adjusted UCL (use when n<50)	17.42

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.928	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.155	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.256	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.745	Mean in Log Scale	-0.657
SD in Original Scale	15.97	SD in Log Scale	2.239
95% t UCL (assumes normality of ROS data)	12.1	95% Percentile Bootstrap UCL	12.3
95% BCA Bootstrap UCL	16.18	95% Bootstrap t UCL	49.4
95% H-UCL (Log ROS)	74.99		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.477	95% H-UCL (KM -Log)	29.16
KM SD (logged)	1.959	95% Critical H Value (KM-Log)	4.179
KM Standard Error of Mean (logged)	0.499		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.764	Mean in Log Scale	-0.386

	A	B	C	D	E	F	G	H	I	J	K	L
665	SD in Original Scale					15.96	SD in Log Scale					1.937
666	95% t UCL (Assumes normality)					12.11	95% H-Stat UCL					29.36
667	DL/2 is not a recommended method, provided for comparisons and historical reasons											
668												
669	Nonparametric Distribution Free UCL Statistics											
670	Detected Data appear Lognormal Distributed at 5% Significance Level											
671												
672	Suggested UCL to Use											
673	99% KM (Chebyshev) UCL					42.8						
674												
675	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
676	Recommendations are based upon data size, data distribution, and skewness.											
677	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
678	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
679												
680												

Lead

General Statistics			
Total Number of Observations	19	Number of Distinct Observations	18
		Number of Missing Observations	0
Minimum	10.6	Mean	18.34
Maximum	32.9	Median	18.9
SD	6.357	Std. Error of Mean	1.458
Coefficient of Variation	0.347	Skewness	0.766
Normal GOF Test			
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.139	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	20.87	95% Adjusted-CLT UCL (Chen-1995)	21.01
		95% Modified-t UCL (Johnson-1978)	20.91
Gamma GOF Test			
A-D Test Statistic	0.489	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.129	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.199	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	9.16	k star (bias corrected MLE)	7.749
Theta hat (MLE)	2.002	Theta star (bias corrected MLE)	2.366
nu hat (MLE)	348.1	nu star (bias corrected)	294.5
MLE Mean (bias corrected)	18.34	MLE Sd (bias corrected)	6.587
		Approximate Chi Square Value (0.05)	255.7
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	252.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	21.12	95% Adjusted Gamma UCL (use when n<50)	21.38
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.149	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.203	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.361	Mean of logged Data	2.853
Maximum of Logged Data	3.493	SD of logged Data	0.343
Assuming Lognormal Distribution			
95% H-UCL	21.41	90% Chebyshev (MVUE) UCL	22.74
95% Chebyshev (MVUE) UCL	24.73	97.5% Chebyshev (MVUE) UCL	27.5
99% Chebyshev (MVUE) UCL	32.94		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	20.74	95% Jackknife UCL	20.87
95% Standard Bootstrap UCL	20.55	95% Bootstrap-t UCL	21.16
95% Hall's Bootstrap UCL	21.39	95% Percentile Bootstrap UCL	20.75
95% BCA Bootstrap UCL	20.86		
90% Chebyshev(Mean, Sd) UCL	22.71	95% Chebyshev(Mean, Sd) UCL	24.69
97.5% Chebyshev(Mean, Sd) UCL	27.45	99% Chebyshev(Mean, Sd) UCL	32.85
Suggested UCL to Use			
95% Student's-t UCL	20.87		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Perchlorate

General Statistics			
Total Number of Observations	19	Number of Distinct Observations	16
Number of Detects	9	Number of Non-Detects	10
Number of Distinct Detects	9	Number of Distinct Non-Detects	7
Minimum Detect	5.8500E-4	Minimum Non-Detect	0.00202
Maximum Detect	0.00905	Maximum Non-Detect	0.00219
Variance Detects	7.5280E-6	Percent Non-Detects	52.63%
Mean Detects	0.00197	SD Detects	0.00274
Median Detects	8.5400E-4	CV Detects	1.39
Skewness Detects	2.666	Kurtosis Detects	7.357
Mean of Logged Detects	-6.722	SD of Logged Detects	0.913
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.576	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.323	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00139	Standard Error of Mean	4.6800E-4
SD	0.00188	95% KM (BCA) UCL	0.00225
95% KM (t) UCL	0.0022	95% KM (Percentile Bootstrap) UCL	0.00219
95% KM (z) UCL	0.00216	95% KM Bootstrap t UCL	0.00379
90% KM Chebyshev UCL	0.00279	95% KM Chebyshev UCL	0.00343
97.5% KM Chebyshev UCL	0.00431	99% KM Chebyshev UCL	0.00604
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.115	Anderson-Darling GOF Test	
5% A-D Critical Value	0.741	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.324	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.286	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.149	k star (bias corrected MLE)	0.84
Theta hat (MLE)	0.00172	Theta star (bias corrected MLE)	0.00235
nu hat (MLE)	20.69	nu star (bias corrected)	15.13
MLE Mean (bias corrected)	0.00197	MLE Sd (bias corrected)	0.00215
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.541	nu hat (KM)	20.57
Approximate Chi Square Value (20.57, α)	11.27	Adjusted Chi Square Value (20.57, β)	10.67
95% Gamma Approximate KM-UCL (use when n>=50)	0.00253	95% Gamma Adjusted KM-UCL (use when n<50)	0.00267
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.8500E-4	Mean	0.0062
Maximum	0.01	Median	0.01
SD	0.00451	CV	0.727
k hat (MLE)	1.09	k star (bias corrected MLE)	0.953
Theta hat (MLE)	0.00569	Theta star (bias corrected MLE)	0.00651
nu hat (MLE)	41.41	nu star (bias corrected)	36.2
MLE Mean (bias corrected)	0.0062	MLE Sd (bias corrected)	0.00635
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (36.20, α)	23.43	Adjusted Chi Square Value (36.20, β)	22.54
95% Gamma Approximate UCL (use when n>=50)	0.00958	95% Gamma Adjusted UCL (use when n<50)	0.00996
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.8	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.286	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00142	Mean in Log Scale	-6.886
SD in Original Scale	0.00192	SD in Log Scale	0.66
95% t UCL (assumes normality of ROS data)	0.00218	95% Percentile Bootstrap UCL	0.00226
95% BCA Bootstrap UCL	0.00276	95% Bootstrap t UCL	0.00517
95% H-UCL (Log ROS)	0.00178		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.935	95% H-UCL (KM -Log)	0.00172
KM SD (logged)	0.671	95% Critical H Value (KM-Log)	2.188
KM Standard Error of Mean (logged)	0.188		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00148	Mean in Log Scale	-6.797

	A	B	C	D	E	F	G	H	I	J	K	L
841	SD in Original Scale					0.00189	SD in Log Scale					0.613
842	95% t UCL (Assumes normality)					0.00224	95% H-Stat UCL					0.00183
843	DL/2 is not a recommended method, provided for comparisons and historical reasons											
844												
845	Nonparametric Distribution Free UCL Statistics											
846	Detected Data appear Approximate Lognormal Distributed at 5% Significance Level											
847												
848	Suggested UCL to Use											
849	95% KM (t) UCL					0.0022	95% KM (% Bootstrap) UCL					0.00219
850												
851	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
852	Recommendations are based upon data size, data distribution, and skewness.											
853	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
854	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
855												

Pyrene

General Statistics

Total Number of Observations	19	Number of Distinct Observations	16
Number of Detects	5	Number of Non-Detects	14
Number of Distinct Detects	5	Number of Distinct Non-Detects	11
Minimum Detect	0.0121	Minimum Non-Detect	0.0334
Maximum Detect	0.137	Maximum Non-Detect	0.038
Variance Detects	0.00362	Percent Non-Detects	73.68%
Mean Detects	0.0641	SD Detects	0.0602
Median Detects	0.0285	CV Detects	0.938
Skewness Detects	0.601	Kurtosis Detects	-3.067
Mean of Logged Detects	-3.184	SD of Logged Detects	1.085

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.796	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.323	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.032	Standard Error of Mean	0.00943
SD	0.0341	95% KM (BCA) UCL	0.0478
95% KM (t) UCL	0.0484	95% KM (Percentile Bootstrap) UCL	0.0482
95% KM (z) UCL	0.0475	95% KM Bootstrap t UCL	0.0624
90% KM Chebyshev UCL	0.0603	95% KM Chebyshev UCL	0.0731
97.5% KM Chebyshev UCL	0.0909	99% KM Chebyshev UCL	0.126

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.5	Anderson-Darling GOF Test
5% A-D Critical Value	0.689	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.291	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.363	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.283	k star (bias corrected MLE)	0.647
Theta hat (MLE)	0.05	Theta star (bias corrected MLE)	0.0992
nu hat (MLE)	12.83	nu star (bias corrected)	6.466
MLE Mean (bias corrected)	0.0641	MLE Sd (bias corrected)	0.0798

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.882	nu hat (KM)	33.51
Approximate Chi Square Value (33.51, α)	21.27	Adjusted Chi Square Value (33.51, β)	20.42
95% Gamma Approximate KM-UCL (use when n>=50)	0.0505	95% Gamma Adjusted KM-UCL (use when n<50)	0.0526

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0327
Maximum	0.137	Median	0.0206
SD	0.0351	CV	1.074
k hat (MLE)	1.773	k star (bias corrected MLE)	1.528
Theta hat (MLE)	0.0184	Theta star (bias corrected MLE)	0.0214
nu hat (MLE)	67.37	nu star (bias corrected)	58.06
MLE Mean (bias corrected)	0.0327	MLE Sd (bias corrected)	0.0264
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (58.06, α)	41.55	Adjusted Chi Square Value (58.06, β)	40.33
95% Gamma Approximate UCL (use when n>=50)	0.0457	95% Gamma Adjusted UCL (use when n<50)	0.0471

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.881	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.24	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0325	Mean in Log Scale	-3.701
SD in Original Scale	0.0347	SD in Log Scale	0.642
95% t UCL (assumes normality of ROS data)	0.0463	95% Percentile Bootstrap UCL	0.0459
95% BCA Bootstrap UCL	0.0507	95% Bootstrap t UCL	0.107
95% H-UCL (Log ROS)	0.042		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-3.744	95% H-UCL (KM -Log)	0.042
KM SD (logged)	0.673	95% Critical H Value (KM-Log)	2.19
KM Standard Error of Mean (logged)	0.254		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0297	Mean in Log Scale	-3.821

	A	B	C	D	E	F	G	H	I	J	K	L
941	SD in Original Scale					0.0354	SD in Log Scale					0.645
942	95% t UCL (Assumes normality)					0.0438	95% H-Stat UCL					0.0374
943	DL/2 is not a recommended method, provided for comparisons and historical reasons											
944												
945	Nonparametric Distribution Free UCL Statistics											
946	Detected Data appear Normal Distributed at 5% Significance Level											
947												
948	Suggested UCL to Use											
949	95% KM (t) UCL					0.0484	95% KM (Percentile Bootstrap) UCL					0.0482
950												
951	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
952	Recommendations are based upon data size, data distribution, and skewness.											
953	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
954	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
955												

RDX

General Statistics			
Total Number of Observations	19	Number of Distinct Observations	8
Number of Detects	7	Number of Non-Detects	12
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	0.105	Minimum Non-Detect	0.5
Maximum Detect	2.61	Maximum Non-Detect	0.5
Variance Detects	0.851	Percent Non-Detects	63.16%
Mean Detects	0.708	SD Detects	0.923
Median Detects	0.189	CV Detects	1.304
Skewness Detects	1.857	Kurtosis Detects	3.323
Mean of Logged Detects	-1.033	SD of Logged Detects	1.242
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.734	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.352	Standard Error of Mean	0.146
SD	0.586	95% KM (BCA) UCL	0.632
95% KM (t) UCL	0.604	95% KM (Percentile Bootstrap) UCL	0.598
95% KM (z) UCL	0.591	95% KM Bootstrap t UCL	1.296
90% KM Chebyshev UCL	0.789	95% KM Chebyshev UCL	0.987
97.5% KM Chebyshev UCL	1.261	99% KM Chebyshev UCL	1.801
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.578	Anderson-Darling GOF Test	
5% A-D Critical Value	0.732	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.302	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.321	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.856	k star (bias corrected MLE)	0.585
Theta hat (MLE)	0.826	Theta star (bias corrected MLE)	1.211
nu hat (MLE)	11.99	nu star (bias corrected)	8.185
MLE Mean (bias corrected)	0.708	MLE Sd (bias corrected)	0.926
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.36	nu hat (KM)	13.69
Approximate Chi Square Value (13.69, α)	6.359	Adjusted Chi Square Value (13.69, β)	5.926
95% Gamma Approximate KM-UCL (use when n>=50)	0.757	95% Gamma Adjusted KM-UCL (use when n<50)	0.812
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.377
Maximum	2.61	Median	0.144
SD	0.622	CV	1.651
k hat (MLE)	0.506	k star (bias corrected MLE)	0.461
Theta hat (MLE)	0.745	Theta star (bias corrected MLE)	0.817
nu hat (MLE)	19.21	nu star (bias corrected)	17.51
MLE Mean (bias corrected)	0.377	MLE Sd (bias corrected)	0.555
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (17.51, α)	9.04	Adjusted Chi Square Value (17.51, β)	8.51
95% Gamma Approximate UCL (use when n>=50)	0.73	95% Gamma Adjusted UCL (use when n<50)	0.775
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.266	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.385	Mean in Log Scale	-1.578
SD in Original Scale	0.6	SD in Log Scale	1.048
95% t UCL (assumes normality of ROS data)	0.623	95% Percentile Bootstrap UCL	0.637
95% BCA Bootstrap UCL	0.739	95% Bootstrap t UCL	1.144
95% H-UCL (Log ROS)	0.692		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.618	95% H-UCL (KM -Log)	0.457
KM SD (logged)	0.845	95% Critical H Value (KM-Log)	2.4
KM Standard Error of Mean (logged)	0.225		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.419	Mean in Log Scale	-1.256

	A	B	C	D	E	F	G	H	I	J	K	L
1041	SD in Original Scale					0.579	SD in Log Scale					0.738
1042	95% t UCL (Assumes normality)					0.649	95% H-Stat UCL					0.555
1043	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1044												
1045	Nonparametric Distribution Free UCL Statistics											
1046	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
1047												
1048	Suggested UCL to Use											
1049	95% KM (t) UCL					0.604	95% KM (Percentile Bootstrap) UCL					0.598
1050												
1051	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1052	Recommendations are based upon data size, data distribution, and skewness.											
1053	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1054	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1055												
1056												

TATB

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	1.14	Mean	19.74
Maximum	37.3	Median	23.7
SD	12.75	Std. Error of Mean	2.925
Coefficient of Variation	0.646	Skewness	-0.283

Normal GOF Test

Shapiro Wilk Test Statistic	0.897	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.16	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	24.81	95% Adjusted-CLT UCL (Chen-1995)	24.35
		95% Modified-t UCL (Johnson-1978)	24.78

Gamma GOF Test

A-D Test Statistic	1.203	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.22	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.203	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.326	k star (bias corrected MLE)	1.152
Theta hat (MLE)	14.89	Theta star (bias corrected MLE)	17.14
nu hat (MLE)	50.38	nu star (bias corrected)	43.76
MLE Mean (bias corrected)	19.74	MLE Sd (bias corrected)	18.4
		Approximate Chi Square Value (0.05)	29.59
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	28.57

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	29.19	95% Adjusted Gamma UCL (use when n<50)	30.23

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.802	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.223	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.203	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.131	Mean of logged Data	2.56
Maximum of Logged Data	3.619	SD of logged Data	1.174

Assuming Lognormal Distribution

95% H-UCL	56.94	90% Chebyshev (MVUE) UCL	46.85
95% Chebyshev (MVUE) UCL	57.03	97.5% Chebyshev (MVUE) UCL	71.17
99% Chebyshev (MVUE) UCL	98.94		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	24.55	95% Jackknife UCL	24.81
95% Standard Bootstrap UCL	24.41	95% Bootstrap-t UCL	24.65
95% Hall's Bootstrap UCL	24.24	95% Percentile Bootstrap UCL	24.6
95% BCA Bootstrap UCL	24.42		
90% Chebyshev(Mean, Sd) UCL	28.51	95% Chebyshev(Mean, Sd) UCL	32.49
97.5% Chebyshev(Mean, Sd) UCL	38.01	99% Chebyshev(Mean, Sd) UCL	48.84

Suggested UCL to Use

95% Student's-t UCL	24.81

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Uranium-234

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	0.56	Mean	2.726
Maximum	13.8	Median	2.08
SD	2.966	Std. Error of Mean	0.68
Coefficient of Variation	1.088	Skewness	3.157

Normal GOF Test

Shapiro Wilk Test Statistic	0.635	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.247	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.906	95% Adjusted-CLT UCL (Chen-1995)	4.372
		95% Modified-t UCL (Johnson-1978)	3.988

Gamma GOF Test

A-D Test Statistic	0.488	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.133	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.202	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.605	k star (bias corrected MLE)	1.386
Theta hat (MLE)	1.699	Theta star (bias corrected MLE)	1.967
nu hat (MLE)	60.97	nu star (bias corrected)	52.68
MLE Mean (bias corrected)	2.726	MLE Sd (bias corrected)	2.316
		Approximate Chi Square Value (0.05)	37.01
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	35.86

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	3.881	95% Adjusted Gamma UCL (use when n<50)	4.005

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0769	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.203	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.58	Mean of logged Data	0.66
Maximum of Logged Data	2.625	SD of logged Data	0.805

Assuming Lognormal Distribution

95% H-UCL	4.179	90% Chebyshev (MVUE) UCL	4.189
95% Chebyshev (MVUE) UCL	4.901	97.5% Chebyshev (MVUE) UCL	5.888
99% Chebyshev (MVUE) UCL	7.828		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.845	95% Jackknife UCL	3.906
95% Standard Bootstrap UCL	3.776	95% Bootstrap-t UCL	5.312
95% Hall's Bootstrap UCL	8.552	95% Percentile Bootstrap UCL	3.898
95% BCA Bootstrap UCL	4.468		
90% Chebyshev(Mean, Sd) UCL	4.767	95% Chebyshev(Mean, Sd) UCL	5.692
97.5% Chebyshev(Mean, Sd) UCL	6.975	99% Chebyshev(Mean, Sd) UCL	9.496

Suggested UCL to Use

95% Adjusted Gamma UCL	4.005

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Uranium-235/236

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
Number of Detects	16	Number of Non-Detects	3
Number of Distinct Detects	16	Number of Distinct Non-Detects	3
Minimum Detect	0.0749	Minimum Non-Detect	0.0396
Maximum Detect	1.83	Maximum Non-Detect	0.0524
Variance Detects	0.177	Percent Non-Detects	15.79%
Mean Detects	0.397	SD Detects	0.42
Median Detects	0.294	CV Detects	1.057
Skewness Detects	2.904	Kurtosis Detects	9.879
Mean of Logged Detects	-1.276	SD of Logged Detects	0.846

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.664	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.226	Lilliefors GOF Test
5% Lilliefors Critical Value	0.222	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.341	Standard Error of Mean	0.0937
SD	0.396	95% KM (BCA) UCL	0.514
95% KM (t) UCL	0.504	95% KM (Percentile Bootstrap) UCL	0.496
95% KM (z) UCL	0.495	95% KM Bootstrap t UCL	0.646
90% KM Chebyshev UCL	0.622	95% KM Chebyshev UCL	0.75
97.5% KM Chebyshev UCL	0.926	99% KM Chebyshev UCL	1.273

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.407	Anderson-Darling GOF Test
5% A-D Critical Value	0.754	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.12	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.219	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.56	k star (bias corrected MLE)	1.309
Theta hat (MLE)	0.255	Theta star (bias corrected MLE)	0.304
nu hat (MLE)	49.93	nu star (bias corrected)	41.9
MLE Mean (bias corrected)	0.397	MLE Sd (bias corrected)	0.347

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.743	nu hat (KM)	28.24
Approximate Chi Square Value (28.24, α)	17.11	Adjusted Chi Square Value (28.24, β)	16.36
95% Gamma Approximate KM-UCL (use when n>=50)	0.563	95% Gamma Adjusted KM-UCL (use when n<50)	0.589

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.336
Maximum	1.83	Median	0.259
SD	0.41	CV	1.22
k hat (MLE)	0.83	k star (bias corrected MLE)	0.734
Theta hat (MLE)	0.405	Theta star (bias corrected MLE)	0.458
nu hat (MLE)	31.53	nu star (bias corrected)	27.88
MLE Mean (bias corrected)	0.336	MLE Sd (bias corrected)	0.393
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (27.88, α)	16.84	Adjusted Chi Square Value (27.88, β)	16.09
95% Gamma Approximate UCL (use when n>=50)	0.557	95% Gamma Adjusted UCL (use when n<50)	0.583

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.962	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0973	Lilliefors GOF Test
5% Lilliefors Critical Value	0.222	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.341	Mean in Log Scale	-1.581
SD in Original Scale	0.406	SD in Log Scale	1.059
95% t UCL (assumes normality of ROS data)	0.503	95% Percentile Bootstrap UCL	0.503
95% BCA Bootstrap UCL	0.59	95% Bootstrap t UCL	0.637
95% H-UCL (Log ROS)	0.707		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-1.584	95% H-UCL (KM -Log)	0.671
KM SD (logged)	1.036	95% Critical H Value (KM-Log)	2.662
KM Standard Error of Mean (logged)	0.245		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.338	Mean in Log Scale	-1.673

	A	B	C	D	E	F	G	H	I	J	K	L
1296					SD in Original Scale	0.409					SD in Log Scale	1.219
1297					95% t UCL (Assumes normality)	0.501					95% H-Stat UCL	0.917
1298	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1299												
1300	Nonparametric Distribution Free UCL Statistics											
1301	Detected Data appear Gamma Distributed at 5% Significance Level											
1302												
1303	Suggested UCL to Use											
1304					95% KM (BCA) UCL	0.514					95% GROS Adjusted Gamma UCL	0.583
1305					95% Adjusted Gamma KM-UCL	0.589						
1306												
1307	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1308	Recommendations are based upon data size, data distribution, and skewness.											
1309	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1310	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1311												
1312												

Uranium-238

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	0.788	Mean	16.25
Maximum	105	Median	10.6
SD	23.31	Std. Error of Mean	5.347
Coefficient of Variation	1.435	Skewness	3.352

Normal GOF Test

Shapiro Wilk Test Statistic	0.594	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.281	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	25.52	95% Adjusted-CLT UCL (Chen-1995)	29.43
		95% Modified-t UCL (Johnson-1978)	26.2

Gamma GOF Test

A-D Test Statistic	0.384	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.775	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.133	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.205	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.845	k star (bias corrected MLE)	0.747
Theta hat (MLE)	19.22	Theta star (bias corrected MLE)	21.75
nu hat (MLE)	32.12	nu star (bias corrected)	28.38
MLE Mean (bias corrected)	16.25	MLE Sd (bias corrected)	18.8
		Approximate Chi Square Value (0.05)	17.23
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	16.47

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	26.77	95% Adjusted Gamma UCL (use when n<50)	28

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.119	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.203	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.238	Mean of logged Data	2.091
Maximum of Logged Data	4.654	SD of logged Data	1.284

Assuming Lognormal Distribution

95% H-UCL	46.2	90% Chebyshev (MVUE) UCL	34.75
95% Chebyshev (MVUE) UCL	42.71	97.5% Chebyshev (MVUE) UCL	53.76
99% Chebyshev (MVUE) UCL	75.46		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	25.04	95% Jackknife UCL	25.52
95% Standard Bootstrap UCL	25.08	95% Bootstrap-t UCL	37.19
95% Hall's Bootstrap UCL	60.74	95% Percentile Bootstrap UCL	25.81
95% BCA Bootstrap UCL	29.91		
90% Chebyshev(Mean, Sd) UCL	32.29	95% Chebyshev(Mean, Sd) UCL	39.55
97.5% Chebyshev(Mean, Sd) UCL	49.64	99% Chebyshev(Mean, Sd) UCL	69.45

Suggested UCL to Use

95% Adjusted Gamma UCL	28

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

1,3-Xylene+1,4-Xylene

General Statistics

Total Number of Observations	19	Number of Distinct Observations	15
Number of Detects	5	Number of Non-Detects	14
Number of Distinct Detects	5	Number of Distinct Non-Detects	10
Minimum Detect	3.9000E-4	Minimum Non-Detect	0.00202
Maximum Detect	0.00105	Maximum Non-Detect	0.00229
Variance Detects	8.1301E-8	Percent Non-Detects	73.68%
Mean Detects	7.6760E-4	SD Detects	2.8513E-4
Median Detects	8.2300E-4	CV Detects	0.371
Skewness Detects	-0.453	Kurtosis Detects	-1.979
Mean of Logged Detects	-7.237	SD of Logged Detects	0.421

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.917	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.202	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	7.6760E-4	Standard Error of Mean	1.2752E-4
SD	2.5503E-4	95% KM (BCA) UCL	9.7325E-4
95% KM (t) UCL	9.8872E-4	95% KM (Percentile Bootstrap) UCL	9.8325E-4
95% KM (z) UCL	9.7734E-4	95% KM Bootstrap t UCL	0.00103
90% KM Chebyshev UCL	0.00115	95% KM Chebyshev UCL	0.00132
97.5% KM Chebyshev UCL	0.00156	99% KM Chebyshev UCL	0.00204

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.346	Anderson-Darling GOF Test
5% A-D Critical Value	0.68	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.224	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.358	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	7.828	k star (bias corrected MLE)	3.264
Theta hat (MLE)	9.8061E-5	Theta star (bias corrected MLE)	2.3514E-4
nu hat (MLE)	78.28	nu star (bias corrected)	32.64
MLE Mean (bias corrected)	7.6760E-4	MLE Sd (bias corrected)	4.2484E-4

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	9.059	nu hat (KM)	344.2
Approximate Chi Square Value (344.24, α)	302.3	Adjusted Chi Square Value (344.24, β)	298.8
95% Gamma Approximate KM-UCL (use when n>=50)	8.7425E-4	95% Gamma Adjusted KM-UCL (use when n<50)	8.8430E-4

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	3.9000E-4	Mean	0.00757
Maximum	0.01	Median	0.01
SD	0.00418	CV	0.552
k hat (MLE)	1.349	k star (bias corrected MLE)	1.171
Theta hat (MLE)	0.00561	Theta star (bias corrected MLE)	0.00646
nu hat (MLE)	51.26	nu star (bias corrected)	44.5
MLE Mean (bias corrected)	0.00757	MLE Sd (bias corrected)	0.007
		Adjusted Level of Significance (β)	0.0369
Approximate Chi Square Value (44.50, α)	30.2	Adjusted Chi Square Value (44.50, β)	29.17
95% Gamma Approximate UCL (use when n>=50)	0.0112	95% Gamma Adjusted UCL (use when n<50)	0.0115

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.898	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.226	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7.4103E-4	Mean in Log Scale	-7.237
SD in Original Scale	1.8105E-4	SD in Log Scale	0.257
95% t UCL (assumes normality of ROS data)	8.1306E-4	95% Percentile Bootstrap UCL	8.0565E-4
95% BCA Bootstrap UCL	8.1044E-4	95% Bootstrap t UCL	8.1325E-4
95% H-UCL (Log ROS)	8.2970E-4		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-7.237	95% H-UCL (KM -Log)	9.1403E-4
KM SD (logged)	0.377	95% Critical H Value (KM-Log)	1.902
KM Standard Error of Mean (logged)	0.188		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.8358E-4	Mean in Log Scale	-6.952

	A	B	C	D	E	F	G	H	I	J	K	L
1473				SD in Original Scale		1.9259E-4				SD in Log Scale		0.267
1474				95% t UCL (Assumes normality)		0.00106				95% H-Stat UCL		0.00111
1475	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1476												
1477	Nonparametric Distribution Free UCL Statistics											
1478	Detected Data appear Normal Distributed at 5% Significance Level											
1479												
1480	Suggested UCL to Use											
1481				95% KM (t) UCL		9.8872E-4				95% KM (Percentile Bootstrap) UCL		9.8325E-4
1482												
1483	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1484	Recommendations are based upon data size, data distribution, and skewness.											
1485	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1486	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1487												
1488												

Dioxins Mammals

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	1.0500E-7	Mean	2.1975E-6
Maximum	1.6100E-5	Median	7.1000E-7
SD	3.6959E-6	Std. Error of Mean	8.4789E-7
Coefficient of Variation	N/A	Skewness	3.247

Normal GOF Test

Shapiro Wilk Test Statistic	0.571	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.286	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.6678E-6	95% Adjusted-CLT UCL (Chen-1995)	4.2670E-6
		95% Modified-t UCL (Johnson-1978)	3.7731E-6

Gamma GOF Test

A-D Test Statistic	0.761	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.79	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.168	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.208	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.635	k star (bias corrected MLE)	0.57
Theta hat (MLE)	3.4615E-6	Theta star (bias corrected MLE)	3.8573E-6
nu hat (MLE)	24.12	nu star (bias corrected)	21.65
MLE Mean (bias corrected)	2.1975E-6	MLE Sd (bias corrected)	2.9115E-6
		Approximate Chi Square Value (0.05)	12.08
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	11.45

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.9398E-6	95% Adjusted Gamma UCL (use when n<50)	4.1541E-6

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.95	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.148	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.203	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-16.07	Mean of logged Data	-13.99
Maximum of Logged Data	-11.04	SD of logged Data	1.445

Assuming Lognormal Distribution

95% H-UCL	7.3014E-6	90% Chebyshev (MVUE) UCL	4.6794E-6
95% Chebyshev (MVUE) UCL	5.8237E-6	97.5% Chebyshev (MVUE) UCL	7.4119E-6
99% Chebyshev (MVUE) UCL	1.0532E-5		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.5922E-6	95% Jackknife UCL	3.6678E-6
95% Standard Bootstrap UCL	3.5577E-6	95% Bootstrap-t UCL	5.3363E-6
95% Hall's Bootstrap UCL	8.6139E-6	95% Percentile Bootstrap UCL	3.7316E-6
95% BCA Bootstrap UCL	4.4744E-6		
90% Chebyshev(Mean, Sd) UCL	4.7412E-6	95% Chebyshev(Mean, Sd) UCL	5.8934E-6
97.5% Chebyshev(Mean, Sd) UCL	7.4926E-6	99% Chebyshev(Mean, Sd) UCL	1.0634E-5

Suggested UCL to Use

95% Adjusted Gamma UCL	4.1541E-6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Dioxins Avian

General Statistics

Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	2.5100E-8	Mean	1.3746E-6
Maximum	1.0800E-5	Median	2.2200E-7
SD	2.5231E-6	Std. Error of Mean	5.7884E-7
Coefficient of Variation	N/A	Skewness	3.181

Normal GOF Test

Shapiro Wilk Test Statistic	0.563	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.296	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	2.3784E-6	95% Adjusted-CLT UCL (Chen-1995)	2.7781E-6
		95% Modified-t UCL (Johnson-1978)	2.4488E-6

Gamma GOF Test

A-D Test Statistic	0.919	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.813	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.21	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.211	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.447	k star (bias corrected MLE)	0.411
Theta hat (MLE)	3.0760E-6	Theta star (bias corrected MLE)	3.3412E-6
nu hat (MLE)	16.98	nu star (bias corrected)	15.63
MLE Mean (bias corrected)	1.3746E-6	MLE Sd (bias corrected)	2.1431E-6
		Approximate Chi Square Value (0.05)	7.705
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	7.221

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	2.7894E-6	95% Adjusted Gamma UCL (use when n<50)	2.9761E-6

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.203	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-17.5	Mean of logged Data	-14.94
Maximum of Logged Data	-11.44	SD of logged Data	1.881

Assuming Lognormal Distribution

95% H-UCL	1.1395E-5	90% Chebyshev (MVUE) UCL	3.9582E-6
95% Chebyshev (MVUE) UCL	5.0545E-6	97.5% Chebyshev (MVUE) UCL	6.5763E-6
99% Chebyshev (MVUE) UCL	9.5654E-6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	2.3267E-6	95% Jackknife UCL	2.3784E-6
95% Standard Bootstrap UCL	2.2810E-6	95% Bootstrap-t UCL	3.6504E-6
95% Hall's Bootstrap UCL	5.7409E-6	95% Percentile Bootstrap UCL	2.3718E-6
95% BCA Bootstrap UCL	2.9833E-6		
90% Chebyshev(Mean, Sd) UCL	3.1112E-6	95% Chebyshev(Mean, Sd) UCL	3.8977E-6
97.5% Chebyshev(Mean, Sd) UCL	4.9895E-6	99% Chebyshev(Mean, Sd) UCL	7.1340E-6

Suggested UCL to Use

95% Adjusted Gamma UCL	2.9761E-6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

	A–E	F	G–K	L
1	UCL Statistics for Data Sets with Non-Detects			
2				
3	User Selected Options			
4	Date/Time of Computation	3/12/2014 10:01:20 AM		
5	From File	UCL 39-6 OD Input Data_0301514.xls		
6	Full Precision	OFF		
7	Confidence Coefficient	95%		
8	Number of Bootstrap Operations	2000		
9				
10	Antimony			
11				
12	General Statistics			
13	Total Number of Observations	10	Number of Distinct Observations	10
14	Number of Detects	9	Number of Non-Detects	1
15	Number of Distinct Detects	9	Number of Distinct Non-Detects	1
16	Minimum Detect	0.478	Minimum Non-Detect	1.16
17	Maximum Detect	3.36	Maximum Non-Detect	1.16
18	Variance Detects	1.084	Percent Non-Detects	10%
19	Mean Detects	1.379	SD Detects	1.041
20	Median Detects	0.996	CV Detects	0.755
21	Skewness Detects	1.064	Kurtosis Detects	-0.19
22	Mean of Logged Detects	0.08	SD of Logged Detects	0.727
23				
24	Normal GOF Test on Detects Only			
25	Shapiro Wilk Test Statistic	0.832	Shapiro Wilk GOF Test	
26	5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level	
27	Lilliefors Test Statistic	0.291	Lilliefors GOF Test	
28	5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
29	Detected Data appear Normal at 5% Significance Level			
30				
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
32	Mean	1.314	Standard Error of Mean	0.321
33	SD	0.954	95% KM (BCA) UCL	1.813
34	95% KM (t) UCL	1.902	95% KM (Percentile Bootstrap) UCL	1.839
35	95% KM (z) UCL	1.842	95% KM Bootstrap t UCL	2.152
36	90% KM Chebyshev UCL	2.277	95% KM Chebyshev UCL	2.713
37	97.5% KM Chebyshev UCL	3.319	99% KM Chebyshev UCL	4.508
38				
39	Gamma GOF Tests on Detected Observations Only			
40	A-D Test Statistic	0.521	Anderson-Darling GOF Test	
41	5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
42	K-S Test Statistic	0.23	Kolmogrov-Smirnoff GOF	
43	5% K-S Critical Value	0.282	Detected data appear Gamma Distributed at 5% Significance Level	
44	Detected data appear Gamma Distributed at 5% Significance Level			
45				
46	Gamma Statistics on Detected Data Only			
47	k hat (MLE)	2.224	k star (bias corrected MLE)	1.557
48	Theta hat (MLE)	0.62	Theta star (bias corrected MLE)	0.886
49	nu hat (MLE)	40.03	nu star (bias corrected)	28.02
50	MLE Mean (bias corrected)	1.379	MLE Sd (bias corrected)	1.105
51				
52	Gamma Kaplan-Meier (KM) Statistics			
53	k hat (KM)	1.897	nu hat (KM)	37.94
54	Approximate Chi Square Value (37.94, α)	24.84	Adjusted Chi Square Value (37.94, β)	23.01
55	95% Gamma Approximate KM-UCL (use when n>=50)	2.007	95% Gamma Adjusted KM-UCL (use when n<50)	2.167
56				
57	Gamma ROS Statistics using Imputed Non-Detects			
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
59	GROS may not be used when kstar of detected data is small such as < 0.1			
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
62	Minimum	0.478	Mean	1.317
63	Maximum	3.36	Median	0.878
64	SD	1.001	CV	0.76
65	k hat (MLE)	2.318	k star (bias corrected MLE)	1.689
66	Theta hat (MLE)	0.568	Theta star (bias corrected MLE)	0.78
67	nu hat (MLE)	46.36	nu star (bias corrected)	33.79
68	MLE Mean (bias corrected)	1.317	MLE Sd (bias corrected)	1.013
69			Adjusted Level of Significance (β)	0.0267
70	Approximate Chi Square Value (33.79, α)	21.49	Adjusted Chi Square Value (33.79, β)	19.81
71	95% Gamma Approximate UCL (use when n>=50)	2.07	95% Gamma Adjusted UCL (use when n<50)	2.247
72				
73	Lognormal GOF Test on Detected Observations Only			
74	Shapiro Wilk Test Statistic	0.903	Shapiro Wilk GOF Test	
75	5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
76	Lilliefors Test Statistic	0.184	Lilliefors GOF Test	
77	5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
78	Detected Data appear Lognormal at 5% Significance Level											
79												
80	Lognormal ROS Statistics Using Imputed Non-Detects											
81					Mean in Original Scale	1.317					Mean in Log Scale	0.0442
82					SD in Original Scale	1.001					SD in Log Scale	0.695
83					95% t UCL (assumes normality of ROS data)	1.897					95% Percentile Bootstrap UCL	1.832
84					95% BCA Bootstrap UCL	1.963					95% Bootstrap t UCL	2.242
85					95% H-UCL (Log ROS)	2.386						
86												
87	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
88					KM Mean (logged)	0.0355					95% H-UCL (KM -Log)	2.26
89					KM SD (logged)	0.671					95% Critical H Value (KM-Log)	2.482
90					KM Standard Error of Mean (logged)	0.228						
91												
92	DL/2 Statistics											
93	DL/2 Normal						DL/2 Log-Transformed					
94					Mean in Original Scale	1.299					Mean in Log Scale	0.0175
95					SD in Original Scale	1.013					SD in Log Scale	0.713
96					95% t UCL (Assumes normality)	1.887					95% H-Stat UCL	2.409
97	DL/2 is not a recommended method, provided for comparisons and historical reasons											
98												
99	Nonparametric Distribution Free UCL Statistics											
100	Detected Data appear Normal Distributed at 5% Significance Level											
101												
102	Suggested UCL to Use											
103					95% KM (t) UCL	1.902					95% KM (Percentile Bootstrap) UCL	1.839
104												
105	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
106	Recommendations are based upon data size, data distribution, and skewness.											
107	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
108	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
109												
110												

111	Aroclor-1254			
112				
113	**General Statistics**			
114	Total Number of Observations	10	Number of Distinct Observations	10
115			Number of Missing Observations	0
116	Minimum	0.002	Mean	0.00943
117	Maximum	0.0381	Median	0.0064
118	SD	0.0106	Std. Error of Mean	0.00334
119	Coefficient of Variation	1.121	Skewness	2.639
120				
121	**Normal GOF Test**			
122	Shapiro Wilk Test Statistic	0.653	**Shapiro Wilk GOF Test**	
123	5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
124	Lilliefors Test Statistic	0.33	**Lilliefors GOF Test**	
125	5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level	
126	**Data Not Normal at 5% Significance Level**			
127				
128	**Assuming Normal Distribution**			
129	**95% Normal UCL**		**95% UCLs (Adjusted for Skewness)**	
130	95% Student's-t UCL	0.0156	95% Adjusted-CLT UCL (Chen-1995)	0.0179
131			95% Modified-t UCL (Johnson-1978)	0.016
132				
133	**Gamma GOF Test**			
134	A-D Test Statistic	0.496	**Anderson-Darling Gamma GOF Test**	
135	5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level	
136	K-S Test Statistic	0.209	**Kolmogrov-Smirnoff Gamma GOF Test**	
137	5% K-S Critical Value	0.271	Detected data appear Gamma Distributed at 5% Significance Level	
138	**Detected data appear Gamma Distributed at 5% Significance Level**			
139				
140	**Gamma Statistics**			
141	k hat (MLE)	1.497	k star (bias corrected MLE)	1.114
142	Theta hat (MLE)	0.0063	Theta star (bias corrected MLE)	0.00846
143	nu hat (MLE)	29.93	nu star (bias corrected)	22.29
144	MLE Mean (bias corrected)	0.00943	MLE Sd (bias corrected)	0.00893
145			Approximate Chi Square Value (0.05)	12.55
146	Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	11.3
147				
148	**Assuming Gamma Distribution**			
149	95% Approximate Gamma UCL (use when n>=50)	0.0167	95% Adjusted Gamma UCL (use when n<50)	0.0186
150				
151	**Lognormal GOF Test**			
152	Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk Lognormal GOF Test**	
153	5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
154	Lilliefors Test Statistic	0.158	**Lilliefors Lognormal GOF Test**	
155	5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	
156	**Data appear Lognormal at 5% Significance Level**			
157				
158	**Lognormal Statistics**			
159	Minimum of Logged Data	-6.215	Mean of logged Data	-5.034
160	Maximum of Logged Data	-3.268	SD of logged Data	0.849
161				
162	**Assuming Lognormal Distribution**			
163	95% H-UCL	0.0207	90% Chebyshev (MVUE) UCL	0.0164
164	95% Chebyshev (MVUE) UCL	0.0198	97.5% Chebyshev (MVUE) UCL	0.0245
165	99% Chebyshev (MVUE) UCL	0.0338		
166				
167	**Nonparametric Distribution Free UCL Statistics**			
168	**Data appear to follow a Discernible Distribution at 5% Significance Level**			
169				
170	**Nonparametric Distribution Free UCLs**			
171	95% CLT UCL	0.0149	95% Jackknife UCL	0.0156
172	95% Standard Bootstrap UCL	0.0146	95% Bootstrap-t UCL	0.0253
173	95% Hall's Bootstrap UCL	0.0362	95% Percentile Bootstrap UCL	0.0156
174	95% BCA Bootstrap UCL	0.0178		
175	90% Chebyshev(Mean, Sd) UCL	0.0195	95% Chebyshev(Mean, Sd) UCL	0.024
176	97.5% Chebyshev(Mean, Sd) UCL	0.0303	99% Chebyshev(Mean, Sd) UCL	0.0427
177				
178	**Suggested UCL to Use**			
179	95% Adjusted Gamma UCL	0.0186		
180				
181	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
182	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)			
183	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.			
184	For additional insight the user may want to consult a statistician.			
185				

	A–E	F	G–K	L
186	Aroclor-1260			
187				
188		General Statistics		
189	Total Number of Observations	10	Number of Distinct Observations	9
190	Number of Detects	9	Number of Non-Detects	1
191	Number of Distinct Detects	8	Number of Distinct Non-Detects	1
192	Minimum Detect	0.0016	Minimum Non-Detect	0.0034
193	Maximum Detect	0.0177	Maximum Non-Detect	0.0034
194	Variance Detects	3.0679E-5	Percent Non-Detects	10%
195	Mean Detects	0.00641	SD Detects	0.00554
196	Median Detects	0.0052	CV Detects	0.864
197	Skewness Detects	1.44	Kurtosis Detects	1.091
198	Mean of Logged Detects	-5.345	SD of Logged Detects	0.8
199				
200		Normal GOF Test on Detects Only		
201	Shapiro Wilk Test Statistic	0.798	Shapiro Wilk GOF Test	
202	5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
203	Lilliefors Test Statistic	0.286	Lilliefors GOF Test	
204	5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
205	Detected Data appear Approximate Normal at 5% Significance Level			
206				
207	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
208	Mean	0.00601	Standard Error of Mean	0.00171
209	SD	0.0051	95% KM (BCA) UCL	0.00893
210	95% KM (t) UCL	0.00915	95% KM (Percentile Bootstrap) UCL	0.00888
211	95% KM (z) UCL	0.00883	95% KM Bootstrap t UCL	0.0135
212	90% KM Chebyshev UCL	0.0111	95% KM Chebyshev UCL	0.0135
213	97.5% KM Chebyshev UCL	0.0167	99% KM Chebyshev UCL	0.023
214				
215		Gamma GOF Tests on Detected Observations Only		
216	A-D Test Statistic	0.479	Anderson-Darling GOF Test	
217	5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
218	K-S Test Statistic	0.211	Kolmogrov-Smirnoff GOF	
219	5% K-S Critical Value	0.283	Detected data appear Gamma Distributed at 5% Significance Level	
220	Detected data appear Gamma Distributed at 5% Significance Level			
221				
222		Gamma Statistics on Detected Data Only		
223	k hat (MLE)	1.841	k star (bias corrected MLE)	1.301
224	Theta hat (MLE)	0.00348	Theta star (bias corrected MLE)	0.00493
225	nu hat (MLE)	33.14	nu star (bias corrected)	23.43
226	MLE Mean (bias corrected)	0.00641	MLE Sd (bias corrected)	0.00562
227				
228		Gamma Kaplan-Meier (KM) Statistics		
229	k hat (KM)	1.389	nu hat (KM)	27.77
230	Approximate Chi Square Value (27.77, α)	16.75	Adjusted Chi Square Value (27.77, β)	15.28
231	95% Gamma Approximate KM-UCL (use when n>=50)	0.00996	95% Gamma Adjusted KM-UCL (use when n<50)	0.0109
232				
233		Gamma ROS Statistics using Imputed Non-Detects		
234	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
235	GROS may not be used when kstar of detected data is small such as < 0.1			
236	For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
237	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
238	Minimum	0.0016	Mean	0.00677
239	Maximum	0.0177	Median	0.0053
240	SD	0.00534	CV	0.789
241	k hat (MLE)	1.962	k star (bias corrected MLE)	1.44
242	Theta hat (MLE)	0.00345	Theta star (bias corrected MLE)	0.0047
243	nu hat (MLE)	39.24	nu star (bias corrected)	28.8
244	MLE Mean (bias corrected)	0.00677	MLE Sd (bias corrected)	0.00564
245			Adjusted Level of Significance (β)	0.0267
246	Approximate Chi Square Value (28.80, α)	17.55	Adjusted Chi Square Value (28.80, β)	16.04
247	95% Gamma Approximate UCL (use when n>=50)	0.0111	95% Gamma Adjusted UCL (use when n<50)	0.0122
248				
249		Lognormal GOF Test on Detected Observations Only		
250	Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test	
251	5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
252	Lilliefors Test Statistic	0.192	Lilliefors GOF Test	
253	5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
254	Detected Data appear Lognormal at 5% Significance Level			
255				
256		Lognormal ROS Statistics Using Imputed Non-Detects		
257	Mean in Original Scale	0.00601	Mean in Log Scale	-5.412
258	SD in Original Scale	0.00537	SD in Log Scale	0.783
259	95% t UCL (assumes normality of ROS data)	0.00913	95% Percentile Bootstrap UCL	0.00878
260	95% BCA Bootstrap UCL	0.00931	95% Bootstrap t UCL	0.0144
261	95% H-UCL (Log ROS)	0.0122		
262				

	A	B	C	D	E	F	G	H	I	J	K	L
263	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
264					KM Mean (logged)	-5.416					95% H-UCL (KM -Log)	0.0113
265					KM SD (logged)	0.75					95% Critical H Value (KM-Log)	2.618
266					KM Standard Error of Mean (logged)	0.253						
267												
268	DL/2 Statistics											
269	DL/2 Normal						DL/2 Log-Transformed					
270					Mean in Original Scale	0.00594					Mean in Log Scale	-5.448
271					SD in Original Scale	0.00543					SD in Log Scale	0.821
272					95% t UCL (Assumes normality)	0.00909					95% H-Stat UCL	0.0128
273	DL/2 is not a recommended method, provided for comparisons and historical reasons											
274												
275	Nonparametric Distribution Free UCL Statistics											
276	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
277												
278	Suggested UCL to Use											
279					95% KM (t) UCL	0.00915					95% KM (Percentile Bootstrap) UCL	0.00888
280												
281	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
282	Recommendations are based upon data size, data distribution, and skewness.											
283	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
284	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
285												

Bis(2-ethylhexyl)phthalate

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
Number of Detects	7	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	3
Minimum Detect	0.101	Minimum Non-Detect	0.354
Maximum Detect	2.42	Maximum Non-Detect	0.4
Variance Detects	0.665	Percent Non-Detects	30%
Mean Detects	0.673	SD Detects	0.816
Median Detects	0.403	CV Detects	1.212
Skewness Detects	2.116	Kurtosis Detects	4.649
Mean of Logged Detects	-0.915	SD of Logged Detects	1.078

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.724	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.328	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.525	Standard Error of Mean	0.231
SD	0.673	95% KM (BCA) UCL	0.975
95% KM (t) UCL	0.948	95% KM (Percentile Bootstrap) UCL	0.919
95% KM (z) UCL	0.904	95% KM Bootstrap t UCL	1.969
90% KM Chebyshev UCL	1.217	95% KM Chebyshev UCL	1.531
97.5% KM Chebyshev UCL	1.966	99% KM Chebyshev UCL	2.821

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.364	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.726	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.251	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.319	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.1	k star (bias corrected MLE)	0.724
Theta hat (MLE)	0.612	Theta star (bias corrected MLE)	0.93
nu hat (MLE)	15.4	nu star (bias corrected)	10.13
MLE Mean (bias corrected)	0.673	MLE Sd (bias corrected)	0.791

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.608	nu hat (KM)	12.17
Approximate Chi Square Value (12.17, α)	5.338	Adjusted Chi Square Value (12.17, β)	4.577
95% Gamma Approximate KM-UCL (use when n>=50)	1.196	95% Gamma Adjusted KM-UCL (use when n<50)	1.395

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.474
Maximum	2.42	Median	0.218
SD	0.739	CV	1.559
k hat (MLE)	0.498	k star (bias corrected MLE)	0.415
Theta hat (MLE)	0.952	Theta star (bias corrected MLE)	1.141
nu hat (MLE)	9.963	nu star (bias corrected)	8.307
MLE Mean (bias corrected)	0.474	MLE Sd (bias corrected)	0.736
		Adjusted Level of Significance (β)	0.0267
Approximate Chi Square Value (8.31, α)	2.914	Adjusted Chi Square Value (8.31, β)	2.388
95% Gamma Approximate UCL (use when n>=50)	1.351	95% Gamma Adjusted UCL (use when n<50)	1.649

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.182	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.518	Mean in Log Scale	-1.2
SD in Original Scale	0.711	SD in Log Scale	0.992
95% t UCL (assumes normality of ROS data)	0.93	95% Percentile Bootstrap UCL	0.928
95% BCA Bootstrap UCL	1.129	95% Bootstrap t UCL	2.191
95% H-UCL (Log ROS)	1.368		

	A	B	C	D	E	F	G	H	I	J	K	L
363	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
364					KM Mean (logged)	-1.187					95% H-UCL (KM -Log)	1.283
365					KM SD (logged)	0.963					95% Critical H Value (KM-Log)	3.028
366					KM Standard Error of Mean (logged)	0.349						
367												
368	DL/2 Statistics											
369	DL/2 Normal						DL/2 Log-Transformed					
370					Mean in Original Scale	0.527					Mean in Log Scale	-1.147
371					SD in Original Scale	0.706					SD in Log Scale	0.956
372					95% t UCL (Assumes normality)	0.936					95% H-Stat UCL	1.312
373	DL/2 is not a recommended method, provided for comparisons and historical reasons											
374												
375	Nonparametric Distribution Free UCL Statistics											
376	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
377												
378	Suggested UCL to Use											
379					95% KM (t) UCL	0.948					95% KM (Percentile Bootstrap) UCL	0.919
380												
381	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
382	Recommendations are based upon data size, data distribution, and skewness.											
383	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
384	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
385												
386												

Copper

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	52.4	Mean	720
Maximum	3410	Median	270.5
SD	1088	Std. Error of Mean	344.1
Coefficient of Variation	1.511	Skewness	2.162
Normal GOF Test			
Shapiro Wilk Test Statistic	0.635	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.393	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1351	95% Adjusted-CLT UCL (Chen-1995)	1537
		95% Modified-t UCL (Johnson-1978)	1390
Gamma GOF Test			
A-D Test Statistic	0.823	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.283	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.276	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.75	k star (bias corrected MLE)	0.592
Theta hat (MLE)	959.7	Theta star (bias corrected MLE)	1217
nu hat (MLE)	15.01	nu star (bias corrected)	11.84
MLE Mean (bias corrected)	720	MLE Sd (bias corrected)	935.9
		Approximate Chi Square Value (0.05)	5.12
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	4.377
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1665	95% Adjusted Gamma UCL (use when n<50)	1947
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.928	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.201	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.959	Mean of logged Data	5.781
Maximum of Logged Data	8.134	SD of logged Data	1.274
Assuming Lognormal Distribution			
95% H-UCL	3500	90% Chebyshev (MVUE) UCL	1469
95% Chebyshev (MVUE) UCL	1842	97.5% Chebyshev (MVUE) UCL	2360
99% Chebyshev (MVUE) UCL	3378		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1286	95% Jackknife UCL	1351
95% Standard Bootstrap UCL	1259	95% Bootstrap-t UCL	4993
95% Hall's Bootstrap UCL	4838	95% Percentile Bootstrap UCL	1343
95% BCA Bootstrap UCL	1519		
90% Chebyshev(Mean, Sd) UCL	1752	95% Chebyshev(Mean, Sd) UCL	2220
97.5% Chebyshev(Mean, Sd) UCL	2869	99% Chebyshev(Mean, Sd) UCL	4144
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2220		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

462	Di-n-butylphthalate			
463				
464	**General Statistics**			
465	Total Number of Observations	10	Number of Distinct Observations	10
466	Number of Detects	7	Number of Non-Detects	3
467	Number of Distinct Detects	7	Number of Distinct Non-Detects	3
468	Minimum Detect	0.414	Minimum Non-Detect	0.342
469	Maximum Detect	6.76	Maximum Non-Detect	0.4
470	Variance Detects	5.171	Percent Non-Detects	30%
471	Mean Detects	2.224	SD Detects	2.274
472	Median Detects	1.47	CV Detects	1.022
473	Skewness Detects	1.658	Kurtosis Detects	2.43
474	Mean of Logged Detects	0.38	SD of Logged Detects	0.992
475				
476	**Normal GOF Test on Detects Only**			
477	Shapiro Wilk Test Statistic	0.799	**Shapiro Wilk GOF Test**	
478	5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
479	Lilliefors Test Statistic	0.322	**Lilliefors GOF Test**	
480	5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
481	**Detected Data appear Approximate Normal at 5% Significance Level**			
482				
483	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**			
484	Mean	1.66	Standard Error of Mean	0.67
485	SD	1.961	95% KM (BCA) UCL	2.772
486	95% KM (t) UCL	2.888	95% KM (Percentile Bootstrap) UCL	2.762
487	95% KM (z) UCL	2.762	95% KM Bootstrap t UCL	5.248
488	90% KM Chebyshev UCL	3.669	95% KM Chebyshev UCL	4.58
489	97.5% KM Chebyshev UCL	5.843	99% KM Chebyshev UCL	8.325
490				
491	**Gamma GOF Tests on Detected Observations Only**			
492	A-D Test Statistic	0.32	**Anderson-Darling GOF Test**	
493	5% A-D Critical Value	0.723	Detected data appear Gamma Distributed at 5% Significance Level	
494	K-S Test Statistic	0.239	**Kolmogrov-Smirnoff GOF**	
495	5% K-S Critical Value	0.318	Detected data appear Gamma Distributed at 5% Significance Level	
496	**Detected data appear Gamma Distributed at 5% Significance Level**			
497				
498	**Gamma Statistics on Detected Data Only**			
499	k hat (MLE)	1.334	k star (bias corrected MLE)	0.858
500	Theta hat (MLE)	1.667	Theta star (bias corrected MLE)	2.594
501	nu hat (MLE)	18.68	nu star (bias corrected)	12.01
502	MLE Mean (bias corrected)	2.224	MLE Sd (bias corrected)	2.402
503				
504	**Gamma Kaplan-Meier (KM) Statistics**			
505	k hat (KM)	0.716	nu hat (KM)	14.32
506	Approximate Chi Square Value (14.32, α)	6.792	Adjusted Chi Square Value (14.32, β)	5.914
507	95% Gamma Approximate KM-UCL (use when n>=50)	3.5	95% Gamma Adjusted KM-UCL (use when n<50)	4.019
508				
509	**Gamma ROS Statistics using Imputed Non-Detects**			
510	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
511	GROS may not be used when kstar of detected data is small such as < 0.1			
512	For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
513	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
514	Minimum	0.01	Mean	1.56
515	Maximum	6.76	Median	0.824
516	SD	2.143	CV	1.374
517	k hat (MLE)	0.419	k star (bias corrected MLE)	0.36
518	Theta hat (MLE)	3.726	Theta star (bias corrected MLE)	4.337
519	nu hat (MLE)	8.373	nu star (bias corrected)	7.195
520	MLE Mean (bias corrected)	1.56	MLE Sd (bias corrected)	2.601
521			Adjusted Level of Significance (β)	0.0267
522	Approximate Chi Square Value (7.19, α)	2.278	Adjusted Chi Square Value (7.19, β)	1.828
523	95% Gamma Approximate UCL (use when n>=50)	4.927	95% Gamma Adjusted UCL (use when n<50)	6.14
524				
525	**Lognormal GOF Test on Detected Observations Only**			
526	Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk GOF Test**	
527	5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
528	Lilliefors Test Statistic	0.178	**Lilliefors GOF Test**	
529	5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
530	**Detected Data appear Lognormal at 5% Significance Level**			
531				
532	**Lognormal ROS Statistics Using Imputed Non-Detects**			
533	Mean in Original Scale	1.592	Mean in Log Scale	-0.377
534	SD in Original Scale	2.117	SD in Log Scale	1.464
535	95% t UCL (assumes normality of ROS data)	2.82	95% Percentile Bootstrap UCL	2.778
536	95% BCA Bootstrap UCL	3.22	95% Bootstrap t UCL	4.739
537	95% H-UCL (Log ROS)	14.99		
538				

	A	B	C	D	E	F	G	H	I	J	K	L
539	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
540					KM Mean (logged)	-0.0559					95% H-UCL (KM -Log)	4.595
541					KM SD (logged)	1.017					95% Critical H Value (KM-Log)	3.138
542					KM Standard Error of Mean (logged)	0.347						
543												
544	DL/2 Statistics											
545	DL/2 Normal						DL/2 Log-Transformed					
546					Mean in Original Scale	1.612					Mean in Log Scale	-0.245
547					SD in Original Scale	2.102					SD in Log Scale	1.292
548					95% t UCL (Assumes normality)	2.831					95% H-Stat UCL	9.008
549	DL/2 is not a recommended method, provided for comparisons and historical reasons											
550												
551	Nonparametric Distribution Free UCL Statistics											
552	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
553												
554	Suggested UCL to Use											
555					95% KM (t) UCL	2.888					95% KM (Percentile Bootstrap) UCL	2.762
556												
557	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
558	Recommendations are based upon data size, data distribution, and skewness.											
559	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
560	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
561												

2,4-DNT

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	4
Number of Distinct Detects	6	Number of Distinct Non-Detects	4
Minimum Detect	2.79	Minimum Non-Detect	0.342
Maximum Detect	15.7	Maximum Non-Detect	0.4
Variance Detects	23.72	Percent Non-Detects	40%
Mean Detects	5.903	SD Detects	4.87
Median Detects	4.105	CV Detects	0.825
Skewness Detects	2.293	Kurtosis Detects	5.403
Mean of Logged Detects	1.584	SD of Logged Detects	0.611
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.658	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.392	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.679	Standard Error of Mean	1.521
SD	4.391	95% KM (BCA) UCL	6.12
95% KM (t) UCL	6.467	95% KM (Percentile Bootstrap) UCL	6.258
95% KM (z) UCL	6.181	95% KM Bootstrap t UCL	7.868
90% KM Chebyshev UCL	8.242	95% KM Chebyshev UCL	10.31
97.5% KM Chebyshev UCL	13.18	99% KM Chebyshev UCL	18.81
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.783	Anderson-Darling GOF Test	
5% A-D Critical Value	0.702	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.337	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.335	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.763	k star (bias corrected MLE)	1.493
Theta hat (MLE)	2.136	Theta star (bias corrected MLE)	3.955
nu hat (MLE)	33.16	nu star (bias corrected)	17.91
MLE Mean (bias corrected)	5.903	MLE Sd (bias corrected)	4.832
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.702	nu hat (KM)	14.04
Approximate Chi Square Value (14.04, α)	6.597	Adjusted Chi Square Value (14.04, β)	5.734
95% Gamma Approximate KM-UCL (use when n>=50)	7.828	95% Gamma Adjusted KM-UCL (use when n<50)	9.006
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.546
Maximum	15.7	Median	3.165
SD	4.737	CV	1.336
k hat (MLE)	0.317	k star (bias corrected MLE)	0.288
Theta hat (MLE)	11.19	Theta star (bias corrected MLE)	12.3
nu hat (MLE)	6.335	nu star (bias corrected)	5.768
MLE Mean (bias corrected)	3.546	MLE Sd (bias corrected)	6.603
		Adjusted Level of Significance (β)	0.0267
Approximate Chi Square Value (5.77, α)	1.523	Adjusted Chi Square Value (5.77, β)	1.177
95% Gamma Approximate UCL (use when n>=50)	13.43	95% Gamma Adjusted UCL (use when n<50)	17.38
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.817	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.294	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.95	Mean in Log Scale	0.958
SD in Original Scale	4.42	SD in Log Scale	0.928
95% t UCL (assumes normality of ROS data)	6.512	95% Percentile Bootstrap UCL	6.399
95% BCA Bootstrap UCL	7.765	95% Bootstrap t UCL	9.275
95% H-UCL (Log ROS)	9.997		

	A	B	C	D	E	F	G	H	I	J	K	L
639	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
640	KM Mean (logged)					0.521	95% H-UCL (KM -Log)					25.77
641	KM SD (logged)					1.371	95% Critical H Value (KM-Log)					3.911
642	KM Standard Error of Mean (logged)					0.475						
643												
644	DL/2 Statistics											
645	DL/2 Normal						DL/2 Log-Transformed					
646	Mean in Original Scale					3.614	Mean in Log Scale					0.265
647	SD in Original Scale					4.681	SD in Log Scale					1.763
648	95% t UCL (Assumes normality)					6.328	95% H-Stat UCL					105.1
649	DL/2 is not a recommended method, provided for comparisons and historical reasons											
650												
651	Nonparametric Distribution Free UCL Statistics											
652	Detected Data appear Lognormal Distributed at 5% Significance Level											
653												
654	Suggested UCL to Use											
655	95% KM (t) UCL					6.467	95% KM (% Bootstrap) UCL					6.258
656												
657	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
658	Recommendations are based upon data size, data distribution, and skewness.											
659	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
660	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
661												

Diphenylamine

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Number of Detects	5	Number of Non-Detects	5
Number of Distinct Detects	5	Number of Distinct Non-Detects	5
Minimum Detect	0.0717	Minimum Non-Detect	0.342
Maximum Detect	1.3	Maximum Non-Detect	0.4
Variance Detects	0.26	Percent Non-Detects	50%
Mean Detects	0.401	SD Detects	0.51
Median Detects	0.182	CV Detects	1.271
Skewness Detects	2.082	Kurtosis Detects	4.423
Mean of Logged Detects	-1.439	SD of Logged Detects	1.086
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.705	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.372	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.289	Standard Error of Mean	0.127
SD	0.347	95% KM (BCA) UCL	0.504
95% KM (t) UCL	0.521	95% KM (Percentile Bootstrap) UCL	0.504
95% KM (z) UCL	0.497	95% KM Bootstrap t UCL	1.16
90% KM Chebyshev UCL	0.669	95% KM Chebyshev UCL	0.842
97.5% KM Chebyshev UCL	1.081	99% KM Chebyshev UCL	1.551
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.455	Anderson-Darling GOF Test	
5% A-D Critical Value	0.69	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.273	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.364	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.087	k star (bias corrected MLE)	0.568
Theta hat (MLE)	0.369	Theta star (bias corrected MLE)	0.706
nu hat (MLE)	10.87	nu star (bias corrected)	5.683
MLE Mean (bias corrected)	0.401	MLE Sd (bias corrected)	0.532
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.693	nu hat (KM)	13.86
Approximate Chi Square Value (13.86, α)	6.479	Adjusted Chi Square Value (13.86, β)	5.625
95% Gamma Approximate KM-UCL (use when n>=50)	0.618	95% Gamma Adjusted KM-UCL (use when n<50)	0.712
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0717	Mean	0.281
Maximum	1.3	Median	0.162
SD	0.363	CV	1.289
k hat (MLE)	1.523	k star (bias corrected MLE)	1.133
Theta hat (MLE)	0.185	Theta star (bias corrected MLE)	0.248
nu hat (MLE)	30.47	nu star (bias corrected)	22.66
MLE Mean (bias corrected)	0.281	MLE Sd (bias corrected)	0.264
		Adjusted Level of Significance (β)	0.0267
Approximate Chi Square Value (22.66, α)	12.83	Adjusted Chi Square Value (22.66, β)	11.57
95% Gamma Approximate UCL (use when n>=50)	0.497	95% Gamma Adjusted UCL (use when n<50)	0.551
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.282	Mean in Log Scale	-1.625
SD in Original Scale	0.362	SD in Log Scale	0.75
95% t UCL (assumes normality of ROS data)	0.492	95% Percentile Bootstrap UCL	0.497
95% BCA Bootstrap UCL	0.632	95% Bootstrap t UCL	1.794
95% H-UCL (Log ROS)	0.502		

	A	B	C	D	E	F	G	H	I	J	K	L
739	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
740					KM Mean (logged)	-1.652					95% H-UCL (KM -Log)	0.555
741					KM SD (logged)	0.809					95% Critical H Value (KM-Log)	2.728
742					KM Standard Error of Mean (logged)	0.347						
743												
744	DL/2 Statistics											
745	DL/2 Normal						DL/2 Log-Transformed					
746					Mean in Original Scale	0.29					Mean in Log Scale	-1.58
747					SD in Original Scale	0.36					SD in Log Scale	0.741
748					95% t UCL (Assumes normality)	0.499					95% H-Stat UCL	0.515
749	DL/2 is not a recommended method, provided for comparisons and historical reasons											
750												
751	Nonparametric Distribution Free UCL Statistics											
752	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
753												
754	Suggested UCL to Use											
755					95% KM (t) UCL	0.521					95% KM (Percentile Bootstrap) UCL	0.504
756												
757	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
758	Recommendations are based upon data size, data distribution, and skewness.											
759	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
760	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
761												
762												

Lead

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	50.5	Mean	119.4
Maximum	259	Median	94.95
SD	71.93	Std. Error of Mean	22.75
Coefficient of Variation	0.603	Skewness	1.003
Normal GOF Test			
Shapiro Wilk Test Statistic	0.875	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.217	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	161	95% Adjusted-CLT UCL (Chen-1995)	164.5
		95% Modified-t UCL (Johnson-1978)	162.3
Gamma GOF Test			
A-D Test Statistic	0.357	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.268	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.342	k star (bias corrected MLE)	2.406
Theta hat (MLE)	35.71	Theta star (bias corrected MLE)	49.6
nu hat (MLE)	66.84	nu star (bias corrected)	48.12
MLE Mean (bias corrected)	119.4	MLE Sd (bias corrected)	76.94
		Approximate Chi Square Value (0.05)	33.2
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	31.06
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	173	95% Adjusted Gamma UCL (use when n<50)	184.9
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.926	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.162	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.922	Mean of logged Data	4.625
Maximum of Logged Data	5.557	SD of logged Data	0.588
Assuming Lognormal Distribution			
95% H-UCL	192.3	90% Chebyshev (MVUE) UCL	186.9
95% Chebyshev (MVUE) UCL	217.7	97.5% Chebyshev (MVUE) UCL	260.4
99% Chebyshev (MVUE) UCL	344.4		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	156.8	95% Jackknife UCL	161
95% Standard Bootstrap UCL	154.5	95% Bootstrap-t UCL	182.4
95% Hall's Bootstrap UCL	187.5	95% Percentile Bootstrap UCL	158.3
95% BCA Bootstrap UCL	159.5		
90% Chebyshev(Mean, Sd) UCL	187.6	95% Chebyshev(Mean, Sd) UCL	218.5
97.5% Chebyshev(Mean, Sd) UCL	261.4	99% Chebyshev(Mean, Sd) UCL	345.7
Suggested UCL to Use			
95% Student's-t UCL	161		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Mercury			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Number of Detects	7	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	3
Minimum Detect	0.00514	Minimum Non-Detect	0.0103
Maximum Detect	0.488	Maximum Non-Detect	0.0119
Variance Detects	0.0328	Percent Non-Detects	30%
Mean Detects	0.0775	SD Detects	0.181
Median Detects	0.0107	CV Detects	2.336
Skewness Detects	2.644	Kurtosis Detects	6.994
Mean of Logged Detects	-4.185	SD of Logged Detects	1.572
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.468	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.497	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0564	Standard Error of Mean	0.0491
SD	0.144	95% KM (BCA) UCL	0.153
95% KM (t) UCL	0.147	95% KM (Percentile Bootstrap) UCL	0.152
95% KM (z) UCL	0.137	95% KM Bootstrap t UCL	2.775
90% KM Chebyshev UCL	0.204	95% KM Chebyshev UCL	0.271
97.5% KM Chebyshev UCL	0.363	99% KM Chebyshev UCL	0.545
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.622	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.486	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.331	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.404	k star (bias corrected MLE)	0.326
Theta hat (MLE)	0.192	Theta star (bias corrected MLE)	0.238
nu hat (MLE)	5.651	nu star (bias corrected)	4.563
MLE Mean (bias corrected)	0.0775	MLE Sd (bias corrected)	0.136
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.154	nu hat (KM)	3.079
Approximate Chi Square Value (3.08, α)	0.396	Adjusted Chi Square Value (3.08, β)	0.272
95% Gamma Approximate KM-UCL (use when n>=50)	0.439	95% Gamma Adjusted KM-UCL (use when n<50)	0.639
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00514	Mean	0.0572
Maximum	0.488	Median	0.01
SD	0.151	CV	2.644
k hat (MLE)	0.446	k star (bias corrected MLE)	0.379
Theta hat (MLE)	0.128	Theta star (bias corrected MLE)	0.151
nu hat (MLE)	8.915	nu star (bias corrected)	7.574
MLE Mean (bias corrected)	0.0572	MLE Sd (bias corrected)	0.093
		Adjusted Level of Significance (β)	0.0267
Approximate Chi Square Value (7.57, α)	2.491	Adjusted Chi Square Value (7.57, β)	2.014
95% Gamma Approximate UCL (use when n>=50)	0.174	95% Gamma Adjusted UCL (use when n<50)	0.215
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.661	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.401	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.335	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0563	Mean in Log Scale	-4.435
SD in Original Scale	0.152	SD in Log Scale	1.349
95% t UCL (assumes normality of ROS data)	0.144	95% Percentile Bootstrap UCL	0.152
95% BCA Bootstrap UCL	0.2	95% Bootstrap t UCL	3.247
95% H-UCL (Log ROS)	0.167		

	A	B	C	D	E	F	G	H	I	J	K	L
915	DL/2 Statistics											
916	DL/2 Normal						DL/2 Log-Transformed					
917	Mean in Original Scale					0.0559	Mean in Log Scale					-4.491
918	SD in Original Scale					0.152	SD in Log Scale					1.375
919	95% t UCL (Assumes normality)					0.144	95% H-Stat UCL					0.174
920	DL/2 is not a recommended method, provided for comparisons and historical reasons											
921												
922	Nonparametric Distribution Free UCL Statistics											
923	Data do not follow a Discernible Distribution at 5% Significance Level											
924												
925	Suggested UCL to Use											
926	99% KM (Chebyshev) UCL					0.545						
927	Warning: Recommended UCL exceeds the maximum observation											
928												
929	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
930	Recommendations are based upon data size, data distribution, and skewness.											
931	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
932	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
933												

934	Perchlorate			
935				
936	**General Statistics**			
937	Total Number of Observations	10	Number of Distinct Observations	9
938	Number of Detects	5	Number of Non-Detects	5
939	Number of Distinct Detects	5	Number of Distinct Non-Detects	4
940	Minimum Detect	5.9000E-4	Minimum Non-Detect	0.00204
941	Maximum Detect	0.00574	Maximum Non-Detect	0.00215
942	Variance Detects	4.3971E-6	Percent Non-Detects	50%
943	Mean Detects	0.00206	SD Detects	0.0021
944	Median Detects	0.00135	CV Detects	1.017
945	Skewness Detects	2.024	Kurtosis Detects	4.257
946	Mean of Logged Detects	-6.511	SD of Logged Detects	0.852
947				
948	**Normal GOF Test on Detects Only**			
949	Shapiro Wilk Test Statistic	0.737	**Shapiro Wilk GOF Test**	
950	5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
951	Lilliefors Test Statistic	0.372	**Lilliefors GOF Test**	
952	5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level	
953	**Detected Data appear Approximate Normal at 5% Significance Level**			
954				
955	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**			
956	Mean	0.0016	Standard Error of Mean	5.2968E-4
957	SD	0.00143	95% KM (BCA) UCL	0.00249
958	95% KM (t) UCL	0.00257	95% KM (Percentile Bootstrap) UCL	0.00249
959	95% KM (z) UCL	0.00247	95% KM Bootstrap t UCL	0.00369
960	90% KM Chebyshev UCL	0.00319	95% KM Chebyshev UCL	0.00391
961	97.5% KM Chebyshev UCL	0.00491	99% KM Chebyshev UCL	0.00687
962				
963	**Gamma GOF Tests on Detected Observations Only**			
964	A-D Test Statistic	0.441	**Anderson-Darling GOF Test**	
965	5% A-D Critical Value	0.686	Detected data appear Gamma Distributed at 5% Significance Level	
966	K-S Test Statistic	0.297	**Kolmogrov-Smirnoff GOF**	
967	5% K-S Critical Value	0.361	Detected data appear Gamma Distributed at 5% Significance Level	
968	**Detected data appear Gamma Distributed at 5% Significance Level**			
969				
970	**Gamma Statistics on Detected Data Only**			
971	k hat (MLE)	1.679	k star (bias corrected MLE)	0.805
972	Theta hat (MLE)	0.00123	Theta star (bias corrected MLE)	0.00256
973	nu hat (MLE)	16.79	nu star (bias corrected)	8.05
974	MLE Mean (bias corrected)	0.00206	MLE Sd (bias corrected)	0.0023
975				
976	**Gamma Kaplan-Meier (KM) Statistics**			
977	k hat (KM)	1.249	nu hat (KM)	24.98
978	Approximate Chi Square Value (24.98, α)	14.59	Adjusted Chi Square Value (24.98, β)	13.23
979	95% Gamma Approximate KM-UCL (use when n>=50)	0.00274	95% Gamma Adjusted KM-UCL (use when n<50)	0.00302
980				
981	**Gamma ROS Statistics using Imputed Non-Detects**			
982	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
983	GROS may not be used when kstar of detected data is small such as < 0.1			
984	For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
985	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
986	Minimum	5.9000E-4	Mean	0.00603
987	Maximum	0.01	Median	0.00787
988	SD	0.00441	CV	0.731
989	k hat (MLE)	1.259	k star (bias corrected MLE)	0.948
990	Theta hat (MLE)	0.00479	Theta star (bias corrected MLE)	0.00636
991	nu hat (MLE)	25.18	nu star (bias corrected)	18.96
992	MLE Mean (bias corrected)	0.00603	MLE Sd (bias corrected)	0.00619
993			Adjusted Level of Significance (β)	0.0267
994	Approximate Chi Square Value (18.96, α)	10.09	Adjusted Chi Square Value (18.96, β)	8.983
995	95% Gamma Approximate UCL (use when n>=50)	0.0113	95% Gamma Adjusted UCL (use when n<50)	0.0127
996				
997	**Lognormal GOF Test on Detected Observations Only**			
998	Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk GOF Test**	
999	5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
1000	Lilliefors Test Statistic	0.243	**Lilliefors GOF Test**	
1001	5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level	
1002	**Detected Data appear Lognormal at 5% Significance Level**			
1003				
1004	**Lognormal ROS Statistics Using Imputed Non-Detects**			
1005	Mean in Original Scale	0.0016	Mean in Log Scale	-6.658
1006	SD in Original Scale	0.00149	SD in Log Scale	0.61
1007	95% t UCL (assumes normality of ROS data)	0.00246	95% Percentile Bootstrap UCL	0.00251
1008	95% BCA Bootstrap UCL	0.00301	95% Bootstrap t UCL	0.00456
1009	95% H-UCL (Log ROS)	0.00251		
1010				

	A	B	C	D	E	F	G	H	I	J	K	L
1011	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
1012					KM Mean (logged)	-6.679					95% H-UCL (KM -Log)	0.00255
1013					KM SD (logged)	0.63					95% Critical H Value (KM-Log)	2.416
1014					KM Standard Error of Mean (logged)	0.268						
1015												
1016	DL/2 Statistics											
1017	DL/2 Normal						DL/2 Log-Transformed					
1018					Mean in Original Scale	0.00155					Mean in Log Scale	-6.689
1019					SD in Original Scale	0.0015					SD in Log Scale	0.599
1020					95% t UCL (Assumes normality)	0.00242					95% H-Stat UCL	0.00239
1021	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1022												
1023	Nonparametric Distribution Free UCL Statistics											
1024	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
1025												
1026	Suggested UCL to Use											
1027					95% KM (t) UCL	0.00257					95% KM (Percentile Bootstrap) UCL	0.00249
1028												
1029	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1030	Recommendations are based upon data size, data distribution, and skewness.											
1031	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1032	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1033												

TATB

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	8
Number of Detects	7	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	0.435	Minimum Non-Detect	1
Maximum Detect	9.71	Maximum Non-Detect	1
Variance Detects	10.59	Percent Non-Detects	30%
Mean Detects	3.381	SD Detects	3.255
Median Detects	2.07	CV Detects	0.963
Skewness Detects	1.402	Kurtosis Detects	1.909
Mean of Logged Detects	0.754	SD of Logged Detects	1.123
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.228	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.521	Standard Error of Mean	0.971
SD	2.843	95% KM (BCA) UCL	4.201
95% KM (t) UCL	4.302	95% KM (Percentile Bootstrap) UCL	4.182
95% KM (z) UCL	4.119	95% KM Bootstrap t UCL	6.048
90% KM Chebyshev UCL	5.435	95% KM Chebyshev UCL	6.755
97.5% KM Chebyshev UCL	8.588	99% KM Chebyshev UCL	12.19
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.218	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.164	**Kolmogrov-Smirnoff GOF**	
5% K-S Critical Value	0.318	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.217	k star (bias corrected MLE)	0.791
Theta hat (MLE)	2.777	Theta star (bias corrected MLE)	4.275
nu hat (MLE)	17.04	nu star (bias corrected)	11.07
MLE Mean (bias corrected)	3.381	MLE Sd (bias corrected)	3.802
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.786	nu hat (KM)	15.72
Approximate Chi Square Value (15.72, α)	7.764	Adjusted Chi Square Value (15.72, β)	6.815
95% Gamma Approximate KM-UCL (use when n>=50)	5.103	95% Gamma Adjusted KM-UCL (use when n<50)	5.814
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.431
Maximum	9.71	Median	1.304
SD	3.071	CV	1.263
k hat (MLE)	0.481	k star (bias corrected MLE)	0.403
Theta hat (MLE)	5.054	Theta star (bias corrected MLE)	6.027
nu hat (MLE)	9.622	nu star (bias corrected)	8.069
MLE Mean (bias corrected)	2.431	MLE Sd (bias corrected)	3.828
		Adjusted Level of Significance (β)	0.0267
Approximate Chi Square Value (8.07, α)	2.775	Adjusted Chi Square Value (8.07, β)	2.265
95% Gamma Approximate UCL (use when n>=50)	7.07	95% Gamma Adjusted UCL (use when n<50)	8.662
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.95	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.189	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.536	Mean in Log Scale	0.325
SD in Original Scale	2.989	SD in Log Scale	1.179
95% t UCL (assumes normality of ROS data)	4.269	95% Percentile Bootstrap UCL	4.067
95% BCA Bootstrap UCL	4.52	95% Bootstrap t UCL	5.937
95% H-UCL (Log ROS)	10.91		

	A–E	F	G–K	L
1111	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
1112	KM Mean (logged)	0.324	95% H-UCL (KM -Log)	8.355
1113	KM SD (logged)	1.093	95% Critical H Value (KM-Log)	3.297
1114	KM Standard Error of Mean (logged)	0.376		
1115				
1116	DL/2 Statistics			
1117	DL/2 Normal		DL/2 Log-Transformed	
1118	Mean in Original Scale	2.517	Mean in Log Scale	0.32
1119	SD in Original Scale	3	SD in Log Scale	1.153
1120	95% t UCL (Assumes normality)	4.256	95% H-Stat UCL	9.986
1121	DL/2 is not a recommended method, provided for comparisons and historical reasons			
1122				
1123	Nonparametric Distribution Free UCL Statistics			
1124	Detected Data appear Normal Distributed at 5% Significance Level			
1125				
1126	Suggested UCL to Use			
1127	95% KM (t) UCL	4.302	95% KM (Percentile Bootstrap) UCL	4.182
1128				
1129	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
1130	Recommendations are based upon data size, data distribution, and skewness.			
1131	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
1132	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
1133				
1134				

Zinc

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	43.7	Mean	68.34
Maximum	194	Median	49.95
SD	46.3	Std. Error of Mean	14.64
Coefficient of Variation	0.678	Skewness	2.704
Normal GOF Test			
Shapiro Wilk Test Statistic	0.578	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.37	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	95.18	95% Adjusted-CLT UCL (Chen-1995)	105.8
		95% Modified-t UCL (Johnson-1978)	97.27
Gamma GOF Test			
A-D Test Statistic	1.496	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.729	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.335	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.268	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.165	k star (bias corrected MLE)	2.982
Theta hat (MLE)	16.41	Theta star (bias corrected MLE)	22.92
nu hat (MLE)	83.3	nu star (bias corrected)	59.64
MLE Mean (bias corrected)	68.34	MLE Sd (bias corrected)	39.57
		Approximate Chi Square Value (0.05)	42.89
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	40.43
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	95.04	95% Adjusted Gamma UCL (use when n<50)	100.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.703	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.302	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.777	Mean of logged Data	4.1
Maximum of Logged Data	5.268	SD of logged Data	0.464
Assuming Lognormal Distribution			
95% H-UCL	93.94	90% Chebyshev (MVUE) UCL	96.06
95% Chebyshev (MVUE) UCL	109.5	97.5% Chebyshev (MVUE) UCL	128.2
99% Chebyshev (MVUE) UCL	164.8		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	92.42	95% Jackknife UCL	95.18
95% Standard Bootstrap UCL	91.2	95% Bootstrap-t UCL	230.6
95% Hall's Bootstrap UCL	197.1	95% Percentile Bootstrap UCL	95.41
95% BCA Bootstrap UCL	108.3		
90% Chebyshev(Mean, Sd) UCL	112.3	95% Chebyshev(Mean, Sd) UCL	132.2
97.5% Chebyshev(Mean, Sd) UCL	159.8	99% Chebyshev(Mean, Sd) UCL	214
Suggested UCL to Use			
95% Student's-t UCL	95.18	or 95% Modified-t UCL	97.27

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

1211	Dioxins Mammals			
1212				
1213	**General Statistics**			
1214	Total Number of Observations	10	Number of Distinct Observations	10
1215			Number of Missing Observations	0
1216	Minimum	7.4000E-8	Mean	1.2572E-6
1217	Maximum	5.6500E-6	Median	2.9250E-7
1218	SD	1.9111E-6	Std. Error of Mean	6.0434E-7
1219	Coefficient of Variation	N/A	Skewness	1.891
1220				
1221	**Normal GOF Test**			
1222	Shapiro Wilk Test Statistic	0.643	**Shapiro Wilk GOF Test**	
1223	5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
1224	Lilliefors Test Statistic	0.37	**Lilliefors GOF Test**	
1225	5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level	
1226	**Data Not Normal at 5% Significance Level**			
1227				
1228	**Assuming Normal Distribution**			
1229	**95% Normal UCL**		**95% UCLs (Adjusted for Skewness)**	
1230	95% Student's-t UCL	2.3650E-6	95% Adjusted-CLT UCL (Chen-1995)	2.6375E-6
1231			95% Modified-t UCL (Johnson-1978)	2.4253E-6
1232				
1233	**Gamma GOF Test**			
1234	A-D Test Statistic	1.107	**Anderson-Darling Gamma GOF Test**	
1235	5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level	
1236	K-S Test Statistic	0.332	**Kolmogrov-Smirnoff Gamma GOF Test**	
1237	5% K-S Critical Value	0.277	Data Not Gamma Distributed at 5% Significance Level	
1238	**Data Not Gamma Distributed at 5% Significance Level**			
1239				
1240	**Gamma Statistics**			
1241	k hat (MLE)	0.68	k star (bias corrected MLE)	0.543
1242	Theta hat (MLE)	1.8475E-6	Theta star (bias corrected MLE)	2.3152E-6
1243	nu hat (MLE)	13.61	nu star (bias corrected)	10.86
1244	MLE Mean (bias corrected)	1.2572E-6	MLE Sd (bias corrected)	1.7061E-6
1245			Approximate Chi Square Value (0.05)	4.486
1246	Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	3.8
1247				
1248	**Assuming Gamma Distribution**			
1249	95% Approximate Gamma UCL (use when n>=50))	3.0434E-6	95% Adjusted Gamma UCL (use when n<50)	3.5926E-6
1250				
1251	**Lognormal GOF Test**			
1252	Shapiro Wilk Test Statistic	0.869	**Shapiro Wilk Lognormal GOF Test**	
1253	5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
1254	Lilliefors Test Statistic	0.261	**Lilliefors Lognormal GOF Test**	
1255	5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	
1256	**Data appear Lognormal at 5% Significance Level**			
1257				
1258	**Lognormal Statistics**			
1259	Minimum of Logged Data	-16.42	Mean of logged Data	-14.48
1260	Maximum of Logged Data	-12.08	SD of logged Data	1.343
1261				
1262	**Assuming Lognormal Distribution**			
1263	95% H-UCL	7.1038E-6	90% Chebyshev (MVUE) UCL	2.5867E-6
1264	95% Chebyshev (MVUE) UCL	3.2592E-6	97.5% Chebyshev (MVUE) UCL	4.1926E-6
1265	99% Chebyshev (MVUE) UCL	6.0261E-6		
1266				
1267	**Nonparametric Distribution Free UCL Statistics**			
1268	**Data appear to follow a Discernible Distribution at 5% Significance Level**			
1269				
1270	**Nonparametric Distribution Free UCLs**			
1271	95% CLT UCL	2.2513E-6	95% Jackknife UCL	2.3650E-6
1272	95% Standard Bootstrap UCL	2.2078E-6	95% Bootstrap-t UCL	6.7656E-6
1273	95% Hall's Bootstrap UCL	8.1566E-6	95% Percentile Bootstrap UCL	2.2531E-6
1274	95% BCA Bootstrap UCL	2.5483E-6		
1275	90% Chebyshev(Mean, Sd) UCL	3.0702E-6	95% Chebyshev(Mean, Sd) UCL	3.8915E-6
1276	97.5% Chebyshev(Mean, Sd) UCL	5.0313E-6	99% Chebyshev(Mean, Sd) UCL	7.2703E-6
1277				
1278	**Suggested UCL to Use**			
1279	95% Chebyshev (Mean, Sd) UCL	3.8915E-6		
1280				
1281	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
1282	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)			
1283	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.			
1284	For additional insight the user may want to consult a statistician.			
1285				
1286				

Dioxins Avian

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	1.8600E-8	Mean	1.7752E-6
Maximum	7.2100E-6	Median	5.2550E-7
SD	2.8020E-6	Std. Error of Mean	8.8608E-7
Coefficient of Variation	N/A	Skewness	1.627
Normal GOF Test			
Shapiro Wilk Test Statistic	0.653	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.365	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.3995E-6	95% Adjusted-CLT UCL (Chen-1995)	3.7199E-6
		95% Modified-t UCL (Johnson-1978)	3.4755E-6
Gamma GOF Test			
A-D Test Statistic	0.531	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.79	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.236	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.283	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.431	k star (bias corrected MLE)	0.368
Theta hat (MLE)	4.1174E-6	Theta star (bias corrected MLE)	4.8178E-6
nu hat (MLE)	8.623	nu star (bias corrected)	7.369
MLE Mean (bias corrected)	1.7752E-6	MLE Sd (bias corrected)	2.9245E-6
		Approximate Chi Square Value (0.05)	2.376
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	1.913
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	5.5071E-6	95% Adjusted Gamma UCL (use when n<50)	6.8377E-6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.148	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-17.8	Mean of logged Data	-14.75
Maximum of Logged Data	-11.84	SD of logged Data	2.061
Assuming Lognormal Distribution			
95% H-UCL	1.4784E-4	90% Chebyshev (MVUE) UCL	6.2394E-6
95% Chebyshev (MVUE) UCL	8.1230E-6	97.5% Chebyshev (MVUE) UCL	1.0737E-5
99% Chebyshev (MVUE) UCL	1.5873E-5		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.2327E-6	95% Jackknife UCL	3.3995E-6
95% Standard Bootstrap UCL	3.1780E-6	95% Bootstrap-t UCL	8.2882E-6
95% Hall's Bootstrap UCL	1.0371E-5	95% Percentile Bootstrap UCL	3.2045E-6
95% BCA Bootstrap UCL	3.7286E-6		
90% Chebyshev(Mean, Sd) UCL	4.4335E-6	95% Chebyshev(Mean, Sd) UCL	5.6375E-6
97.5% Chebyshev(Mean, Sd) UCL	7.3088E-6	99% Chebyshev(Mean, Sd) UCL	1.0592E-5
Suggested UCL to Use			
95% Adjusted Gamma UCL	6.8377E-6		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Antimony	D_Antimon	Aroclor-1:	D_Aroclor-:	Aroclor-1:	D_Aroclor-:	Bis(2-eth	D_Bis(2-etl	Copper	D_Copper	Di-n-buty	D_Di-n-but	2,4-DNT	D_2,4-DNT	Diphenyla	D_Dipheny
0.566	1	0.0381	1	0.0177	1	0.101	1	312	1	0.414	1	0.349	0	0.349	0
3.36	1	0.002	1	0.0016	1	0.403	1	1910	1	0.342	0	0.342	0	0.342	0
2.5	1	0.0031	1	0.0028	1	0.354	0	52.4	1	0.354	0	0.354	0	0.354	0
1.16	0	0.0084	1	0.0052	1	0.4	0	79.8	1	0.4	0	0.4	0	0.4	0
2.18	1	0.007	1	0.0054	1	2.42	1	3410	1	6.76	1	15.7	1	1.3	1
0.996	1	0.005	1	0.0026	1	0.144	1	196	1	3.68	1	4.52	1	0.309	1
0.478	1	0.0108	1	0.0063	1	0.358	0	225	1	1.12	1	2.79	1	0.182	1
0.758	1	0.0113	1	0.0135	1	0.291	1	323	1	0.527	1	5.18	1	0.348	0
0.523	1	0.0028	1	0.0034	0	0.915	1	229	1	1.6	1	3.69	1	0.0717	1
1.05	1	0.0058	1	0.0026	1	0.437	1	463	1	1.47	1	3.54	1	0.143	1

Lead	D_Lead	Mercury	D_Mercury	Perchlora	D_Perchlor	TATB	D_TATB	Zinc	D_Zinc	Dioxins Ma	D_Dioxins I	Dioxins Av	D_Dioxins Avian
217	1	0.488	1	0.000948	1	5.19	1	194	1	3.84E-06	1	7.21E-06	1
50.5	1	0.0103	0	0.00206	0	0.435	1	43.7	1	2.49E-07	1	5.52E-08	1
53.8	1	0.00514	1	0.00168	1	1	0	45.8	1	2.90E-07	1	1.05E-07	1
51.2	1	0.00956	1	0.00135	1	1	0	56.8	1	2.95E-07	1	5.47E-07	1
98	1	0.0128	1	0.00574	1	0.592	1	91	1	5.65E-06	1	6.75E-06	1
91.9	1	0.00523	1	0.00208	0	9.71	1	49.4	1	2.83E-07	1	5.44E-08	1
139	1	0.0107	1	0.00215	0	1	0	46.3	1	2.72E-07	1	5.04E-07	1
259	1	0.011	1	0.00059	1	2.07	1	60.2	1	1.20E-06	1	1.93E-06	1
83.1	1	0.0108	0	0.00204	0	3.69	1	45.7	1	7.40E-08	1	1.86E-08	1
150	1	0.0119	0	0.00208	0	1.98	1	50.5	1	4.19E-07	1	5.78E-07	1

Aroclor-126	D_Aroclor-1	**Benzo(b)flu**	D_Benzo(b)flu	**Bis(2-eth**	D_Bis(2-eth	**Copper**	D_Copper	**Di-n-buty**	D_Di-n-but	**Fluoranth**	D_Fluorant	**HMX**	D_HMX	**Lead**	D_Lead	**Perchlora**	D_Perchlor	**Pyrene**	D_Pyrene	**RDX**	D_RDX	**TATB**	D_TATB	**Uranium-**	D_Uranium	**Uranium-**	D_Uranium	**Uranium-**	D_Uranium	**1,3-Xylen**	D_1,3-Xyle	**Dioxins Ma**	D_Dioxins	**Dioxins Av**	D_Dioxins Avian
0.0017	1	0.0283	1	0.346	0	49.1	1	0.147	1	0.0162	1	0.974	1	18.9	1	0.00208	0	0.0121	1	1.16	1	7.98	1	3.62	1	0.515	1	19.4	1	0.00105	1	3.37E-06	1	2.31E-06	1
0.0175	0	0.035	0	0.132	1	32	1	0.31	1	0.035	0	0.267	1	17.6	1	0.000717	1	0.035	0	0.5	0	37.3	1	0.648	1	0.0446	0	1.31	1	0.00039	1	3.82E-07	1	1.30E-07	1
0.0016	1	0.0257	1	0.342	0	99.2	1	0.342	0	0.0106	1	7.69	1	22.4	1	0.00206	0	0.0342	0	0.5	0	30.5	1	13.8	1	1.83	1	105	1	0.00206	0	3.55E-06	1	2.36E-06	1
0.017	0	0.0396	1	0.128	1	349	1	0.341	0	0.0651	1	2.41	1	20.6	1	0.00905	1	0.122	1	2.61	1	30.8	1	0.56	1	0.0396	0	0.788	1	0.000823	1	1.05E-07	1	2.51E-08	1
0.0172	0	0.0342	0	8.4	1	212	1	0.342	0	0.0342	0	0.222	1	11.1	1	0.000669	1	0.0342	0	0.189	1	29.1	1	3.02	1	0.446	1	18.6	1	0.00206	0	1.04E-06	1	8.94E-07	1
0.0027	1	0.0353	0	0.353	0	88.7	1	1.2	1	0.0353	0	2.27	1	30.7	1	0.00213	0	0.0353	0	0.105	1	24.4	1	1.01	1	0.075	1	4.09	1	0.00213	0	2.41E-07	1	5.88E-08	1
0.0342	0	0.0343	0	0.289	1	83.2	1	0.343	0	0.0343	0	0.151	1	32.9	1	0.00206	0	0.0343	0	0.138	1	34.9	1	0.726	1	0.0524	0	1.19	1	0.00206	0	1.25E-07	1	2.84E-08	1
0.0174	0	0.0348	0	0.247	1	55.9	1	0.0884	1	0.0348	0	0.5	0	23.8	1	0.000912	1	0.0348	0	0.144	1	31.1	1	0.847	1	0.0749	1	1.57	1	0.00209	0	5.22E-07	1	1.62E-07	1
0.019	0	0.038	0	0.38	0	32.5	1	0.38	0	0.038	0	0.5	0	13.9	1	0.000594	1	0.038	0	0.5	0	11.4	1	4.09	1	0.558	1	26.4	1	0.00229	0	4.51E-07	1	1.39E-07	1
0.0013	1	0.037	0	0.37	0	7.09	1	0.37	0	0.037	0	24.5	1	10.9	1	0.00166	1	0.037	0	0.5	0	1.35	1	1.5	1	0.179	1	5.29	1	0.00223	0	1.20E-07	1	2.62E-08	1
0.0167	0	0.0334	0	0.0833	1	1470	1	0.334	0	0.0334	0	67.4	1	14.5	1	0.00202	0	0.0334	0	0.5	0	23.7	1	2.45	1	0.274	1	15.6	1	0.00202	0	7.10E-07	1	2.22E-07	1
0.0168	0	0.0337	0	0.337	0	49.9	1	0.337	0	0.0337	0	0.5	0	20.8	1	0.00203	0	0.0337	0	0.5	0	27.9	1	3.04	1	0.418	1	19.8	1	0.00203	0	8.62E-07	1	2.67E-07	1
0.0351	0	0.0183	1	0.351	0	34.1	1	0.146	1	0.0242	1	1.18	1	20.1	1	0.00212	0	0.0211	1	0.5	0	33.8	1	2.16	1	0.259	1	10.6	1	0.00212	0	4.38E-06	1	2.75E-06	1
0.0207	1	0.0334	0	0.334	0	61.1	1	0.334	0	0.0334	0	0.419	1	18.1	1	0.00272	1	0.0334	0	0.5	0	16.9	1	5.11	1	0.648	1	31.7	1	0.000565	1	4.01E-06	1	2.78E-06	1
0.0172	0	0.0915	1	0.343	0	27.5	1	0.133	1	0.142	1	0.516	1	19.7	1	0.00206	0	0.137	1	0.608	1	3.52	1	1.8	1	0.185	1	9.21	1	0.00101	1	3.74E-06	1	2.54E-06	1
0.0168	0	0.0336	0	0.108	1	31.9	1	0.0827	1	0.0336	0	0.5	0	10.6	1	0.000854	1	0.0336	0	0.5	0	7.73	1	2.08	1	0.32	1	12.1	1	0.00203	0	1.37E-06	1	4.39E-07	1
0.0188	0	0.0157	1	0.374	0	13.4	1	0.374	0	0.0202	1	0.5	0	10.9	1	0.000585	1	0.0285	1	0.5	0	1.14	1	1.32	1	0.168	1	5.81	1	0.00226	0	4.91E-07	1	1.48E-07	1
0.0183	0	0.0365	0	0.365	0	22	1	0.365	0	0.0365	0	0.5	0	11.9	1	0.00219	0	0.0365	0	0.5	0	1.74	1	1.15	1	0.096	1	3.9	1	0.00219	0	1.84E-07	1	3.86E-08	1
0.0177	0	0.0353	0	0.0889	1	29.6	1	0.176	1	0.0353	0	0.0346	0	19	1	0.00213	0	0.0353	0	0.5	0	19.8	1	2.87	1	0.314	1	16.3	1	0.00213	0	1.61E-05	1	1.08E-05	1

Supplement 4-10

Predicting and Controlling Noise from Detonation Activities

LA-UR-20-24479

Los Alamos
NATIONAL LABORATORY
EST. 1943

Deployed Environmental Safety Health
Weapons Facility Operations

To: Brian Watkins, WFO-DO C919
Thru: Thomas Sisneros, WFO-DO, MS C919
From: Bob Stokes, DESH-WFO, MS C927
Phone: 505-606-0947
Symbol: DESH-20-018
Date: March 26, 2020

Subject: Predicting and Controlling Noise from Detonation Activities

Since the 1950s explosives testing has been conducted on Laboratory property. While the explosive noise was noticeable, the majority of this time the test were not concerning to the public. Addressing several citizens concerns in 2007 the noise produced during explosives test were studied with regard predicting and mitigating noise to neighboring communities, Laboratory workers, and management processes. Subsequent concerns made it clear that information could be made more quickly available for the Laboratory's communications office also.

Prior to 2007 outdoor explosive work at LANL was conducted believing the remoteness of the area and hilly terrain would mitigate the noise to our neighboring communities. Following a set of explosive shot in 2007 initiated to reduce the explosive inventory numerous complaints were received. As a result, the Weapons Division began work on a process to predict the noise at site boundaries. Between 2007 and 2011, many explosive shots were conducted with noise monitoring in place. Using the inputs from these noise measurements and pertinent meteorology inputs a predictive model for noise was developed.

The predictive model is nick named "Noise Machine" provides an adequate approximation of the noise level being generated during open detonation activities. Today outdoor explosive shots that are greater than 10lbs are require to be evaluated to predicted noise level prior to firing. The Noise Machine is a Java application used by weapons personnel to predict sound levels that will occur at the time of firing. For predicted sound levels above 110 dB, the programmatic responsible line manager must be notified to review weather conditions such as temperature, wind speed, and wind direction and the details of the shot configuration to decide whether to execute the shot. If predicted sound levels exceed 115dB, the division manager approval is required prior to firing. While the Noise Machine is an adequate predictor of the noise generated during open air detonations the randomness weather could cause the prediction to fluctuate a few dB.

Workers involved in actual open detonation operations are stationed in the control building at the site during detonation. Based on past personnel exposure monitoring the impulse sound level will be between 126dB and 134dB. These levels are below the occupational exposure limit of 140dB set by the American Conference of Governmental Industrial Hygienist (ACGIH). Various types of hearing protection are available to workers and visitors during open detonation operations as a precautionary measure.

LA-UR-20-24479

To allow for quick response to community concerns access control personnel notify Laboratory communication office of shot activities If The Noise Machine is unavailable, then all shots that weigh over 10lbs require division management approval prior to firing.

The work performed by the Weapons Division and Weapons Facilities Operations to address noise has provided an adequate process to understand and mitigate noise to LANL workers and neighboring communities. Management having personal responsibility for predicted noise greater than 110dB provides an assurance that the noise issue is taken seriously. Finally, the prior notification of shot activities provided to the LANL Communication Office provides the Laboratory the ability to respond to public concerns quickly.

RCS:rcs

Copy: Brian Watkins, WFO-DO, bwatkins@lanl.gov
Thomas Sisneros, WFO-DO, tsisneros@lanl.gov
Chuck Mielke, J-DO cmielke@lanl.gov
Eric Brown, M-DO, en_brown@lanl.gov
Stephanie Archuleta, DESH-DO, sarchuleta@lanl.gov
Janice Salazar, DESH-WFO, jaragon@lanl.gov
Bob Lechel, DESH-WFO, lechel@lanl.gov
Mandy Smith, DGL-M6, demanda@lanl.gov
Luciana Vigil-Holterman, EPC-WMP, luciana@lanl.gov

Supplement 4-11

Open Burning Unit Groundwater Monitoring and Surface Drainage Information

LA-UR-20-24479

Table 4.11-1. Pertinent Groundwater Data At or Above Regulatory Standards for Monitoring the TA-16 Burn Ground, 2000-2019

Location	Analyte	# of analyses	# of Detects	% Detects	Detects versus Nondetects	Minimum Report Result	Maximum Report Result	Action Limit	Units	Action Limit Type	# of Exceedances	First Sample Date	Last Sample Date
Spring													
Bulldog Spring	Iron	46	45	97.8	45/1	45	5120	1000	µg/L	NM GW STD	9	9/9/2004	8/14/2019
Burning Ground Spring	Iron	131	98	74.8	98/33	22.3	1710	1000	µg/L	NM GW STD	10	1/10/2000	8/17/2019
Burning Ground Spring	RDX	74	71	95.9	71/3	6	100	9.66	µg/L	NMED A1 TAP SCRN LVL	66	1/31/2000	8/17/2019
Martin Spring	Aluminum	122	87	71.3	87/35	51	8620	5000	µg/L	NM GW STD	6	1/10/2000	8/10/2019
Martin Spring	Arsenic	122	31	25.4	31/91	1.3	10.1	10	µg/L	NM GW STD	1	1/10/2000	8/10/2019
Martin Spring	Benzo(a)anthracene	19	1	5.3	1/18	0.186	0.186	0.12	µg/L	NMED A1 TAP SCRN LVL	1	4/18/2001	2/23/2018
Martin Spring	Boron	114	114	100.0	114/0	508	2840	750	µg/L	NM GW STD	109	1/10/2000	8/10/2019
Martin Spring	Iron	122	91	74.6	91/31	29.3	5200	1000	µg/L	NM GW STD	23	1/10/2000	8/10/2019
Martin Spring	Nitrobenzene	88	1	1.1	1/87	2.4	2.4	1.4	µg/L	NMED A1 TAP SCRN LVL	1	1/31/2000	8/10/2019
Martin Spring	RDX	70	67	95.7	67/3	3.54	230	9.66	µg/L	NMED A1 TAP SCRN LVL	65	1/31/2000	8/10/2019
SWSC Spring	Iron	67	56	83.6	56/11	41.6	10200	1000	µg/L	NM GW STD	15	1/10/2000	3/16/2019
SWSC Spring	Lead	67	13	19.4	13/54	0.204	20.2	15	µg/L	NM GW STD	1	1/10/2000	3/16/2019
SWSC Spring	Perchlorate	37	22	59.5	22/15	0.428	17.1	13.8	µg/L	NMED A1 TAP SCRN LVL	1	3/21/2000	3/16/2019
SWSC Spring	RDX	36	35	97.2	35/1	12.7	296	9.66	µg/L	NMED A1 TAP SCRN LVL	35	1/31/2000	3/16/2019
Alluvial													
CDV-16-02656	Barium	88	86	97.7	86/2	1150	5150	2000	µg/L	NM GW STD	80	3/23/2000	8/17/2019
CDV-16-02656	Cadmium	88	28	31.8	28/60	0.041	5.2	5	µg/L	NM GW STD	1	3/23/2000	8/17/2019
CDV-16-02656	Lead	88	37	42.0	37/51	0.063	16.4	15	µg/L	NM GW STD	1	3/23/2000	8/17/2019
CDV-16-02659	Barium	92	92	100.0	92/0	3130	13600	2000	µg/L	NM GW STD	92	3/28/2000	8/10/2019
CDV-16-02659	Dinitrobenzene[1,3-]	56	1	1.8	1/55	12	12	2	µg/L	EPA TAP SCRN LVL	1	3/28/2000	8/10/2019
CDV-16-02659	Mercury	106	2	1.9	2/104	0.063	4.4	2	µg/L	NM GW STD	1	3/28/2000	8/10/2019
CDV-16-02659	RDX	57	56	98.2	56/1	2.51	112	9.66	µg/L	NMED A1 TAP SCRN LVL	38	3/28/2000	8/10/2019
CDV-16-611923	Barium	27	27	100.0	27/0	4950	49400	2000	µg/L	NM GW STD	27	4/2/2010	8/9/2019
CDV-16-611923	Iron	27	26	96.3	26/1	83.6	11900	1000	µg/L	NM GW STD	16	4/2/2010	8/9/2019
CDV-16-611923	Manganese	27	27	100.0	27/0	2.05	7510	200	µg/L	NM GW STD	21	4/2/2010	8/9/2019
CDV-16-611923	RDX	23	21	91.3	21/2	0.285	15	9.66	µg/L	NMED A1 TAP SCRN LVL	1	4/2/2010	8/9/2019
CDV-16-611937	Barium	20	20	100.0	20/0	148	13500	2000	µg/L	NM GW STD	15	4/1/2010	8/9/2019
CDV-16-611937	Iron	20	20	100.0	20/0	486	13700	1000	µg/L	NM GW STD	18	4/1/2010	8/9/2019
CDV-16-611937	Manganese	20	20	100.0	20/0	323	4060	200	µg/L	NM GW STD	20	4/1/2010	8/9/2019
FLC-16-25280	Aluminum	9	9	100.0	9/0	1740	29900	5000	µg/L	NM GW STD	6	4/3/2008	3/8/2019
FLC-16-25280	Iron	9	9	100.0	9/0	1100	16700	1000	µg/L	NM GW STD	9	4/3/2008	3/8/2019
FLC-16-25280	Manganese	9	9	100.0	9/0	12.4	345	200	µg/L	NM GW STD	2	4/3/2008	3/8/2019

Location	Analyte	# of analyses	# of Detects	% Detects	Detects versus Nondetects	Minimum Report Result	Maximum Report Result	Action Limit	Units	Action Limit Type	# of Exceedances	First Sample Date	Last Sample Date
FLC-16-25280	Tetrachloroethene	8	8	100.0	8/0	6.09	200	5	µg/L	NM GW STD	8	2/16/2006	3/8/2019
FLC-16-25280	Trichloroethene	8	8	100.0	8/0	2.97	11.8	5	µg/L	NM GW STD	3	2/16/2006	3/8/2019
Intermediate													
16-26644	RDX	29	29	100.0	29/0	0.876	96.5	9.66	µg/L	NMED A1 TAP SCRN LVL	9	4/20/2010	8/7/2019
16-26644	Tetrachloroethene	21	21	100.0	21/0	0.64	5.03	5	µg/L	NM GW STD	1	4/20/2010	8/7/2019
CdV-16-1(i)	RDX	34	34	100.0	34/0	22.2	37.4	9.66	µg/L	NMED A1 TAP SCRN LVL	34	6/1/2005	11/1/2019
CdV-16-2(i)r	RDX	37	36	97.3	36/1	1.34	128	9.66	µg/L	NMED A1 TAP SCRN LVL	35	12/15/2005	8/12/2019
CDV-16-4ip S1	RDX	30	30	100.0	30/0	104	265	9.66	µg/L	NMED A1 TAP SCRN LVL	30	8/31/2010	8/12/2019
CDV-9-1(i) S1	RDX	16	16	100.0	16/0	8.03	37.3	9.66	µg/L	NMED A1 TAP SCRN LVL	15	5/21/2015	8/6/2019
R-25b	Bromodichloromethane	19	3	15.8	3/16	0.587	2.18	1.34	µg/L	NMED A1 TAP SCRN LVL	1	1/5/2009	3/20/2017
R-25b	Chlorodibromomethane	19	3	15.8	3/16	1.27	3.04	1.68	µg/L	NMED A1 TAP SCRN LVL	1	1/5/2009	3/20/2017
R-25b	Lead	28	13	46.4	13/15	0.512	54	15	µg/L	NM GW STD	2	1/5/2009	3/20/2017
R-25b	Total Dissolved Solids	19	19	100.0	19/0	32.9	1880	1000	mg/L	NM GW STD	3	1/5/2009	3/20/2017
R-26 PZ-2	Cobalt	14	14	100.0	14/0	2.15	98.2	50	µg/L	NM GW STD	3	4/15/2009	3/5/2019
R-26 PZ-2	Iron	14	8	57.1	8/6	34.2	16900	1000	µg/L	NM GW STD	4	4/15/2009	3/5/2019
R-26 PZ-2	Lead	14	4	28.6	4/10	0.968	16.7	15	µg/L	NM GW STD	1	4/15/2009	3/5/2019
R-26 PZ-2	Manganese	14	13	92.9	13/1	12	1380	200	µg/L	NM GW STD	4	4/15/2009	3/5/2019

EPA TAP SCRN LVL = U.S. Environmental Protection Agency screening level for tap water.
NMED A1 TAP SCRN LVL = New Mexico Environment Department screening level for tap water.
NM GW STD = New Mexico groundwater standard.

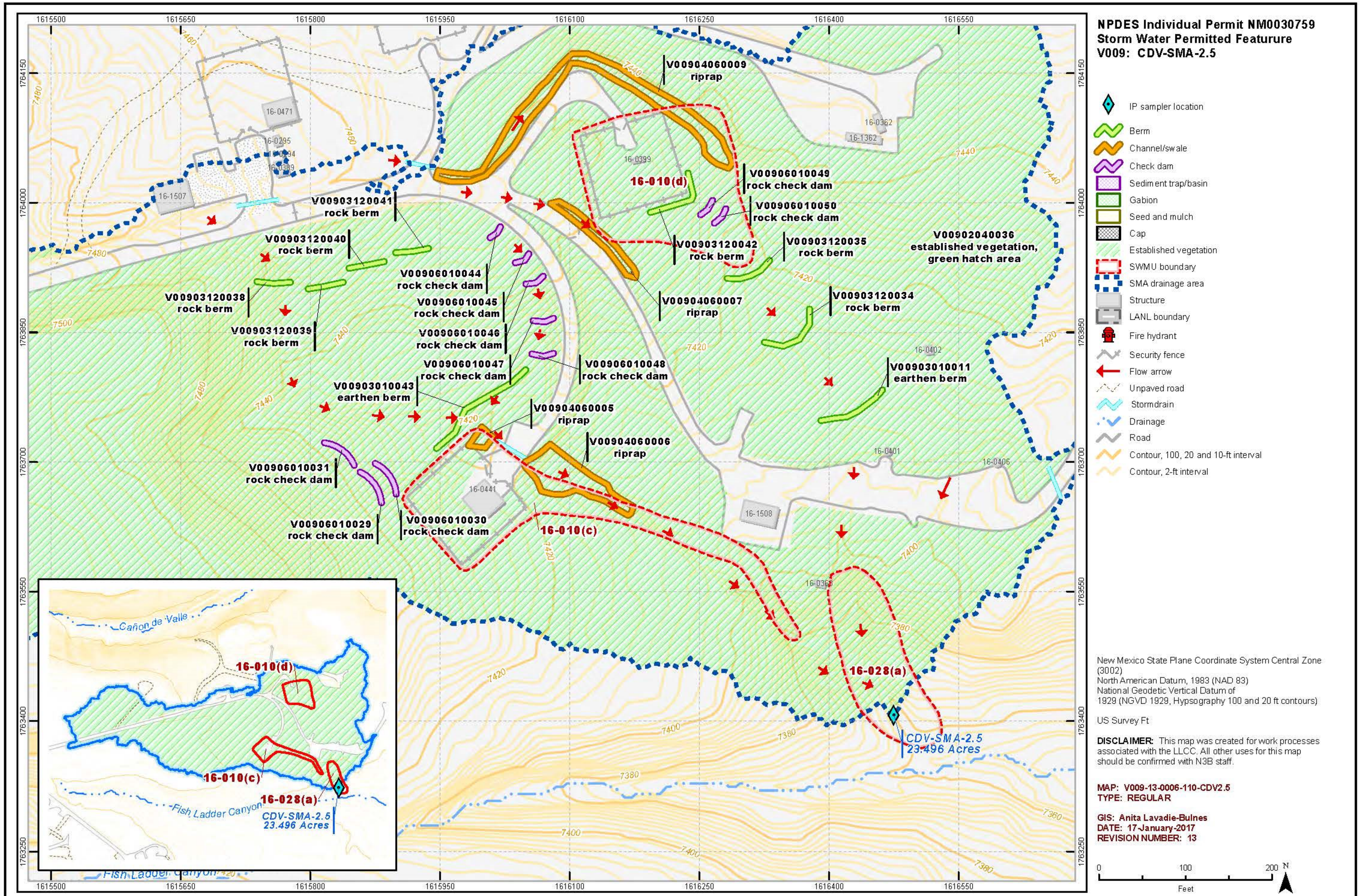


Figure 4.11-1. Drainage Control Features Near the TA-16-388 Open Burning Unit.

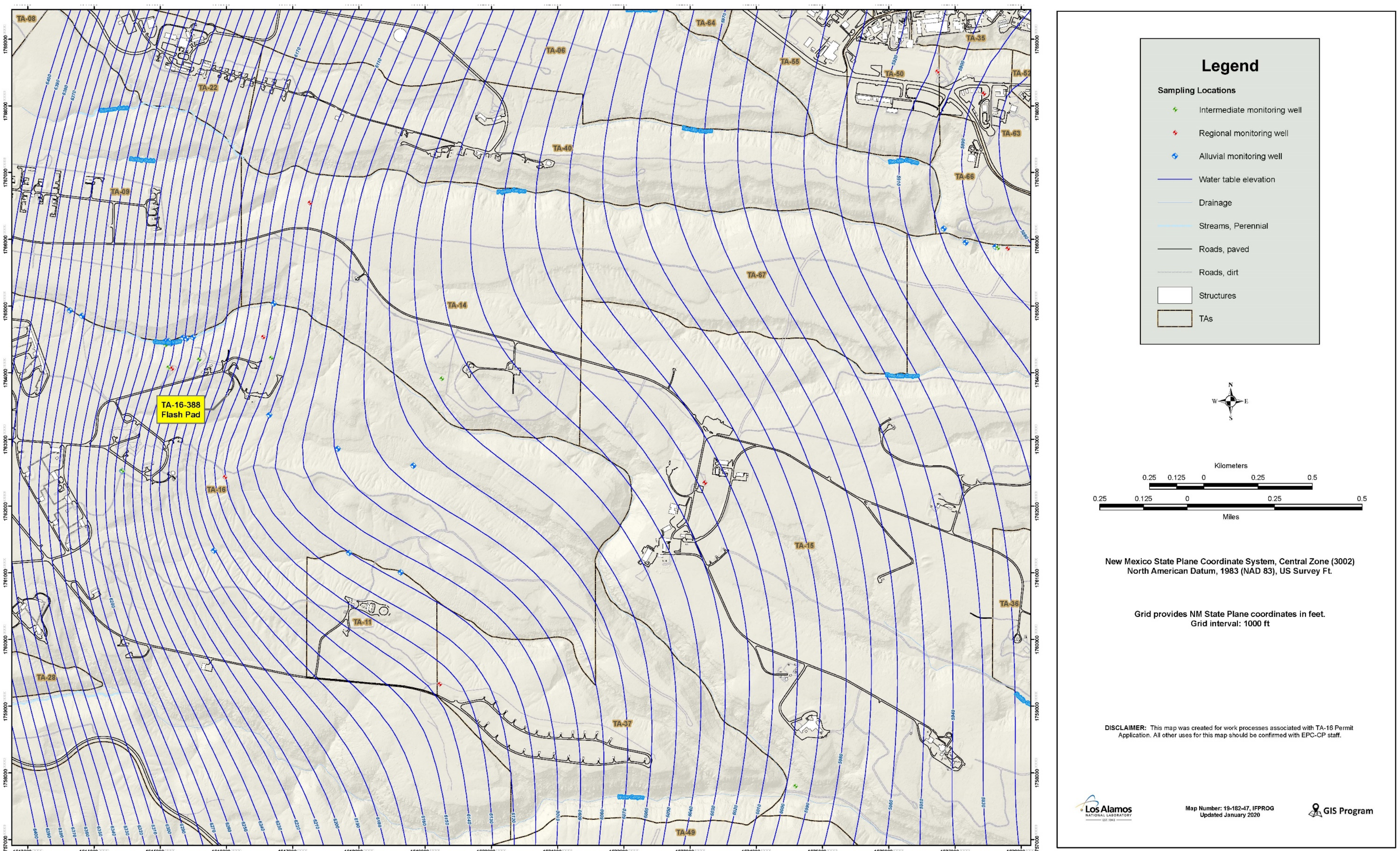


Figure 4.11-2. Water Table Contours and Sampling Locations Downgradient of Unit at Technical Area 16

Supplement 4-12

Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations at Los Alamos National Laboratory

LA-UR-20-24479

Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations at Los Alamos National Laboratory

Operated by:

Triad National Security, LLC

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

Owned by:

U.S. Department of Energy

National Nuclear Security Administration

Office of Los Alamos Site Operations

Los Alamos, New Mexico 87544

[This page has been left intentionally blank.]

TABLE OF CONTENTS

List of Tables

List of Figures

List of Attachments

List of Acronyms

AIEC	acute inhalation exposure concentrations
CCS	Chemical Compliance Systems, Inc.
DOE	U.S. Department of Energy
EF	emission factor
EPA	U.S. Environmental Protection Agency
ESL	ecological screening level
GLC	ground level concentration
LANL	Los Alamos National Laboratory
NAAQS	National Ambient Air Quality Standards
NMAAQS	New Mexico Ambient Air Quality Standards
NMED	New Mexico Environment Department
OBODM	Open Burn Open Detonation Model
REL	Reference Exposure Levels
RSL	Regional Screening Level
SR	State Road
SSL	Soil Screening Levels
TA	Technical Area

[This page has been left intentionally blank.]

1.0 INTRODUCTION

This report describes the air modeling analysis and risk evaluation for open burning operations conducted at Technical Area (TA)-16 located at Los Alamos National Laboratory (LANL). The purpose of this air modeling analysis is to simulate, study, and develop reasonable, yet conservative estimates, of potential air quality impacts from current and future open burning waste treatment operations at LANL.

LANL is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The Facility and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The Facility is owned and co-operated by the U.S. Department of Energy (DOE) and is co-operated by Triad National Security, LLC (LANL). The location of the open burning unit at LANL that is addressed in this report is shown in Figure 1-1.

1.1 Description of Open Burning Unit

The TA-16-388 Flash Pad is located at the TA-16 Burn Ground in the southwestern quadrant of LANL. The TA-16 Burn Ground is bounded on the northern side by Cañon de Valle and on the southern side by Water Canyon. The unit is used for the open burning treatment of detonable quantities of explosives waste and explosives-contaminated wastes.

The unit consists of a 22-foot (ft) by 22-ft concrete pad that has 3-ft high concrete walls along the back and two sides. Each of the three walls has a 5-ft long forced air propane burner mounted on it. The propane burners provide the heat and fuel for efficient waste treatment operations at the TA-16-388 Flash Pad. A picture of the unit is included as Figure 1-2. Treatment operations are most often conducted using the two side burners to treat waste placed in a steel tray. A retractable steel structure covers the concrete pad, burners and trays when the unit is not in use. The location coordinates of open burn unit in Universal Trans Mercator (UTM) Zone 13, NAD83 Datum coordinates are:

Unit	X-Coordinate	Y-Coordinate
TA-16-388 Flash Pad	379670.0	3967821.0

The unit is only used for treatment of explosives waste and explosives-contaminated waste. All treatment events utilize at least two propane burners and an average treatment operation lasts 30 minutes.

1.2 Waste Streams Treated Through Open Burning

The TA-16-388 Flash Pad is used to treat explosives waste and explosives-contaminated waste which are generated at LANL primarily from explosives processing operations, such as machining and pressing; research and development activities; and decommissioning and demolition activities. The waste streams include homogenous and heterogeneous wastes and are described in the following paragraphs.

<u>Explosives machining waste</u>

This waste stream consists of explosives machining chips or cuttings, water, filters, and filter solids that result primarily from the filtration of water used during the machining of explosives. Approximately one-third of this waste stream is water. Cloth filters are sometimes present in the waste. The waste stream is generated during explosives machining and explosives processing and may include plastic bags or wrapping. Water is used as a coolant during the machining process; therefore, explosives machining chips or cuttings and filters that are used to filter the water for reuse are generated as a wet high explosives waste stream.

Excess explosives

This waste stream includes large and small pieces of excess conventional explosives. Explosives may be in the form of flakes, granules, crystals, powders, pressings, plastic bonded, putties, rubberized solids, or extrudable solids. Explosives infrequently contain barium or ammonium nitrate mixed with more than 0.2% combustible substances. Other materials that may be present in this waste stream include plastic bags, wrapping, and casings; cardboard and paper; and fiberboard containers. A fraction of the waste stream may contain metals such as aluminum, brass, steel, stainless steel, and copper. This waste stream can include waste generated from inventory reduction efforts, off-specification explosives, damaged explosives, and salvaged explosives.

Explosives-contaminated combustible debris

This waste stream includes detonable explosives-contaminated debris generated in research laboratories, processing areas and prep rooms. Debris may include filters removed from laboratory equipment or may contain trace amounts of solvents. Other materials that may be present in this waste stream include plastic pieces, bags, wrapping and tubing; weigh boats; latex or nitrile gloves; glass or plastic vials; cardboard and paper; fiberboard containers; Kimwipes, rags, and swabs; glassware; and metal. Metal constituents may include aluminum, stainless steel, steel, brass and copper. Solvents in the waste stream may include trace quantities of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, fluor-inerts or trichloroethylene.

Explosives-contaminated solvent waste

This waste stream consists of dimethyl sulfoxide (DMSO) that contains dissolved explosives. It is generated primarily by dissolving of explosives and polymers in support of research and development activities.

Explosives-contaminated noncombustible debris

This waste stream consists of explosives-contaminated equipment that includes discarded, noncombustible equipment, debris from firing sites, noncombustible material from decommissioning and demolition activities, and material from explosives processing areas. This waste stream is typically recycled after treatment. Most often this waste stream consists of metal equipment or sand/carbon from water filtration activities. Because generation of this waste stream is related to maintenance and decommissioning and demolition activities, in many years none of this waste is generated. However, during decommissioning or maintenance activities at explosives processing buildings, noncombustible debris (including surplus equipment) will be generated. Any oil present within the equipment is drained, and the equipment is then disassembled and/or steam cleaned if it can be done safely.

Waste containers for all of the explosives waste streams described above generally consist of plastic bags, paper-lined cardboard boxes, plywood boxes, or plastic buckets. The preceding discussion describes typical waste treated through open burning at LANL. Up to 95% of the wastes treated by open burning within a year are explosives machining waste. Excess explosives including off-specification, damaged, and salvaged explosives make up an estimated annual quantity of approximately 5-15% of waste treated through open burning. The precise percentages vary somewhat depending on LANL strategic, research, and operational processes in the given year; however, it should be noted that the other three waste streams identified are treated infrequently.

1.3 Typical Open Burning Treatment Operations Compared to Modeled Parameters

Attachment B (*Part A Application*) of the LANL Hazardous Waste Facility Permit (NMED, 2010), lists the capacity for the TA-16-388 Flash Pad as 100 gallons or 1,000 pounds per burn (lbs/burn). Annual burn limits for the TA-16-388 Flash Pad are not listed in the Permit and to date, have not been included in permit application documents. The modeling parameters detailed in Section 2.6 of this report, assume that a maximum amount of

200 lbs of explosives waste can be treated at the TA-16-388 Flash Pad at any one time. This weight does not take into account other noncombustible solids that may be present during a treatment event so that a representation of the maximum amount of waste that can be treated at one time could be analyzed for air impacts. Additionally, this air impact analysis report assumes that the maximum amount of explosives waste treated annually is 6,000 lbs. This approach allows for the calculation of annual air impacts for a potential maximum volume of waste per year and the calculation of the cumulative effects associated with that potential maximum.

The actual waste quantities treated at the TA-16-388 Flash Pad are generally much less than the quantities of waste modeled in this analysis. Average quantities per burn at the TA-16-388 Flash Pad are approximately 52 lbs/burn. This is roughly 26% of the 200 lbs/ burn modeled for this air impacts assessment. The average annual quantity of waste treated at the two units that operated over the past eight years at the TA-16 Burn Ground has been less than 3,000 lbs. The most that has been treated within a single year since 2003 was 5,345 lbs in 2010 during explosives inventory reduction efforts. In 2008, only 1,061 lbs were treated due to decreased production activities for the year. These variances demonstrate that to model a 6,000 lb maximum annual treatment volume for explosives wastes is a reasonable but still very conservative action. The quantity modeled is greater than the actual volumes treated in recent history, but is still close enough to represent a potential possibility for the unit. However, there is added conservatism to this quantity as 2010 waste treatment quantities utilized two open burning units at the TA-16 Burn Ground rather than the single unit (TA-16-388 Flash Pad) that the DOE/Triad are seeking to permit.

The number of treatment operations and the amount of time it takes to complete treatment operations at the TA-16-388 Flash Pad were also overestimated as part of this air impacts analysis. Modeling of air impacts assumed that the unit conducts treatment operations for a full hour and operated continuously from 8 AM to 5 PM for an entire year in order to ensure the maximum hourly annual air concentration was captured by the modeling. The operating conditions at the TA-16-388 Flash Pad are much less frequent than those modeled. Most treatment events are conducted in approximately 30 minutes, in the morning when the wind is generally the lowest of the day, and only one burn is conducted per day.

Also, as described in Section 3.0 of this report, the waste streams actually treated at the TA-16-388 Flash Pad are different from and in general less hazardous to human health and the environment than the waste streams that the emissions factors used in this analysis are based upon. No attempt was made to eliminate non-characteristic emissions from the analysis, which increases the conservative nature of the analysis. Waste stream emissions factors that have been chosen for this analysis estimate a higher air impact than would actually be released from day-to-day operations at the TA-16-388 Flash Pad.

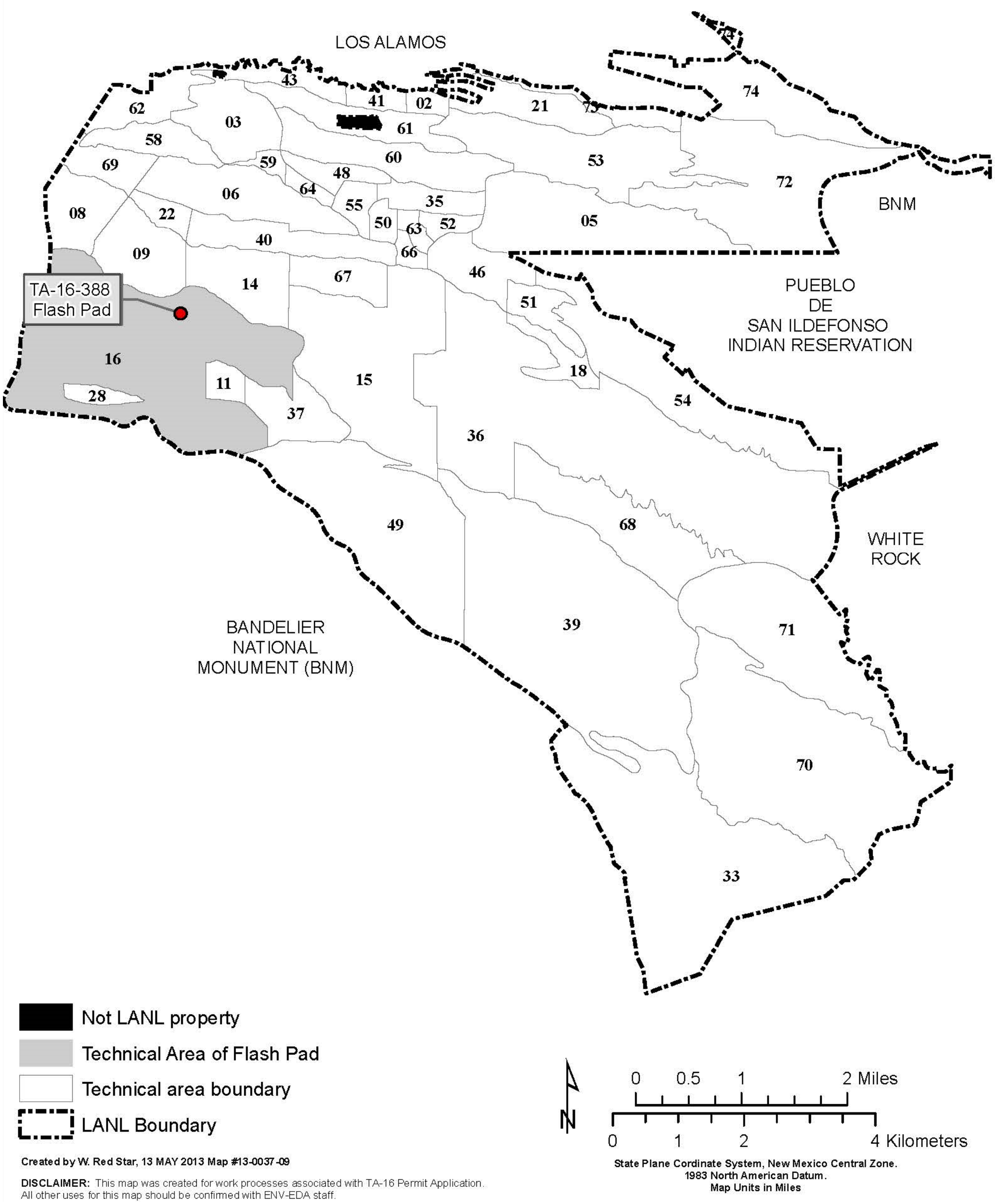


Figure 1-2

Location Map of Open Buring Unit at Los Alamos National Laboratory

Figure 1-2
Photograph of Technical Area 16- 388 (TA-16-388) Flash Pad

2.0 AIR DISPERSION MODELING

Air dispersion modeling was conducted to estimate the ground level concentrations (GLCs) that occur downwind following an open burn event. The GLC is required to compare potential air quality impacts of open burning operations with health-based screening levels for air and soil. Dispersion modeling is a standard technique accepted by the U.S. Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) to estimate downwind concentrations.

2.1 Model Selection

The NMED specified this air modeling analysis should be conducted using the Open Burn and Open Detonation Model (OBODM). The EPA has approved the use of OBODM for modeling open burn/open detonation operations. Historically, NMED used OBODM to model air emissions from LANL's TA-16 Burn Ground during the previous Resource Conservation and Recovery Act (RCRA) permit application process.

Models used for predicting downwind concentrations, such as OBODM, assume dispersion follows a uniform Gaussian distribution within the plume. In reality, atmospheric dispersion is far more complex and is dependent on more unique source and terrain features than a model is capable of considering. Nevertheless, dispersion models are accepted tools to assess source impacts for regulatory purposes.

Considering numerous studies over time, the EPA states in Title 40 of the Code of Federal Regulations 51, *Appendix W – Guideline on Air Quality Models* that models are reasonably reliable for estimating the magnitude of the highest concentrations occurring within an area. Errors in the highest estimated concentrations of $\pm$ 10 to 40 percent are typical. However, estimates of concentrations that occur at a specific time and location are less reliable. Models are also more reliable in estimating longer time-averaged concentrations, such as annual averages, than for estimating short-term concentrations at specific locations.

OBODM is intended for use in evaluating the potential air quality impacts of the open-air burning and open detonation of obsolete munitions and solid propellants at U.S. Department of Defense and DOE installations (Bjorklund, et al., 1998a). OBODM predicts the downwind transport of pollutants using cloud rise and dispersion model algorithms from existing dispersion models. A complete description of the plume rise and dispersion algorithms used in OBODM is found in Volume II of the user's manual (Bjorklund, et al., 1998b). The OBODM allows for a simplistic representation of local meteorology and includes a screening-level complex terrain algorithm. All OBODM source and receptor locations are defined relative to a rectangular or a polar coordinate system in which north (0 degrees) is the positive Y-axis and east (90 degrees) is the positive X-axis. All vertical (z) coordinates are heights above ground level except when the OBODM complex terrain screening mode is used, in which case the z coordinates are terrain heights above mean sea level.

2.2 Methodology Steps

OBODM runs were conducted to determine the maximum GLC for acute and chronic exposures. Emission factors (EFs) for specific contaminants potentially generated by open burning operations were applied to model results to obtain concentrations for comparison to ambient air quality standards and human health soil screening levels. The methodology was comprised of the following steps:

1. A source strength model input file was prepared for short-term GLCs using the maximum quantity of hourly waste treated and propane used. The input file contained this maximum quantity for each hour from 8 AM to 5 PM for each day of the year.

2. Using a one-year continuous hourly on-site meteorological data set, OBODM was run using the hourly source strength file for the short-term 1-, 3-, 8-, and 24-hour averaging periods.
3. The hourly model results were used to create a source strength input file for estimating annual or chronic GLCs. In a descending order, maximum hourly waste quantities were assigned to the hours of the year with the highest predicted GLC from the hourly model runs. This was done until the sum of the hourly values equaled the maximum annual waste and propane quantity.
4. OBODM was run using the annual source strength file and the same one-year on-site meteorological data set for the annual averaging period.
5. In each model run, the contaminant emission rate was set at 1 gram per second (1 g/sec). Thus, the maximum GLC predicted was for a contaminant emission rate of 1 g/sec. The maximum GLC over the 1-g/sec emission rate, referenced as the X/Q value, and units of $\mu g/m^3$ per 1 g/sec.
6. EFs together with maximum waste and propane quantities were used to calculate the emission rate in g/sec for each specific pollutant or contaminant projected to occur from a burn.
7. Contaminant-specific GLCs for all averaging periods were calculated by multiplying the model result X/Q value ($\mu g/m^3$ divided by g/sec) times each chemical-specific emission rate (g/sec).
8. The calculated GLCs were compared to ambient air quality standards and human health and ecological risk screening levels for soil.

2.3 Model Input Values

The input values used in the model runs are summarized in Table 2-1. The fuel heat content for waste burned is representative of the range of wastes treated. However, the heat content of propane used to assist each burn is much higher than waste heat content. The calculated propane heat content assumes 1 gallon of propane is burned each minute during the 30-minute burn with a weight of 4.24 lb/gallon. This yields 127.2 lb/propane per burn. A representative propane heat content is 6,030 kcal/liter or 11,893 cal/g (AP-42, 2008). The fuel quantities are maximum hourly and annual values. The fuel burn rates were calculated from the hourly fuel quantity divided by the fuel burn time. A release height of 0.5 meters was specified.

Table 2-1
Model Input Values

Parameter	Input Value
Fuel Heat Content, cal/g	12,893 (1000 waste, 11,893 propane)
Hourly Fuel Quantity, lbs	327.2 (200 waste, 127.2 propane)
Annual Fuel Quantity, lbs	9816 (6000 waste, 3816 propane)
Fuel Burn Time, sec	1800
Fuel Burn Rate, lb/sec	0.18
Fuel Burn Rate, g/sec	82.5
Contaminant Emission Rate, g/sec	1

2.4 Meteorological Data

LANL maintains a network of on-site meteorological stations that is adequate to predict maximum downwind concentrations from open burning operations when using a full year of meteorological data. The centrally located TA-6 station is the official meteorological station for LANL and data from it are reported to the National Weather Service. The station consists of a 92-meter tower instrumented for wind and temperature at four levels. A one-year continuous hourly record from this station was used in the model input. This data set has been approved for use by NMED for all LANL air quality permitting and was used by NMED in the modeling and human health screening for the first TA-16 Burn Ground RCRA application in 2007. The TA-16 Burn Ground site elevation is 7,500 ft and the elevation of the TA-6 Meteorological Station is 7,424 ft. The TA-6 station is also the closest LANL meteorological station to the burn ground being at a distance of approximately 1.5 miles from the TA-16 Burn Ground. The use of an official meteorological station consistently lessens uncertainty and increases the ability to compare current, previous, and future modeling.

2.5 Receptors

Receptors are locations on-site or off-site where an individual may be exposed to contaminants within or from the air due to a stationary source of contamination to the air. Receptors with terrain elevations were established to ensure the maximum downwind concentrations were captured in the model runs. A Cartesian receptor grid was set up with the burn ground being the center point of a 2,000- by 2,000-meter grid with 100-meter spacing between receptors. Public receptors included nearby roadways, recreation areas, schools, hospitals, and tribal land. A list of public receptors is shown in Table 2-2.

Figure 2-1 shows the LANL property boundary, roadways, and the location of the on-site and off-site receptors used in the analysis. LANL property is shaded darker than the surrounding land in the figure. The sites and associated receptor grid are indicated in the black grid squares. Public receptors are indicated in yellow.

Table 2-2
Public Receptors

Receptor	X-Coordinate[1] (meters)	Y-Coordinate[1] (meters)	Elevation (meters)
Bandelier Entrance at State Road (SR) 4	384789.7	3962060.7	2031.2
Bandelier Visitor Center	385202.9	3960086.4	1845.1
San Ildefonso West of SR 4	388891.3	3967279.6	2006.7
White Rock Overlook Park	393146.0	3965274.7	1911.6
Piñon Elementary School, White Rock	390207.5	3964769.6	1981.0
Royal Crest Trailer Park	382432.8	3970723.1	2228.0
Los Alamos Medical Center	381001.8	3971679.6	2226.7
West Jemez Road	377585.0	3969284.5	2386.7
Ponderosa Campground	377386.1	3966238.8	2311.2
LANL SE Boundary	388723.0	3958724.3	1643.8
SR 4 SE	387161.9	3961999.5	1993.5
SR 4 SE	387131.3	3963223.8	1952.0
SR 4 SE	388019.0	3963805.4	1985.6
Pajarito Rd	388416.9	3965488.9	2003.9
Pajarito Rd	386702.8	3966284.8	2035.8
Pajarito Rd	385417.2	3967692.8	2130.0
Pajarito Rd	383764.3	3968549.8	2180.4
Pajarito Rd	382142.0	3969498.7	2220.6
West Jemez Rd	377367.0	3967907.1	2364.6
West Jemez Rd	378132.2	3970600.7	2406.3
SR 4 SW	383427.6	3962917.7	2105.2
SR 4 SW	382264.4	3964080.9	2156.9
SR 4 SW	380948.2	3965427.7	2208.7
SR 4 SW	379142.3	3966223.5	2260.6

[1] All Universal Transverse Mercator (UTM) coordinates are based on the datum, North American Datum (NAD) 83.

2.6 Model Methodology Description

OBODM runs were conducted to determine the maximum 1-, 3-, 8-, and 24-hour and annual air concentrations. The annual air concentration was used to calculate the 10-year soil concentration from pollutant deposition. Details of the approach taken are provided below.

Open burning operations occur from 8 AM to 5 PM local time in the summer and from 9 AM to 4 PM in the winter. Up to 200 lbs of explosives waste is treated in each burn; and a maximum of 6,000 lbs of waste can be treated per year. Due to preparation, only one burn per hour is conducted.

As noted in Section 1.3 of this report, typically only one burn occurs on the same day. However, to ensure the maximum hourly concentration was captured all hours of the year from 8 AM to 5 PM were modeled. This was done by using as input a source strength file with the maximum hourly explosives waste quantity of 200 lbs for each hour of the year from 8 AM to 5 PM. All other hours were specified as 0 lbs of waste.

Propane assist from two burners is used for each burn. Accordingly, the weight of propane burned per hour (127.2 lbs) was added to each hourly waste quantity for a total of 327.2 lbs/waste per burn.

To ensure the maximum annual air concentration was captured by the analysis, an annual source strength file was created based on the results of the hourly model run. Using an annual file with 8,760 hours per year, hourly waste quantities were used for the hour of the year, which corresponded to the hours that showed the highest concentrations in the hourly model runs. This model was run in a descending manner starting with the hour showing the highest concentration and down to the hourly results until the annual waste quantities of 6,000 lbs/yr were reached. The weight of propane was also added to each hourly input waste quantity.

In all model runs, a 1-g/sec contaminant emission rate was specified. The contaminant for model purposes was non-specific and the model results for this analysis were not dependent on specification of a particular contaminant or pollutant. The model does not consider any reactivity or unique characteristic of a pollutant as it travels downwind for the emission source. Although within OBODM a user can specify the molecular weight for a specific pollutant, the value is only used by the model if results are requested in terms of parts per million, which was not the case in this analysis where results in $\mu g/m^3$ (parts per billion or ppb) were used.

The density of a pollutant can also be specified if deposition due to gravitational settling is desired. For this analysis, OBODM could not be used to estimate deposition because the model will not calculate deposition except in flat terrain. For the complex terrain in this analysis with terrain elevations assigned to receptors, the model will not run if results for deposition are requested.

Each run was conducted using the appropriate source strength file as described above, the one-year hourly meteorological data set from the LANL TA-6 station, and the receptors described in Section 2.5. Table 2-3 summarizes the two scenarios modeled.

Table 2-3

Model Scenarios

Averaging Time	Waste Quantity (pounds of waste per burn)	Input/output File Name[1]
1, 3, 8, and 24 hours[2]	327.2 (200 waste, 127.2 propane)	388H8.INP 388H8.OUT
Annual	9816 (6000 waste, 3816 propane)	388A1.INP 388A1.OUT

[1] OBODM input and output files, the accompanying hourly source strength files, and the model-ready meteorological data file have been provided to the NMED in electronic format for review purposes.

[2]The 1-, 3-, 8-, and 24-hour averaging periods were needed to assess compliance with ambient air quality standards for those averaging times.

2.7 Model Results

The maximum GLCs from model runs for each averaging period are shown in Table 2-4 together with the X and Y coordinates for each value. All maximum GLCs occurred close to the burn ground on LANL property at the five receptors within the 2,000- by 2,000-meter receptor grid centered on the burn site. The highest single GLC for the nearby public receptors is also shown for each averaging period together with the location of the public receptor. The values shown represent results using the 1-g/sec contaminant emission rates. Specific concentrations for individual pollutants were calculated using these results. Each of these locations with the predicted maximum GLC is shown on Figure 2-2.

Table 2-4

Maximum Ground Level Concentrations and Locations

	Maximum GLC ($\mu g/m^3$)	X-Coordinate (meters)	Y-Coordinate (meters)	Public Receptor Maximum GLC ($\mu g/m^3$)	Public Receptor Location
TA16 Burn Ground		379670.0	3967821.0		
1-hour	1.05E+01	379270.0	3968121.0	2.78E+00	SR 4 SW
3-hour	3.95E+00	379370.0	3968021.0	9.47E-01	SR 4 SW
8-hour	2.21E+00	379670.0	3968221.0	5.08E-01	SR 4 SW
24-hour	7.73E-01	380070.0	3967821.0	1.72E-01	SR 4 SW
Annual	9.32E-03	379370.00	3967821.0	1.93E-03	West Jemez Rd

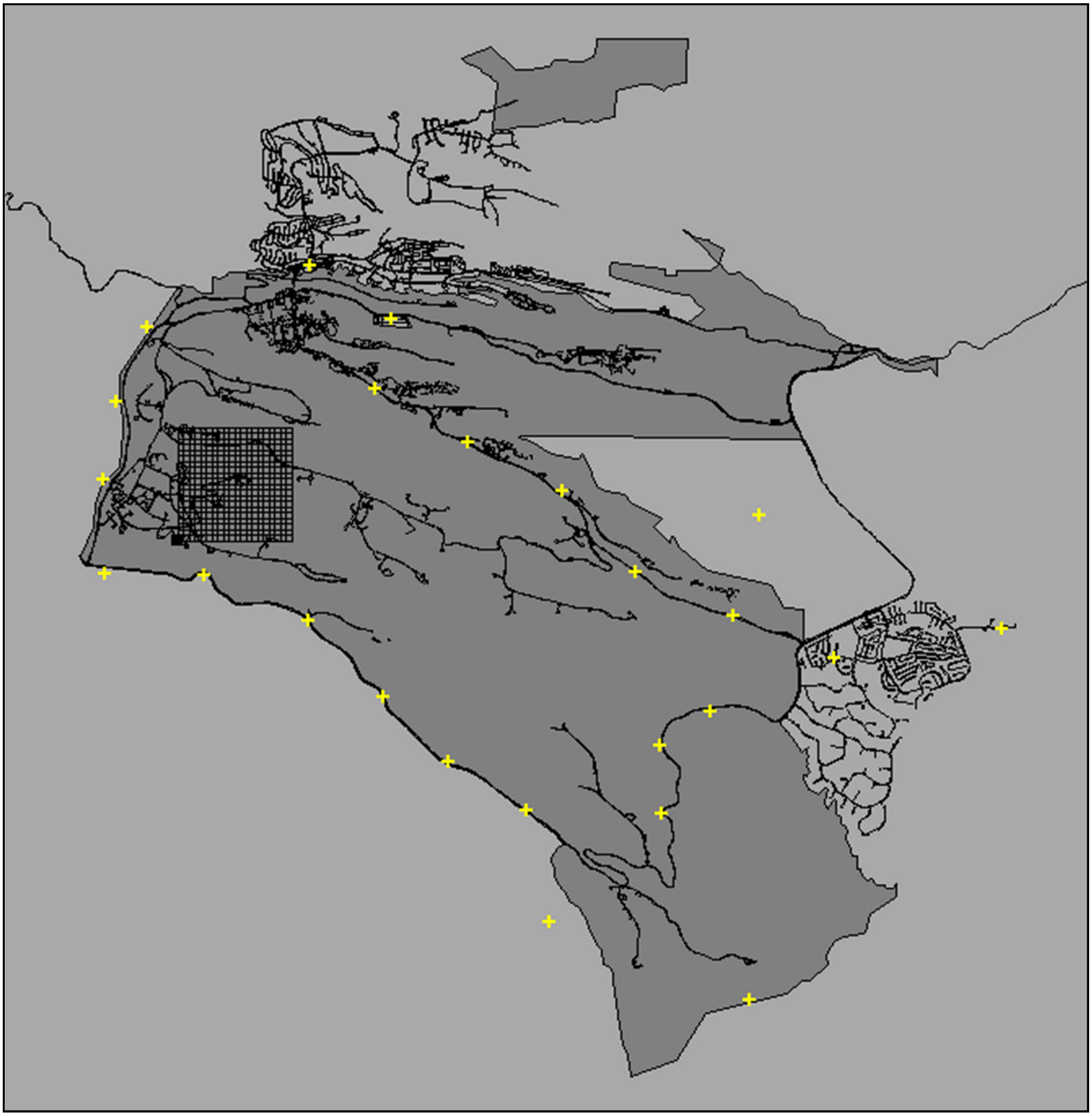


Figure 2-1

Location of Public Receptors and Receptor Grid

(Black grid squares are the site location and the yellow plus signs are public receptors.)

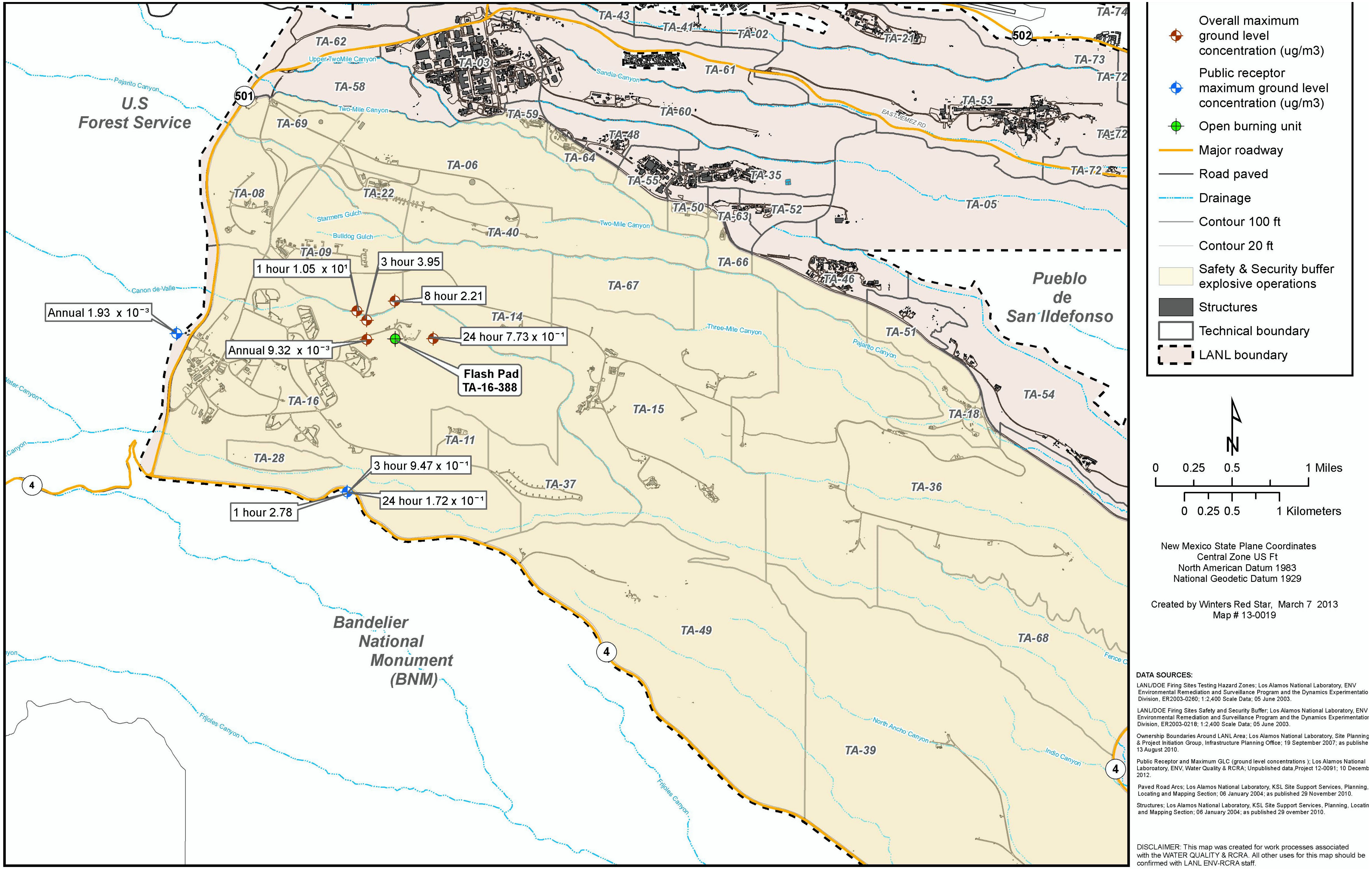


Figure 2-2
Locations of Highest Predicted Ground Level Concentrations from TA-16-388 Flash Pad Open Burning Unit

[This page has been left intentionally blank.]

3.0 EMISSION FACTORS FOR OPEN BURNING

This section describes the sources of emission factors and the emission factors applied to each waste stream treated by open burning. Waste streams treated by open burning are described in Section 1.2 of this document. An emissions factor is a documented representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. Based on the waste streams described, emission factors were chosen for pollutants that had air quality limits. Emission factors are not shown for pre-treatment and post-treatment emissions such as fugitive dust, because no equipment operates off-road, earth-moving operations are not part of the open burning/open detonation activities, and ash generation is routinely negligible from open burning operations. Additionally, emission factors for the detonation of explosives, where more recent research has been conducted and is available, were not considered for use because detonation has processes, such as fragment formation, that do not occur during open burning.

Materials burned at the TA-16-388 Flash Pad may vary in composition from consisting mostly-to-all explosives and explosives pieces, to small quantities of explosives on contaminated combustible solids or noncombustible solids. Most of the emissions products (over 99 percent) associated with open burning are carbon, nitrogen, and oxygen. In fact, emission products from most energetic material treated by open burning can be adequately represented by the following analytes: carbon dioxide, carbon monoxide, nitrogen oxide, and nitrogen dioxide; with only trace quantities of total saturated hydrocarbons, acetylene, ethylene, propene, benzene, toluene, and particulates (EPA, 1998).

In order to characterize the potential impact to the site from air dispersion and depositions, the minimal fractions of contaminants that may be produced during open burning treatment activities have been estimated using calculations and emission factors from documented sources. The maximum amount of burnable material that can be treated at the TA-16-388 Flash Pad is 200 lbs per burn and 6,000 lbs per year. In order to reasonably, but conservatively represent waste treatment activities at the TA-16-388 Flash Pad, a combined waste stream was developed that encompasses the most conservative emission factors from surrogates that represent the waste streams treated by open burning. This methodology sufficiently covers the worst-case scenario for emissions from the unit.

Surrogate waste streams described below and chosen to represent each waste stream detailed in Section 1.2, were chosen from one of the limited documented sources. The waste stream-specific emission factors were combined to create a single surrogate waste stream that encompasses all waste streams that may be treated at the TA-16-388 Flash Pad. This waste stream is represented by the combined emission factors located in Column 7 of Table 3-1. Emission factors for the propane that is used as fuel for open burning waste treatment are shown separately, but are included with the waste stream surrogate as part of the air impact assessment.

3.1 Emission Factors for Excess Explosives, Explosives Machining Waste, and Explosives-Contaminated Noncombustible Debris

Approximately 99 percent of the waste treated at the TA-16-388 Flash Pad is a combination of explosives machining waste, excess explosives waste, and explosives-contaminated noncombustible debris. As described in Section 1.2, the excess explosives waste stream consists of pure explosives that may be held within plastic bags, cardboard, or paper in some cases; the explosives machining waste stream consist of pure explosives shavings or cuttings, water, and sometimes cloth filters; and the explosives-contaminated noncombustible debris consists primarily of metal piping, equipment, concrete, or soil generated during decommissioning and environmental restoration activities. Because the non-combustible materials themselves do not burn, the only emissions result from the burning of the explosives.

The specific types of explosives treated by open burning vary depending primarily on research and development (R&D) and stockpile stewardship activities. The primary types of explosives treated are 1,3,5 triamino 2,4,6 trinitrobenzene (TATB), cyclotetramethylenetetranitramine (HMX), trinitrotoluene (TNT), and cyclonite (RDX). Emission factors are not available for all of the explosives treated.

TNT is the least oxygenated; therefore, it is an explosive that burns less completely ("dirtier") than others treated at the TA-16-388 Flash Pad. Emission factors for burning TNT are available in Chapter 6, Section 3, Table 6.3-1 of EPA's Compilation of Air Pollutant Emission Factors (EPA, 1983). There are no toxic air pollutant emission factors for TNT in AP-42; therefore, the emission factors available from the Open Burn/Open Detonation Dispersion Model (OBODM) User's Guide (Bjorklund, et.al., 1998a.) for burning types of explosives similar to those burned at the TA-16-388 Flash Pad were reviewed. The types of materials in the EPA document that can be considered to be most similar to those treated at LANL are:

- M-43, which contains RDX;
- PBXN-110, which contains HMX; and
- M31A1E1, a mixture of explosives.

While these waste stream surrogates contain some of the explosives treated by open burning at LANL, a number of contaminants are present within the surrogates that are not be present in LANL explosives treated at the site. However, no attempt has been made to eliminate these extraneous contaminants from this analysis which provides an even more conservative estimate of potential emissions from treated waste. Emission factors from each of the waste stream surrogates are used as published for this assessment to provide a conservative emissions estimate. The highest pollutant-specific emission factor for any of the three waste stream surrogates was chosen for inclusion in this air impact assessment. Columns 2 through 5 of Table 3-1 summarize the emission factors used to represent this waste stream in grams (g) of pollutant per g of waste (g/g) and identify the waste surrogate of origin.

3.2 Emission Factors for Combustible Solids

Emission factors from the diesel and dunnage surrogate waste in the OBODM User's Guide (Bjorklund, et.al., 1998a) were used for this waste category. The diesel and dunnage waste consisted of scrap wood, dead branches from trees and shrubs, Styrofoam™ packing material, other combustibles, and diesel fuel. These emission factors, shown in Column 6 of Table 3-1, should be much higher than those produced from the typical treatment of explosives contaminated combustible waste stream at LANL. In contrast to the diesel and dunnage surrogate waste, the explosives contaminated combustible debris waste stream at LANL is characterized by dry waste, no vegetation, no diesel, a high heating value from the explosives in the waste, and clean supplemental fuel (propane burners).

While reviewing available surrogate waste streams from the OBODM User's Guide, initially it was determined that the aluminized ammonium perchlorate (AP) propellant manufacturing waste category may be a better fit as a surrogate for the LANL explosives-contaminated combustible debris waste stream. The manufacturing surrogate waste was conceptually designed to simulate the mix of AP-contaminated plastic gloves, cotton rags, paper wipes, wood towel rods and similar materials that result from the clean-up of the vessels used to manufacture AP-based propellants (EPA, 1998). As a general description, this surrogate gets far closer to the waste stream treated at LANL than the diesel and dunnage waste surrogate. However, there are two major reasons this surrogate was not ultimately selected to represent this LANL waste stream. The first reason is that LANL does not treat AP through open burning so these emission factors are not accurately representative of the wastes treated at LANL. The second and more important reason for not choosing this waste surrogate is that the trial-run execution for the development of emission factors for the AP-manufacturing surrogate waste was determined to be erroneously flawed and thus was not used to represent any waste stream that is treated by open burning at LANL.

Specifically, it was determined that the surrogate waste used for the trials was not truly representative of a real manufacturing waste because of the way the propellant was placed in contact with the combustible materials. One-inch cubes were placed randomly on top and in contact with the combustible materials rather than dispersed on the materials as a powder as the waste stream would actually be generated. Because of this type of cube dispersion all of the trials resulted in holes in the stainless steel pan. The unique mix of emission products, the melted plastic, and the rate of conversion of N to NOx observed for the surrogate AP-manufacturing waste demonstrated that this burn was very different from all other burns that involved energetic materials (EPA, 1998).

An additional consideration taken into account during the development of an emission factor list for this waste stream is the potential for dioxin and furan formation. Dioxins and furans are formed from burning almost any kind of material, including forest fires, residential wood combustion, and residential oil heating (EPA 1997a). The factors that affect dioxin formation include temperature, time and turbulence, oxygen, carbon, chlorine, bromine, catalysts, and humidity. Precursors to the formation of dioxins/furans within the lower range of temperatures (200-400 ^{o}C), rely heavily on the presence of the products of incomplete combustion to include chlorine compounds, halogens, soot or fly ash, and metals (Zhang et. al, 2017). These compounds generally are not present in the waste treated by open burning for the reasons described below, and the temperature at which treatment events occur is sustained well above this lower temperature range. The temperature of the propane burners is in excess of 1400 degrees Fahrenheit (^{o}F) or 760 ^{o}C. The temperature of the burn area stays consistently above 1800 ^{o}F (approximately 982 ^{o}C). The types of explosives burned at the TA-16-388 Flash Pad most often range in burn temperature from approximately 1070-2030 ^{o}C and often make up a large percentage of the waste being treated. Temperatures exceeding 400 ^{o}C are documented to provide destruction at a faster pace than formation (Zhang et. al, 2017). At higher temperatures (650–900 °C), there is a very close dependence of the formation of chlorinated and nonchlorinated aromatic compounds with residence time in a combustion and/or afterburning chamber with the presence of the necessary parameters (Wielgosiński, 2011). Again, this is not the case in treatment events at the TA-16-388 Flash Pad. Because of the system design and operations of the propane burning, there is minimal residence time for gases (and soot/carbon if present) to be trapped with catalysts (metals). Additionally, the air turbulence of the operation of two propane burners in an open air environment decrease any residence time further. Also, due to the system design and operations of the treatment process, there is sufficient available oxygen for complete combustion, while carbon is present fundamentally as a part of an explosive waste stream, it is actively being burned by the appropriate treatment method rather than smoldering and generating any char or soot as necessary to form dioxin/furan compounds. Chlorine and halogens are generally not present in the waste treated by open burning. Paper and small plastic bags (making up less than 1%) may be the only materials for potentially chlorine-producing compounds treated at LANL. While metals are present within some of the waste streams treated by open burning, the intent of the waste treatment activity is to burn any explosives contamination off of the metal, not to vaporize the metal. Lastly, though most of the waste treated by controlled open burning at the TA-16-388 Flash Pad is wetted waste, the water present is evaporated off the waste explosive as the waste is burned. The temperature of the burn is high enough that there is no smoldering, char, or soot formation within the process, that would be necessary for dioxin formation. Very little ash is generated by the treatment process overall.

Dioxin/furan formation can be avoided by ensuring that the process of combustion is complete. To ensure complete combustion an adequate oxygen supply is necessary as well as ensuring the three T's of combustion (temperature, time, and turbulence). This documented temperature of treatment events is more than sufficient to ensure that the reactive characteristic (explosives content) within the waste is eliminated. The TA-16-388 Flash Pad internal operating procedures require that, for all burn events, the waste must continue to be treated until the certified operator determines visually that the waste is fully treated. The multidirectional propane burners ensure that high combustion turbulence is maintained throughout the treatment event. Therefore, it is unlikely that dioxins and furans could be formed during the OB operations currently conducted at LANL.

3.3 Emission Factors for Open Burning of Liquids

The explosives-contaminated solvent waste stream historically consisted of oils and solvents contaminated with explosives. Due to changes in processes and improved waste characterization, this waste stream has decreased considerably in recent history. No oils and most solvents will not be treated by open burning in the future. The only solvent that may be treated at the TA-16-388 Flash Pad is dimethyl sulfoxide (DMSO) which contains 25 percent or greater dissolved explosives.

No emission factors were identified for burning explosives-contaminated liquids. Also, DMSO is not a petroleum product; therefore, emission factors from burning of fuel oil used in past analyses are not applicable. This waste stream is treated infrequently so no emission factors specific to DMSO have been incorporated into the assessment. The trace solvents discussed for the surrogate waste streams above serve as solvent representation.

3.4 Emission Factors for Open Burning of Propane

Propane is burned to improve combustion efficiency of explosives and explosives-contaminated waste streams. A typical burn uses two burners at a time for approximately 30 minutes per burn. The two burners together consume approximately 1 gallon of propane per minute for a total of 30 gallons (127.2 lbs) per burn. Emissions from burning the propane are additive to the emissions from burning the waste. The emission factors were obtained from Chapter 1.5, Table 1.5-1 of AP-42 (EPA, 2008). The commercial boiler emission factors were used because the heat input capacities for commercial boilers are generally between 0.3 and 10 million British Thermal Units per hour. No toxic air pollutant emission factors were located, but propane is a very clean-burning fuel and products of incomplete combustion should be minimal. Emission factors are shown in Table 3-2.

Table 3-1.

Emission Factors by Surrogate Waste Streams and Combined Waste Stream

Name of Pollutant	TNT Emission Factor [1]	M31A1E1 Emission Factor	M-43 Emission Factor	PBXN-110 Emission Factor	Diesel and Dunnage Emission Factor	Combined Emission Factor[2]	Surrogate Name of Max Emission Factor
1,2,4-Trimethylbenzene			3.87E-07	4.25E-07	2.43E-04	2.43E-04	Diesel and Dunnage
sec-Butylbenzene		3.43E-07	4.53E-07	1.10E-06	5.09E-04	5.09E-04	Diesel and Dunnage
1,3,5-Trimethylbenzene		4.29E-08	9.07E-08	2.99E-07	5.57E-04	5.57E-04	Diesel and Dunnage
1,3-Butadiene			9.07E-08	4.98E-07	1.34E-06	1.34E-06	Diesel and Dunnage
1-Butene		2.29E-07	2.72E-07	5.97E-07	4.69E-06	4.69E-06	Diesel and Dunnage
1-Hexene		1.07E-07			2.19E-06	2.19E-06	Diesel and Dunnage
1-Pentene		3.55E-08	9.07E-08	9.95E-08	1.72E-06	1.72E-06	Diesel and Dunnage
2,2,4-Trimethylpentane		1.29E-07			6.97E-06	6.97E-06	Diesel and Dunnage
2,2-Dimethylbutane		4.29E-08				4.29E-08	M31A1E1
2,3,4-Trimethylpentane					1.38E-06	1.38E-06	Diesel and Dunnage
2,3-Dimethylbutane		3.55E-08			2.06E-06	2.06E-06	Diesel and Dunnage
2,3-Dimethylhexane					5.40E-06	5.40E-06	Diesel and Dunnage
2,3-Dimethylpentane					3.33E-06	3.33E-06	Diesel and Dunnage
2,4,4-Trimethyl-1-pentene		8.58E-08	9.07E-08	1.99E-07		1.99E-07	PBXN-110
2,4-Dimethylhexane				1.99E-07	6.42E-06	6.42E-06	Diesel and Dunnage
2,4-Dimethylpentane					2.16E-06	2.16E-06	Diesel and Dunnage
2,5-Dimethylhexane					1.11E-05	1.11E-05	Diesel and Dunnage
2-Methyl-1-butene			9.07E-08	1.99E-07	1.05E-06	1.05E-06	Diesel and Dunnage
2-Methyl-2-butene			9.07E-08			9.07E-08	M-43
2-Methylheptane		3.44E-08	9.07E-08		4.42E-05	4.42E-05	Diesel and Dunnage
2-Methylhexane		4.29E-08	1.81E-07		1.38E-05	1.38E-05	Diesel and Dunnage
2-Methylnaphthalene					2.18E-05	2.18E-05	Diesel and Dunnage
2-Methylpentane		6.89E-08			9.47E-06	9.47E-06	Diesel and Dunnage
3-Ethylhexane, 3-Methylheptane		1.07E-07	9.07E-08		5.90E-05	5.90E-05	Diesel and Dunnage

Table 3-1. Emission Factors by Surrogate Waste Streams and Combined Waste Stream (continued)

Name of Pollutant	TNT Emission Factor [1]	M31A1E1 Emission Factor	M-43 Emission Factor	PBXN-110 Emission Factor	Diesel and Dunnage Emission Factor	Combined Emission Factor[2]	Surrogate Name of Max Emission Factor
3-Methyl-1-butene			9.07E-08	1.99E-07		1.99E-07	PBXN-110
3-Methylhexane					1.55E-05	1.55E-05	Diesel and Dunnage
3-Methylpentane		3.77E-08			5.08E-06	5.08E-06	Diesel and Dunnage
Acenaphthylene					6.71E-06	6.71E-06	Diesel and Dunnage
Acetophenone					1.74E-07	1.74E-07	Diesel and Dunnage
Acetylene		1.02E-06	5.89E-06	3.09E-06	9.52E-05	9.52E-05	Diesel and Dunnage
Aluminum					7.13E-07	7.13E-07	Diesel and Dunnage
Anthracene					1.02E-07	1.02E-07	Diesel and Dunnage
Aromative (e.g. Styrene)		5.43E-05	2.81E-06	7.07E-06	2.29E-03	2.29E-03	Diesel and Dunnage
Barium		4.20E-07			1.61E-07	4.20E-07	M31A1E1
Benzene		9.98E-07	1.76E-06	4.88E-06	7.84E-05	7.84E-05	Diesel and Dunnage
Benzo(a)anthracene					9.81E-07	9.81E-07	Diesel and Dunnage
Benzo(a)pyrene					7.42E-07	7.42E-07	Diesel and Dunnage
Benzo(b)fluoranthene					7.84E-07	7.84E-07	Diesel and Dunnage
Benzo(ghi)perylene					3.45E-07	3.45E-07	Diesel and Dunnage
Benzo(k)fluoranthene					7.46E-07	7.46E-07	Diesel and Dunnage
Benzyl alcohol		1.91E-09			3.96E-05	3.96E-05	Diesel and Dunnage
Biphenyl					6.45E-06	6.45E-06	Diesel and Dunnage
Butylbenzyl phthalate(85-68-7)					1.22E-07	1.22E-07	Diesel and Dunnage
Carbon Tetrachloride		6.89E-08				6.89E-08	Diesel and Dunnage
Chromium		3.97E-07				3.97E-07	M31A1E1
Chrysene					9.33E-07	9.33E-07	Diesel and Dunnage
cis-2-Butene		1.29E-07	9.07E-08	1.99E-07		1.99E-07	PBXN-110
cis-2-Pentene			9.07E-08			9.07E-08	M-43
CO	2.80E-02	1.66E-04	1.40E-03	2.32E-02	2.98E-02	2.98E-02	Diesel and Dunnage
CO2		6.45E-01	7.73E-01	1.04E+00	1.63E+00	1.63E+00	Diesel and Dunnage
Copper		6.31E-06				6.31E-06	M31A1E1
Cyclohexane		3.55E-08	9.07E-08		2.67E-05	2.67E-05	Diesel and Dunnage

Table 3-1. Emission Factors by Surrogate Waste Streams and Combined Waste Stream (continued)

Name of Pollutant	TNT Emission Factor [1]	M31A1E1 Emission Factor	M-43 Emission Factor	PBXN-110 Emission Factor	Diesel and Dunnage Emission Factor	Combined Emission Factor[2]	Surrogate Name of Max Emission Factor
Cyclopentane		4.29E-08	9.07E-08	9.95E-08	1.53E-06	1.53E-06	Diesel and Dunnage
Dibenz(a,h)anthracene					2.00E-07	2.00E-07	Diesel and Dunnage
Diethyl phthalate		6.58E-08			7.00E-08	7.00E-08	Diesel and Dunnage
Dimethyl phthalate					1.88E-07	1.88E-07	Diesel and Dunnage
Di-n-butyl phthalate		3.30E-07			1.46E-07	3.30E-07	M31A1E1
Di-n-octyl phthalate					9.19E-07	9.19E-07	Diesel and Dunnage
Ethane		6.38E-08	1.81E-07	9.95E-07	1.15E-05	1.15E-05	Diesel and Dunnage
Ethyl chloride		6.89E-08				6.89E-08	M31A1E1
Ethylbenzene		4.44E-07	3.42E-07	7.96E-07	5.49E-05	5.49E-05	Diesel and Dunnage
Ethylene		9.78E-07	4.81E-06	6.67E-06	7.43E-05	7.43E-05	Diesel and Dunnage
Fluoranthene					7.85E-07	7.85E-07	Diesel and Dunnage
HCL			9.97E-04	1.79E-04		9.97E-04	M-43
i-Butane		7.11E-08			1.24E-06	1.24E-06	Diesel and Dunnage
i-Butene		1.51E-07	5.44E-07	1.29E-06	2.26E-06	2.26E-06	Diesel and Dunnage
Indeno(1,2,3-cd)pyrene					2.83E-07	2.83E-07	Diesel and Dunnage
i-Pentane			9.07E-08		1.08E-05	1.08E-05	Diesel and Dunnage
i-Propylbenzene					1.03E-04	1.03E-04	Diesel and Dunnage
m- & p-Xylene		1.33E-06	6.83E-07	7.96E-07	4.52E-04	4.52E-04	Diesel and Dunnage
Methane					8.72E-05	8.72E-05	Diesel and Dunnage
Methyl chloroform		3.44E-08				3.44E-08	M31A1E1
Methylchloride		2.84E-07		1.81E-07		2.84E-07	M31A1E1
Methylcyclohexane		3.30E-07			1.56E-04	1.56E-04	Diesel and Dunnage
Methylcyclopentane					9.93E-06	9.93E-06	Diesel and Dunnage
Methylenechloride		7.46E-07				7.46E-07	M31A1E1
m-Ethyltoluene		8.58E-08		1.99E-07	1.28E-04	1.28E-04	Diesel and Dunnage
Naphthalene					8.38E-05	8.38E-05	Diesel and Dunnage
n-Butane		3.44E-07	9.07E-08	9.95E-08	4.60E-06	4.60E-06	Diesel and Dunnage
n-Decane		3.55E-08	8.16E-07	1.29E-06	1.97E-03	1.97E-03	Diesel and Dunnage

Table 3-1. Emission Factors by Surrogate Waste Streams and Combined Waste Stream (continued)

Name of Pollutant	TNT Emission Factor [1]	M31A1E1 Emission Factor	M-43 Emission Factor	PBXN-110 Emission Factor	Diesel and Dunnage Emission Factor	Combined Emission Factor[2]	Surrogate Name of Max Emission Factor
n-Heptane			9.07E-08		5.90E-05	5.90E-05	Diesel and Dunnage
n-Hexane			9.07E-08		1.60E-05	1.60E-05	Diesel and Dunnage
Nitrogen dioxide (peroxide)		9.67E-05	4.69E-04	2.82E-04	5.07E-05	4.69E-04	M-43
Nitrogen Oxide		1.18E-03	6.28E-03	2.62E-03	7.99E-04	6.28E-03	M-43
Nitrogen Oxides	7.50E-02					7.50E-02	TNT
n-Nonane		4.29E-08		1.99E-07	1.03E-03	1.03E-03	Diesel and Dunnage
n-Octane		3.55E-08	9.07E-08		2.48E-04	2.48E-04	Diesel and Dunnage
Non-methane Organic Compound		1.03E-07	4.99E-05	1.07E-04	7.84E-03	7.84E-03	Diesel and Dunnage
n-Pentane					9.05E-06	9.05E-06	Diesel and Dunnage
n-Propylbenzene		1.72E-07		9.95E-08	8.16E-05	8.16E-05	Diesel and Dunnage
OCDD					1.03E-11	1.03E-11	Diesel and Dunnage
o-Ethyltoluene		3.90E-07		2.99E-07		3.90E-07	M31A1E1
o-Xylene		3.44E-07	9.07E-08	3.75E-07	1.25E-04	1.25E-04	Diesel and Dunnage
Particulates	9.00E-02					9.00E-02	TNT
Perylene					1.72E-07	1.72E-07	Diesel and Dunnage
p-Ethyltoluene		7.11E-08	1.81E-07	4.25E-07	1.53E-04	1.53E-04	Diesel and Dunnage
Phenanthrene					7.17E-06	7.17E-06	Diesel and Dunnage
Phenol					1.56E-05	1.56E-05	Diesel and Dunnage
PM10		9.10E-01	1.18E-03	4.87E-01	5.44E-03	9.10E-01	M31A1E1
Propane		3.08E-07		2.99E-07	2.22E-06	2.22E-06	Diesel and Dunnage
Propene			1.09E-06	2.99E-06	1.30E-05	1.30E-05	Diesel and Dunnage
Pyrene					7.06E-07	7.06E-07	Diesel and Dunnage
Styrene		2.57E-07			4.99E-05	4.99E-05	Diesel and Dunnage
Sulfur Dioxide		1.22E-03	1.18E-04	3.47E-04	1.88E-04	1.22E-03	M31A1E1
Toluene		2.84E-07	5.44E-07		1.22E-04	1.22E-04	Diesel and Dunnage
Total Alkanes (Paraffins)		2.33E-06	5.44E-07		3.50E-03	3.50E-03	Diesel and Dunnage
Total Alkenes (Olefins)		2.57E-06	1.33E-05	1.59E-05	1.93E-04	1.93E-04	Diesel and Dunnage

Table 3-1. Emission Factors by Surrogate Waste Streams and Combined Waste Stream (continued)

Name of Pollutant	TNT Emission Factor [1]	M31A1E1 Emission Factor	M-43 Emission Factor	PBXN-110 Emission Factor	Diesel and Dunnage Emission Factor	Combined Emission Factor[2]	Surrogate Name of Max Emission Factor
Total Non-methane Hydrocarbons/NMHC		9.88E-05	4.13E-05	5.11E-05	1.20E-02	1.20E-02	Diesel and Dunnage
Total Unidentified Hydrocarbons		1.92E-05	2.47E-05	4.41E-05	6.04E-03	6.04E-03	Diesel and Dunnage
trans-2-Butene		5.19E-08	1.81E-07	3.98E-07	2.91E-06	2.91E-06	Diesel and Dunnage
trans-2-Pentene					1.08E-06	1.08E-06	Diesel and Dunnage
Vinyl Chloride				2.23E-07		2.23E-07	PBXN-110
Vinylidene Chloride		2.15E-07				2.15E-07	M31A1E1
Volatile Organic Compounds	5.50E-04					5.50E-04	TNT
Zinc		4.14E-07			6.26E-05	6.26E-05	Diesel and Dunnage

[1] Emission factors are displayed as a fraction of grams of pollutant per grams of waste treated.

[2] The highest emission factor of all the surrogate waste streams was included within the combined emission factor to provide the most conservative set of emission factors possible.

Table 3-2
Emission Factors for Propane

Contaminant	Emission Factor (lb/1000 gal)	Emission Factor (lb/lb)
Nitrogen Oxides	13	3.07E-03
Carbon Monoxide	7.5	1.77E-03
PM10	0.7	1.65E-04
PM2.5	0.7	1.65E-04
Sulfur Dioxide	9	2.12E-03
Nonmethane Hydrocarbons	1	2.36E-04

4.0 SCREENING LEVELS

Screening levels for air and soil were used to evaluate the potential impacts of contaminants from the air emissions of open burning treatment activities to human health and the environment. The *Draft Final Open Burning/Open Detonation Permitting Guidelines* (EPA 2002b) drafted by the EPA suggest that compliance with ambient air quality standards (AAQS) should be evaluated by determining the maximum off-site exposure. The maximum on-site and off-site exposures should be evaluated for toxic air pollutants. Screening levels additional to those of AAQS are shown in Table 4-1.

4.1 Ambient Air Quality Standards

EPA has established national AAQS (NAAQS) for particulate matter (PM_{10} and $PM_{2.5}$), lead, sulfur dioxide, carbon monoxide, nitrogen dioxide, and ozone. New Mexico Ambient Air Quality Standards (NMAAQS) are established for sulfur dioxide, carbon monoxide, and nitrogen dioxide. Both the NAAQS and NMAAQS are set for multiple averaging periods ranging from 1 hour to an annual basis. For EPA and NMED air permitting purposes, the ambient standards do not apply within the boundary of the permitted facility. This analysis followed this long-standing protocol.

The screening analysis did not include the NAAQS for ozone. Dispersion models such as OBODM do not simulate photochemical reactions and ozone formation impacts are not considered significant (EPA, 2002). NMED does not require modeling for ozone as part of the air quality permit process. Also, based on LANL waste minimization procedures and pollution prevention practices to eliminate lead from explosives processes to the extent practicable, a screening analysis was not conducted for the lead NAAQS because no lead emissions are predicted to occur from open burning.

4.2 Toxic Air Pollutant Screening Levels

The *Draft Final Open Burning/Open Detonation Permitting Guidelines* (EPA 2002b) suggest evaluating both long-term (chronic and cancer) and short-term (acute) risk-based impacts as follows:

Short-term impacts were evaluated using the acute inhalation exposure concentrations (AIEC) from the Human Health Risk Assessment Protocol Companion Database (HHRAP Database) to EPA's *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA, 2016). This database includes the acute inhalation sources listed in Section 4.1.4 of the *Draft Final Open Burning/Open Detonation Permitting Guidelines* (EPA, 2002b). The Non-Cancer Acute Inhalation RELs for Airborne Toxicants were also listed as established in the Air Toxics Hot Spots Program's Guidance Manual for Preparation of Health Risk Assessments (Appendix L) developed by the California Office of Environmental Health Hazard Assessment (CA OEHHA, 2015). The available data from the HHRAP Database (AEIC) or the datasets for the RELs (CA OEHHA, 2019) were used for the assessments in Table 5-3 and 5-4. Where both databases provided a value for a given constituent, the lesser and more conservative of the two values was applied. The CA OEHHA data was also used for the Non-Cancer Chronic Inhalation RELs.

Long-term chronic non-cancer impacts were evaluated using the Regional Screening Levels (RSLs) - Generic Tables (EPA, 2019). For the EPA RSLs, the Non-Cancer Resident Air RSL Chronic value for THI = 0.1 was listed in Table 4.1 and in Attachment A. This value was compared to the CA-OEHHA non-cancer chronic reference exposure level (REL) (CA OEHHA, 2019) provided in $\mu g/m^3$. Where the two databases provided a chronic RSL for the same chemical constituent, the lesser and more conservative of the two values was used to compare to the annual impact concentrations.

4.3 Deposition Screening Levels

Screening levels for soil deposition were compared to an estimated 10-year impact to show a quantitative estimate over the anticipated lifetime of the permit. Deposition of pollutants was compared to the NMED Human Health Residential Soil Screening Levels (SSLs) (NMED, 2019) where available as a Cancer Residential Soil Screening Level or as a Noncancer Residential Soil Screening Level. Where NMED values for Cancer or Noncancer Resident Soil Screening Levels were not listed or available, the lesser of EPA RSLs for Carcinogenic Target Risk and/or Noncancer Child Hazard Index (also known as Target Hazard Index) (EPA, 2019) were evaluated where available. The estimated 10-year soil concentrations were also compared to the LANL-derived ecological screening levels (ESLs) obtained from ECORISK Database, Version 3.1 (LANL, 2019). Comparing the estimated 10-year impact to soil for these screening levels in Table 4-1 covers the potential impact to any human or ecological receptors that come in contact with the area surrounding the TA-16-388 Flash Pad.

Table 4-1

Open Burning Screening Levels for Acute, Chronic, and Soil - TA-16-388 Flash Pad

Name of Pollutant	CAS #	Air Inhalation Emission Concentration (1) (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Acute Reference Exposure Level (2) (REL) (µg/m^3)	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (3) (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for (4) THI = 0.1 (µg/m3)	NMED Cancer - Residential Soil TR=1E-05 (5) (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (5) (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (4) (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (5) (mg/kg)	Minimum LANL ESL (6) mg/kg
1,2,4-Trimethylbenzene	95-63-6	NA	NA	NA	6.30E+00	NA	NA	7.80E+01	5.00E+01	NA
sec-Butylbenzene	135-98-8	NA	NA	NA	NA	NA	NA	NA	7.80E+02	NA
1,3,5-Trimethylbenzene	108-67-8	1.25E+05	NA	NA	6.30E+00	NA	NA	NA	2.70E+01	NA
1,3-Butadiene	106-99-0	NA	6.60E+02	2.00E+00	2.10E-01	6.86E-01	2.30E+00	7.60E-02	1.80E-01	NA
1-Butene	106-98-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Hexene	592-41-6	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Pentene	109-67-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2,4-Trimethylpentane	540-84-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dimethylbutane	75-83-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3-Dimethylbutane	79-29-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3-Dimethylhexane	584-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3-Dimethylpentane	565-59-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylhexane	589-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylpentane	108-08-7	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,5-Dimethylhexane	592-13-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-1-butene	563-46-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-2-butene	513-35-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylheptane	592-27-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylhexane	591-76-4	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	2.32E+02	NA	2.40E+01	1.60E+01
2-Methylpentane	107-83-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methyl-1-butene	563-45-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylhexane	589-34-4	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylpentane	96-14-0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	NA	NA	1.20E+02

Table 4-1 (continued)
Open Burning Screening Levels for Acute, Chronic, and Soil - TA-16-388 Flash Pad

Name of Pollutant	CAS #	Air Inhalation Emission Concentration (1) (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Acute Reference Exposure Level (2) (REL) (µg/m^3)	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (3) (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for (4) THI = 0.1 (µg/m3)	NMED Cancer - Residential Soil TR=1E-05 (5) (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (5) (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (4) (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (5) (mg/kg)	Minimum LANL ESL (6) mg/kg
Acetophenone	98-86-2	3.00E+04	NA	NA	NA	NA	7.82E+03	NA	7.80E+02	NA
Acetylene	74-86-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	7429-90-5	NA	NA	NA	5.20E-01	NA	7.80E+04	NA	7.70E+03	NA
Anthracene	120-12-7	6.00E+03	NA	NA	NA	NA	1.74E+04	NA	1.80E+03	6.80E+00
Aromative (e.g. Styrene)			NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	1.50E+03	NA	NA	5.20E-02	NA	1.56E+04	NA	1.50E+03	1.10E+02
Benzene	71-43-2	1.30E+03	2.70E+01	3.00E+00	3.10E+00	1.78E+01	1.14E+02	1.20E+00	8.20E+00	2.40E+01
Benzo(a)anthracene	56-55-3	3.00E+02	NA	NA	NA	1.53E+00	NA	1.10E+00	NA	7.30E-01
Benzo(a)pyrene	50-32-8	6.00E+02	NA	NA	2.10E-04	NA	NA	1.10E-01	1.80E+00	6.20E+01
Benzo(b)fluoranthene	205-99-2	6.00E+02	NA	NA	NA	1.53E+00		1.10E+00	NA	1.80E+01
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	NA	NA	2.50E+01
Benzo(k)fluoranthene	207-08-9	6.00E+02	NA	NA	NA	1.53E+01	NA	1.10E+01	NA	7.10E+01
Benzyl alcohol	100-51-6	6.00E+04	NA	NA	NA	NA	NA	NA	6.30E+02	1.20E+02
Biphenyl, 1,1'-	92-52-4	NA	NA	NA	4.20E-02	8.48E+02	3.91E+04	8.70E+01	4.70E+00	NA
Butyl benzyl phthalate	85-68-7	1.50E+04	NA	NA	NA	NA	NA	2.90E+02	1.30E+03	9.00E+01
Carbon Tetrachloride	56-23-5	1.90E+03	1.90E+03	4.00E+01	1.00E+01	1.07E+01	1.44E+02	6.50E-01	1.00E+01	NA
Chromium	7440-47-3	1.50E+03	NA	NA	NA	9.66E+01	4.52E+04	NA	NA	2.30E+01
Chrysene	218-01-9	6.00E+02	NA	NA	NA	1.53E+02	NA	1.10E+02	NA	3.10E+00
cis-2-Butene	590-18-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-2-Pentene	627-20-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO (2)	630-08-0	NA	2.30E+04	NA	NA	NA	NA	NA	NA	NA
CO2	124-38-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	3.13E+03	NA	3.10E+02	1.40E+01
Cyclohexane	110-82-7	NA	NA	NA	6.30E+02	NA	NA	NA	6.50E+02	NA
Cyclopentane	287-92-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	3.00E+04	NA	NA	NA	1.53E-01	NA	1.10E-01	NA	1.40E+01
Diethyl phthalate	84-66-2	1.50E+04	NA	NA	NA	NA	4.93E+04	NA	5.10E+03	1.00E+02
Dimethyl phthalate	113-11-3	1.50E+04	NA	NA	NA	NA	NA	NA	NA	1.00E+01
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	1.50E+04	NA	NA	NA	NA	6.16E+03	NA	6.30E+02	1.10E-02
Di-n-octyl phthalate	117-84-0	5.00E+04	NA	NA	NA	NA	NA	NA	6.30E+01	9.10E-01
Ethane	74-84-0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl chloride	75-00-3	2.50E+06	NA	3.00E+04	1.00E+03	NA	1.90E+04	NA	1.40E+03	NA

Table 4-1 (continued)
Open Burning Screening Levels for Acute, Chronic, and Soil - TA-16-388 Flash Pad

Name of Pollutant	CAS #	Air Inhalation Emission Concentration (1) (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Acute Reference Exposure Level (2) (REL) (µg/m³)	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (3) (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for (4) THI = 0.1 (µg/m3)	NMED Cancer - Residential Soil TR=1E-05 (5) (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (5) (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (4) (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (5) (mg/kg)	Minimum LANL ESL (6) mg/kg
Ethylbenzene	100-41-4	5.00E+05	NA	2.00E+03	1.00E+02	7.51E+01	3.93E+03	5.80E+00	3.40E+02	NA
Ethylene	74-85-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	1.50E+01	NA	NA	NA	NA	2.32E+03	NA	2.40E+02	1.00E+01
HCL / Hydrogen Chloride	7647-01-0	2.10E+03	2.10E+03	9.00E+00	2.10E+00	NA	NA	NA	2.80E+06	NA
i-Butane	75-28-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
i-Butene	115-11-7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	5.00E+02	NA	NA	NA	1.53E+00	NA	1.10E+00	NA	7.10E+01
i-Pentane	78-78-4	NA	NA	NA		NA	NA	NA	NA	NA
i-Propylbenzene / Cumene	98-82-8	2.46E+05	NA	NA	4.20E+01	NA	2.36E+03	NA	1.90E+02	NA
m- & p-Xylene	108-38-3 & 106-42-3	2.20E+04	NA	NA	1.00E+01	NA	7.64E+02	NA	5.50E+01	1.40E+00
Methane	74-82-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloroform / Trichloroethane, 1,1,1-	71-55-6	6.80E+04	6.80E+04	1.00E+03	5.20E+02	NA	1.44E+04	NA	8.10E+02	2.60E+02
Methylchloride / Chloromethane	74-87-3	2.00E+05	NA	NA	9.40E+00	4.11E+01	2.68E+02	NA	1.10E+01	NA
Methylcyclohexane /	108-87-2	NA	NA	NA	NA	NA	5.50E+03	NA	NA	NA
Methylcyclopentane	96-37-7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	1.40E+04	1.40E+04	4.00E+02	6.30E+01	7.66E+02	4.09E+02	5.70E+01	3.50E+01	2.60E+00
m-Ethyltoluene	620-14-4	NA	NA	NA		NA	NA	NA	NA	NA
Naphthalene	91-20-3	7.50E+04	NA	9.00E+00	3.10E-01	4.97E+01	1.62E+02	3.80E+00	1.30E+01	1.00E+00
n-Butane	106-97-8	NA	NA	NA		NA	NA	NA	NA	NA
n-Decane	124-18-5	NA	NA	NA		NA	NA	NA	NA	NA
n-Heptane	142-82-5	NA	NA	NA	4.20E+01	NA	NA	NA	2.20E+00	NA
n-Hexane	110-54-3	NA	NA	7.00E+03	7.30E+01	NA	6.15E+02	NA	6.10E+01	NA
Nitrogen dioxide (peroxide)	10102-44-0	NA	4.70E+02	NA	NA	NA	NA	NA	NA	NA
Nitrogen Oxide	10024-97-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen Oxides (2)		NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nonane	111-84-2	NA	NA	NA	2.10E+00	NA	NA	NA	1.10E+00	NA
n-Octane	111-65-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-methane Organic Compound/NMHC (2)		NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-1 (continued)
Open Burning Screening Levels for Acute, Chronic, and Soil - TA-16-388 Flash Pad

Name of Pollutant	CAS #	Air Inhalation Emission Concentration (1) (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Acute Reference Exposure Level (2) (REL) (µg/m^3)	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (3) (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for (4) THI = 0.1 (µg/m3)	NMED Cancer - Residential Soil TR=1E-05 (5) (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (5) (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (4) (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (5) (mg/kg)	Minimum LANL ESL (6) mg/kg
n-Pentane	109-66-0	NA	NA	NA	1.00E+02	NA	NA	NA	8.10E+01	NA
n-Propylbenzene	103-65-1	NA	NA	NA	1.00E+02	NA	NA	NA	3.80E+02	NA
OCDD *Screening Limits are for TCDD,2,3,7,8-	TCDD CAS no. 1746-01-6	1.50E+00	NA	NA	4.20E-06	4.90E-05	5.06E-05	4.80E-06	5.10E-06	2.90E-07
o-Ethyltoluene	611-14-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	2.20E+04	NA	NA	1.00E+01	NA	8.05E+02	NA	6.50E+01	1.40E+00
Perylene	198-55-0	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Ethyltoluene	622-96-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	1.00E+03	NA	NA	NA	NA	1.74E+03	NA	NA	5.50E+00
Phenol	108-95-2	5.80E+03	5.80E+03	2.00E+02	2.10E+01	NA	1.85E+04	NA	1.90E+03	7.90E-01
PM10 (2)(3)		NA	NA	NA	NA	NA	NA	NA	NA	NA
Propane	74-98-6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propene / Propylene	115-07-1	NA	NA	3.00E+03	3.10E+02	NA	NA	NA	2.20E+02	NA
Pyrene	129-00-0	1.50E+04	NA	NA	NA	NA	1.74E+03	NA	1.80E+02	1.00E+01
Styrene	100-42-5	2.10E+04	2.10E+04	9.00E+02	1.00E+02	NA	7.26E+03	NA	6.00E+02	1.20E+00
Sulfur Dioxide (2)	7446-09-5	NA	6.60E+02	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	3.70E+04	3.70E+04	3.00E+02	5.20E+02	NA	5.23E+03	NA	4.90E+02	2.30E+01
Total Alkanes (Paraffins)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Non-methane Hydrocarbons / NMHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Unidentified Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-2-Butene	624-64-6	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-2-Pentene	646-04-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	75-01-4	1.80E+05	1.80E+05	NA	1.00E+01	7.42E-01	1.13E+02	5.90E-02	7.00E+00	1.20E-01
Vinylidene Chloride / Dichloroethylene (1,1)	75-35-4	7.50E+04	NA	7.00E+01	2.10E+01	NA	4.40E+02	NA	2.30E+01	1.10E+01
Volatile Organic Compounds		NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	3.00E+04	NA	NA	NA		2.35E+04	NA	2.30E+03	4.70E+01

Notes:

Table 4-1 (continued)
Open Burning Screening Levels for Acute, Chronic, and Soil - TA-16-388 Flash Pad

Name of Pollutant	CAS #	Air Inhalation Emission Concentration (1) (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Acute Reference Exposure Level (2) (REL) (µg/m^3)	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (3) (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for (4) THI = 0.1 (µg/m3)	NMED Cancer - Residential Soil TR=1E-05 (5) (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (5) (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (4) (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (5) (mg/kg)	Minimum LANL ESL (6) mg/kg

1. Screening concentrations from acute (1 hr) inhalation exposures concentrations (AIEC) from the Companion Database to EPA's Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (EPA 2016). https://archive.epa.gov/epawaste/hazard/tsd/td/web/mdb/05hhrapchemdat.mdb

2. REL acute 1-hour screening concentrations are from the CA OEHHA, 2019, Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

3. REL chronic annual screening concentrations are from the CA OEHHA, 2019, Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

4. U.S. EPA resident air non-carcinogenic SLs, and resident soil non-carcinogenic and carcinogenic screening levels are from the Regional Screening Levels (RSLs) – Generic Tables. November 2019. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

5. NMED resident soil carcinogenic and non-carcinogenic screening levels are from the New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation. Volume I Soil Screening Guidance for Human Health Risk Assessments. Feb. 2019 (Rev. 2, 6/19/2019). https://www.env.nm.gov/wp-content/uploads/sites/12/2016/11/Final-NMED-SSG-VOL-I_-Rev.2-6_19_19.pdf
6. ESL minimum values and effected receptors are recorded in the LANL ECORSK Database, on CD, LA-UR-12-24548, Los Alamos National Laboratory, Los Alamos, New Mexico, 2019.

5.0 RESULTS

Modeled impacts through the use of OBODM in this report assumed the plume from open burning travels in a straight line in each given hour. This conservatively calculates the maximum impact at a given receptor by maintaining the target receptor along the plume centerline for the averaging period with the least amount of dispersion. The reality for receptors in complex terrain is that this is unlikely to occur due to additional dispersion. Also, the modeling approach used did not utilize any option to reduce downwind concentrations through either deposition or depletion of the plume as it moves from the site to a given receptor. In reality, these mechanisms would substantially lower projected impacts.

EXCEL® spreadsheets were used to calculate constituent-specific air and soil concentrations and for comparison to appropriate screening levels (see Attachment A). The following calculations and comparisons were made:

- Maximum 1-, 3-, 8-, and 24-hour concentrations and annual average concentrations were calculated and compared to the NAAQS and NMAAQS for public receptors;
- Maximum 1-hour concentrations were calculated and compared to AIEC acute values or CA-OEHHA acute RELs, or the lesser of the two where both values exist;
- Annual average air concentrations were calculated and compared to the lesser of the CA-OEHHA Non-Cancer Reference Exposure Level (REL) Chronic (µg/m3) and EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3);
- Soil concentrations from deposition were calculated and compared to NMED Human Health Cancer and Non-Cancer Residential Soil SSLs. Where NMED data was not available, EPA RSL screening levels for Residential Soil were applied. Where both Cancer and Non-Cancer values existed, the lesser of the two was listed in the table provided in Attachment A. EPA Carcinogenic SL values are based on a target risk of $TR=1E^{-06}$ and Non-Carcinogenic SL Child values are based on a Target Hazard Index (THI) of 0.1 (mg/kg). The LANL-derived ESLs are also included for review and comparison and in some cases was the only value available for soil concentrations.
- Concentrations for emission products were calculated whether there was a screening level or not. A comparison of the calculated values from model results with the EPA and NMED ambient air quality standards are summarized in Tables 5-1. In cases where there is a NAAQS and NMAAQS for the same pollutant and same averaging period, the more stringent standard is referenced in the tables. Background concentrations for all forms of particulate matter and sulfur dioxide have been added to model results as specified by NMED and the total value is shown in the tables for comparison to standards (NMED, 2019a).

This analysis was conducted using the highest maximum model result that occurred at any public receptor location. Receptors on LANL property were not used, as is the protocol under NMED modeling guidelines when demonstrating compliance with ambient air quality standards for permit purposes (NMED 2019a). In this respect, NMED follows EPA direction in regards to the definition of *ambient air* which defines where the air quality standards are applicable.

As demonstrated in the Table 5-1, no AAQS are projected to be exceeded by the model results, and all results are conservatively predicted.

Table 5-2a, -2b, and -2c contain a comparison of the calculated values from model results with the acute and chronic air health screening levels and the human health and ecological soil deposition screening levels. Because OBODM cannot estimate deposition in complex terrain such as present within the LANL site, an alternative approach was needed. Gravitational deposition would be significant only for relatively large particles deposited close to the open burning treatment unit. Wet deposition should be insignificant for open burning which occurs infrequently and never during precipitation events. Thus, non-gravitational dry deposition should be the major contributor to contaminant soil concentrations. This type of deposition was conservatively estimated using the calculation provided by the California EPA for air toxics analyses found in the document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (CA OEHHA, 2015).

There are several levels of conservatism present in the deposition estimates using this approach. First, the annual contaminant air concentration used in the calculation is based on running OBODM using the maximum permitted annual waste burned within the hours of the year predicted to yield maximum concentrations from the hourly air concentration model runs. Second, the single maximum annual air concentration is used which is a non-depleted value, e.g. there is no removal of contaminant mass from the plume as a function of downwind distance. In the calculation, it is assumed there is no degradation of organic compounds in the soil over time which also results in an over prediction of soil concentrations during the 10-year estimate. The deposition rate or Dep-rate used was the California EPA recommended value for an uncontrolled source is 0.05 meters/second.

Using this procedure, soil concentrations were calculated using the maximum annual air concentrations for each contaminant predicted by OBODM. The calculation is shown below:

C_s = Dep * X / (K_s * SD * BD * T_t)

Dep = Deposition on the affected soil area per day (ug/m^2/d)

Dep = GLC * Dep-rate * 86,400

GLC = The chemical specific annual ground level concentration from OBODM result and emission factor (ug/m^3)

Dep-rate = 0.05 m/sec (default value for uncontrolled source)

86,400 = Seconds per day conversion factor

X = $[\{e^{-K_s * T_f} - e^{-K_s * T_o}\} / K_s] + T_t$

e = 2.718

K_s = Soil elimination constant = 6.93 x 10^{-9} (no degradation of contaminant in soil assumed)

T_f = End of evaluation period (d) = 3650

T_o = Beginning of evaluation period (d) = 0

T_t = Total days of exposure period T_f - T_o (d) = 3650 (ten-year period)

SD = Soil mixing depth (m) = 0.01 for soil ingestion or dermal pathway (analysis is on Laboratory property)

BD = Soil bulk density (kg/m^3) = 1,333

Table 5-1
TA-16-388 Flash Pad Screening Analysis Worksheet for Ambient Air Quality Standards

Basis	
200	lb waste/hr
6000	lb waste/yr
127.2	lb propane/hr
3816.0	lb propane/yr
1	g/sec contaminant emission rate
lodel Results (X/Q)	
2.78E+00	1-hour maximum value, ug/m^3 per g/sec contaminant
8.35E-01	8th highest overall 1-hour maximum value, ug/m^3 per g/sec contaminant (as applied to 1-hour NO_2 NAAQS)
9.47E-01	3-hour maximum value, ug/m^3 per g/sec contaminant
5.08E-01	8-hour maximum value, ug/m^3 per g/sec contaminant
1.72E-01	24-hour maximum value, ug/m^3 per g/sec contaminant
1.57E-01	High 2nd high 24-hour maximum value, ug/m^3 per g/sec contaminant (as applied to 24-hr PM_{10})
3.86E-02	8th highest overall 24-hour maximum value, ug/m^3 per g/sec contaminant (as applied to 24-hour $PM_{2.5}$ NAAQS)(3)
1.93E-03	Annual maximum value, ug/m^3 per g/sec contaminant

Pollutant	Averaging Time	OB Waste Emisson Factor, lb/lb waste	OB Waste Emission Rate, g/sec	OB Waste Maximum Concentration, ug/m^3	Propane Emission Factor, lb/lb propane	Propane Emission Rate, g/sec	Propane Maximum Concentration, ug/m^3	Maximum Concentration, Total ug/m^3	NAAQS ug/m^3	NMAAQS ug/m^3	Air Quality Standard Exceeded?
Nitrogen Dioxide		7.50E-02			3.07E-03						
(As NOX)	1-hour (3)		1.89E+00	1.58E+00		4.91E-02	4.10E-02	1.6	188.03	none	No
	24-hour		1.89E+00	3.25E-01		4.91E-02	8.44E-03	0.3	none	188.03	No
	Annual		6.47E-03	1.25E-05		1.68E-04	3.25E-07	0.00001	99.66	94.02	No
Carbon Monoxide		2.98E-02			1.77E-03						
	1-hour		7.51E-01	2.09E+00		2.84E-02	7.88E-02	2.2	40069.6	14997.5	No
	8-hour		7.51E-01	3.81E-01		2.84E-02	1.44E-02	0.4	10303.6	9960.1	No
Sulfur Dioxide		1.22E-03			2.12E-03						
	1-hour		3.07E-02	8.54E-02		3.40E-02	9.45E-02				
Background(11)	1-hour			1.32E+01							
Total	1-hour			1.33E+01				13.38	196.40	none	No
	3-hour		3.07E-02	2.91E-02		3.40E-02	3.22E-02	0.06	1309.30	none	No
	24-hour		3.07E-02	5.28E-03		3.40E-02	5.84E-03	0.01	none	261.90	No
	Annual		1.05E-04	2.03E-07		1.17E-04	2.25E-07	0.0000004	none	52.40	No
PM_{10}		9.10E-01			1.65E-04						
	24-hour		2.29E+01	3.61E+00		2.65E-03	4.16E-04				
Background(8)	24-hour			2.30E+01							
Total	24-hour			2.66E+01				26.61	150	none	No
$PM_{2.5}$		9.10E-01			1.65E-04						
	24-hour(3)		2.29E+01	8.85E-01		2.65E-03	1.02E-04				
Background(9)	24-hour			9.45E+00							
Total	24-hour(3)			1.03E+01				10.33	35	none	No
	Annual		7.85E-02	1.52E-04		9.06E-06	1.75E-08				
Background(10)	Annual			4.32E+00							
Total	Annual			4.32E+00				4.32	12	none	No

Notes

1 Maximum concentrations are from public receptors off LANL property for all ambient standards analyses.
2 Calculated maximum concentrations for NMAAQS are based on the first high value from OBODM model runs.
3 Calculated maximum concentrations for the 1-hour NO_2 and 24-hour $PM_{2.5}$ NAAQS are based on the 8th high overall value from OBODM model runs which is more conservative than the high 8th high as specified by NMED Air Dispersion Modeling Guideline, June 2019. OBODM cannot estimate the 8th highest concentration at any one receptor, only the high and second high values.
4 Calculated maximum concentration for the 24-hour PM_{10} NAAQS is based on high 2nd high from OBODM model runs as specified by NMED Air Dispersion Modeling Guideline, March 2019.
5 Emission factor for PM_{10} used also for $PM_{2.5}$ which overpredicts $PM_{2.5}$ concentrations.
6 Particulate matter background concentrations added as specified from NMED Air Dispersion Modeling Guidelines, March 2019.
7 Ambient standards for gases in ug/m^3 are from Table 6.A in the NMED Air Dispersion Modeling Guideline, June 2019.
8 PM10 24-hr background - 2019 JUNE - North Central - Santa Fe - 23 ug/m3 max.
9 PM2.5 24-hr background - 2019 JUNE - North Central - Santa Fe - 98 percentile - 9.45 ug/m3
10 PM2.5 Annual background - 2019 JUNE - North Central - Santa Fe - 4.32 ug/m3
11 SO2 1hr-background - 2019 JUNE - Albuquerque Region - 1-hr background - 15.8 ug/m3 and 1-hour background 99th percentile - 13.2 ug/m3
12 The standard is calculated similarly to the NO2 1-hour standard instructions in section 2.6.4.4, but the fourth highest is used in place of the eighth highest (and 99th percentile is substituted for 98th percentile)

Table 5-2a
Health Screening Level Comparisons – 1-Hour Acute Exposures

Contaminant	CAS No.	Air Inhalation Emission Concentration (AIEC) - acute ($\mu g/m^3$)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute ($\mu g/m^3$)	Screening Level Exceeded?
1,2,4-Trimethylbenzene	95-63-6	NA	NA	NA
sec-Butylbenzene	135-98-8	NA	NA	NA
1,3,5-Trimethylbenzene	108-67-8	1.25E+05	NA	No
1,3-Butadiene	106-99-0	NA	6.60E+02	No
1-Butene	106-98-9	NA	NA	NA
1-Hexene	592-41-6	NA	NA	NA
1-Pentene	109-67-1	NA	NA	NA
2,2,4-Trimethylpentane	540-84-1	NA	NA	NA
2,2-Dimethylbutane	75-83-2	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	NA	NA	NA
2,3-Dimethylbutane	79-29-8	NA	NA	NA
2,3-Dimethylhexane	584-94-1	NA	NA	NA
2,3-Dimethylpentane	565-59-3	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	NA	NA	NA
2,4-Dimethylhexane	589-43-5	NA	NA	NA
2,4-Dimethylpentane	108-08-7	NA	NA	NA
2,5-Dimethylhexane	592-13-2	NA	NA	NA
2-Methyl-1-butene	563-46-2	NA	NA	NA
2-Methyl-2-butene	513-35-9	NA	NA	NA
2-Methylheptane	592-27-8	NA	NA	NA
2-Methylhexane	591-76-4	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA
2-Methylpentane	107-83-5	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	NA	NA	NA
3-Methyl-1-butene	563-45-1	NA	NA	NA
3-Methylhexane	589-34-4	NA	NA	NA
3-Methylpentane	96-14-0	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA
Acetophenone	98-86-2	3.00E+04	NA	No
Acetylene	74-86-2	NA	NA	NA
Aluminum	7429-90-5	NA	NA	NA
Anthracene	120-12-7	6.00E+03	NA	No
Aromative (e.g. Styrene)			NA	NA
Barium	7440-39-3	1.50E+03	NA	No
Benzene	71-43-2	1.30E+03	2.70E+01	No
Benzo(a)anthracene	56-55-3	3.00E+02	NA	No
Benzo(a)pyrene	50-32-8	6.00E+02	NA	No
Benzo(b)fluoranthene	205-99-2	6.00E+02	NA	No
Benzo(ghi)perylene	191-24-2	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	6.00E+02	NA	No
Benzyl alcohol	100-51-6	6.00E+04	NA	No
Biphenyl	92-52-4	NA	NA	NA
Butyl benzyl phthalate	85-68-7	1.50E+04	NA	No
Carbon Tetrachloride	56-23-5	1.90E+03	1.90E+03	No
Chromium	7440-47-3	1.50E+03	NA	No
Chrysene	218-01-9	6.00E+02	NA	No
cis-2-Butene	590-18-1	NA	NA	NA
cis-2-Pentene	627-20-3	NA	NA	NA

Table 5-2a (continued)
Health Screening Level Comparisons – 1-Hour Acute Exposures

Contaminant	CAS No.	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded?
Carbon Monoxide (2)	630-08-0	NA	2.30E+04	No
Carbon Dioxide	124-38-9	NA	NA	NA
Copper	7440-50-8	NA	NA	NA
Cyclohexane	110-82-7	NA	NA	NA
Cyclopentane	287-92-3	NA	NA	NA
Dibenz(a,h)anthracene / Dibenzo(a,h)anthracene	53-70-3	3.00E+04	NA	No
Diethyl phthalate	84-66-2	1.50E+04	NA	No
Dimethyl phthalate	113-11-3	1.50E+04	NA	No
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	1.50E+04	NA	No
Di-n-octyl phthalate	117-84-0	5.00E+04	NA	No
Ethane	74-84-0	NA	NA	-
Ethyl chloride / Chloroethane	75-00-3	2.50E+06	NA	No
Ethylbenzene	100-41-4	5.00E+05	NA	No
Ethylene	74-85-1	NA	NA	NA
Fluoranthene	206-44-0	1.50E+01	NA	No
HCL - Hydrochloric Acid	7647-01-0	2.10E+03	2.10E+03	No
i-Butane	75-28-5	NA	NA	NA
i-Butene	115-11-7	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	5.00E+02	NA	No
i-Pentane	78-78-4	NA	NA	NA
i-Propylbenzene / Cumene	98-82-8	2.46E+05	NA	No
m- & p-Xylene	108-38-3 & 106-42-3	2.20E+04	NA	No
Methane	74-82-8	NA	NA	NA
Methyl chloroform / Trichloroethane, 1,1,1-	71-55-6	6.80E+04	6.80E+04	No
Methyl chloride	74-87-3	2.00E+05	NA	No
Methylcyclohexane	108-87-2	NA	NA	NA
Methylcyclopentane	96-37-7	NA	NA	NA
Methylene chloride / dichloromethane	75-09-2	1.40E+04	1.40E+04	No
m-Ethyltoluene	620-14-4	NA	NA	NA
Naphthalene	91-20-3	7.50E+04	NA	No
n-Butane	106-97-8	NA	NA	NA
n-Decane	124-18-5	NA	NA	NA
n-Heptane	142-82-5	NA	NA	NA
n-Hexane	110-54-3	NA	NA	NA
Nitrogen dioxide / Nitrogen peroxide	10102-44-0	NA	4.70E+02	No
Nitrogen Oxide	10024-97-2	NA	NA	NA
Nitrogen Oxides (2)		NA	NA	NA
n-Nonane	111-84-2	NA	NA	NA
n-Octane	111-65-9	NA	NA	NA
Non-methane Organic Compound /NMHC (2)		NA	NA	NA
n-Pentane	109-66-0	NA	NA	NA
n-Propylbenzene	103-65-1	NA	NA	NA
OCDD *Screening Limits are for TetraCDD, 2,3,7,8-	TCDD CAS no. 1746-01-6	1.50E+00	NA	No
o-Ethyltoluene	611-14-3	NA	NA	NA

Table 5-2a (continued)

Health Screening Level Comparisons – 1-Hour Acute Exposures

Contaminant	CAS No.	Air Inhalation Emission Concentration (AIEC) - acute (μg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (μg/m^3)	Screening Level Exceeded?
o-Xylene	95-47-6	2.20E+04	NA	No
Perylene	198-55-0	NA	NA	NA
p-Ethyltoluene	622-96-8	NA	NA	NA
Phenanthrene	85-01-8	1.00E+03	NA	No
Phenol	108-95-2	5.80E+03	5.80E+03	No
PM10 (2)		NA	NA	NA
Propane	74-98-6	NA	NA	NA
Propene	115-07-1	NA	NA	NA
Pyrene	129-00-0	1.50E+04	NA	No
Styrene	100-42-5	2.10E+04	2.10E+04	No
Sulfur Dioxide (2)	7446-09-5	NA	6.60E+02	No
Toluene	108-88-3	3.70E+04	3.70E+04	No
Total Alkanes (Paraffins)	NA	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	NA	NA	NA
Total Non-methane Hydrocarbons - TNMHC	NA	NA	NA	NA
Total Unidentified Hydrocarbons	NA	NA	NA	NA
trans-2-Butene	624-64-6	NA	NA	NA
trans-2-Pentene	646-04-8	NA	NA	NA
Vinyl Chloride	75-01-4	1.80E+05	1.80E+05	**No**
Vinylidene Chloride / Dichloroethylene, 1,1-	75-35-4	7.50E+04	NA	No
Volatile Organic Compounds		NA	NA	NA
Zinc	7440-66-6	3.00E+04	NA	No

Notes:

1. NA - Chemical Not Available in database
2. Impacts from propane combustion have been added to waste impact concentrations for nitrogen oxides, carbon monoxide, PM10, sulfur dioxide and NMHC.
3. PM10 emissions factor and emissions are the same for PM2.5
3. Screening concentrations from acute (1 hr) inhalation exposures concentrations (AIEC) from the Companion Database to EPA's Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (EPA 2016). https://archive.epa.gov/epawaste/hazard/tsd/td/web/mdb/05hhrapchemdat.mdb

4. REL 1-hour acute screening concentrations are from the CA OEHHA, 2019, Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

Table 5-2b
Health Screening Level Comparisons – Annual Chronic Exposures

Contaminant	CAS No.	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
1,2,4-Trimethylbenzene	95-63-6	NA	6.30E+00	No
sec-Butylbenzene	135-98-8	NA	NA	NA
1,3,5-Trimethylbenzene	108-67-8	NA	6.30E+00	No
1,3-Butadiene	106-99-0	2.00E+00	2.10E-01	No
1-Butene	106-98-9	NA	NA	NA
1-Hexene	592-41-6	NA	NA	NA
1-Pentene	109-67-1	NA	NA	NA
2,2,4-Trimethylpentane	540-84-1	NA	NA	NA
2,2-Dimethylbutane	75-83-2	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	NA	NA	NA
2,3-Dimethylbutane	79-29-8	NA	NA	NA
2,3-Dimethylhexane	584-94-1	NA	NA	NA
2,3-Dimethylpentane	565-59-3	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	NA	NA	NA
2,4-Dimethylhexane	589-43-5	NA	NA	NA
2,4-Dimethylpentane	108-08-7	NA	NA	NA
2,5-Dimethylhexane	592-13-2	NA	NA	NA
2-Methyl-1-butene	563-46-2	NA	NA	NA
2-Methyl-2-butene	513-35-9	NA	NA	NA
2-Methylheptane	592-27-8	NA	NA	NA
2-Methylhexane	591-76-4	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA
2-Methylpentane	107-83-5	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	NA	NA	NA
3-Methyl-1-butene	563-45-1	NA	NA	NA
3-Methylhexane	589-34-4	NA	NA	NA
3-Methylpentane	96-14-0	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA
Acetophenone	98-86-2	NA	NA	NA
Acetylene	74-86-2	NA	NA	NA
Aluminum	7429-90-5	NA	5.20E-01	No
Anthracene	120-12-7	NA	NA	NA
Aromative (e.g. Styrene)		NA	NA	NA
Barium	7440-39-3	NA	5.20E-02	No
Benzene	71-43-2	3.00E+00	3.10E+00	No
Benzo(a)anthracene	56-55-3	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	2.10E-04	No
Benzo(b)fluoranthene	205-99-2	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA
Benzyl alcohol	100-51-6	NA	NA	NA
Biphenyl, 1,1'-	92-52-4	NA	4.20E-02	No
Butyl benzyl phthalate	85-68-7	NA	NA	NA
Carbon Tetrachloride	56-23-5	4.00E+01	1.00E+01	No
Chromium	7440-47-3	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA
cis-2-Butene	590-18-1	NA	NA	NA
cis-2-Pentene	627-20-3	NA	NA	NA

Table 5-2b (continued)

Health Screening Level Comparisons – Annual Chronic Exposures

Contaminant	CAS No.	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
CO (2)	630-08-0	NA	NA	NA
CO2	124-38-9	NA	NA	NA
Copper	7440-50-8	NA	NA	NA
Cyclohexane	110-82-7	NA	6.30E+02	No
Cyclopentane	287-92-3	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA
Dimethyl phthalate	113-11-3	NA	NA	NA
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	NA	NA	NA
Di-n-octyl phthalate	117-84-0	NA	NA	NA
Ethane	74-84-0	NA	NA	NA
Ethyl chloride	75-00-3	3.00E+04	1.00E+03	No
Ethylbenzene	100-41-4	2.00E+03	1.00E+02	No
Ethylene	74-85-1	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA
HCL / Hydrogen Chloride	7647-01-0	9.00E+00	2.10E+00	No
i-Butane	75-28-5	NA	NA	NA
i-Butene	115-11-7	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA
i-Pentane	78-78-4	NA		NA
i-Propylbenzene / Cumene	98-82-8	NA	4.20E+01	No
m- & p-Xylene	108-38-3 & 106-42-3	NA	1.00E+01	No
Methane	74-82-8	NA	NA	NA
Methyl chloroform / Trichloroethane, 1,1,1-	71-55-6	1.00E+03	5.20E+02	No
Methylchloride / Chloromethane	74-87-3	NA	9.40E+00	No
Methylcyclohexane /	108-87-2	NA	NA	NA
Methylcyclopentane	96-37-7	NA	NA	NA
Methylene chloride	75-09-2	4.00E+02	6.30E+01	No
m-Ethyltoluene	620-14-4	NA		NA
Naphthalene	91-20-3	9.00E+00	3.10E-01	No
n-Butane	106-97-8	NA		NA
n-Decane	124-18-5	NA		NA
n-Heptane	142-82-5	NA	4.20E+01	No
n-Hexane	110-54-3	7.00E+03	7.30E+01	No
Nitrogen dioxide (peroxide)	10102-44-0	NA	NA	NA
Nitrogen Oxide	10024-97-2	NA	NA	NA
Nitrogen Oxides (2)		NA	NA	NA
n-Nonane	111-84-2	NA	2.10E+00	No
n-Octane	111-65-9	NA	NA	NA
Non-methane Organic Compound/NMHC (2)		NA	NA	NA
n-Pentane	109-66-0	NA	1.00E+02	No
n-Propylbenzene	103-65-1	NA	1.00E+02	No
OCDD *Screening Limits are for TCDD,2,3,7,8-	TCDD CAS no. 1746-01-6	NA	4.20E-06	No
o-Ethyltoluene	611-14-3	NA	NA	-
o-Xylene	95-47-6	NA	1.00E+01	No
Perylene	198-55-0	NA	NA	NA

Table 5-2b (continued)

Health Screening Level Comparisons – Annual Chronic Exposures

Contaminant	CAS No.	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
p-Ethyltoluene	622-96-8	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA
Phenol	108-95-2	2.00E+02	2.10E+01	No
PM10 (2)(3)		NA	NA	NA
Propane	74-98-6	NA	NA	NA
Propene / Propylene	115-07-1	3.00E+03	3.10E+02	No
Pyrene	129-00-0	NA	NA	NA
Styrene	100-42-5	9.00E+02	1.00E+02	No
Sulfur Dioxide (2)	7446-09-5	NA	NA	NA
Toluene	108-88-3	3.00E+02	5.20E+02	No
Total Alkanes (Paraffins)	NA	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	NA	NA	NA
Total Non-methane Hydrocarbons / NMHC	NA	NA	NA	NA
Total Unidentified Hydrocarbons	NA	NA	NA	NA
trans-2-Butene	624-64-6	NA	NA	NA
trans-2-Pentene	646-04-8	NA	NA	NA
Vinyl Chloride	75-01-4	NA	1.00E+01	No
Vinylidene Chloride / Dichloroethylene (1,1)	75-35-4	7.00E+01	2.10E+01	No
Volatile Organic Compounds	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA

Notes

1. NA - Chemical Not Available in database
2. Impacts from propane combustion have been added to waste impact concentrations for nitrogen oxides, carbon monoxide, PM10, sulfur dioxide and NMHC.
3. PM10 emissions factor and emissions are the same for PM2.5.
4. Chronic REL annual screening concentrations are from the CA OEHHA, 2019, Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values,
   November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf
5. U.S. EPA air non-carcinogenic screening levels are from the Regional Screening Levels (RSLs) – Generic Tables. November 2019.
   https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Table 5-2c
Health and Ecological Screening Level Comparisons – 10-year Residential Soil Exposures

Contaminant	CAS Nos.	Lesser of NMED Cancer or NonCancer Residential Soil SL (mg/kg)	EPA RSLs - Lesser of the Cancer or NonCancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	NMED, EPA, or LANL ESL Screening Levels Exceeded?
1,2,4-Trimethylbenzene	95-63-6	NA	5.00E+01	NA	No
sec-Butylbenzene	135-98-8	NA	7.80E+02	NA	No
1,3,5-Trimethylbenzene	108-67-8	NA	2.70E+01	NA	No
1,3-Butadiene	106-99-0	6.86E-01	7.60E-02	NA	No
1-Butene	106-98-9	NA	NA	NA	NA
1-Hexene	592-41-6	NA	NA	NA	NA
1-Pentene	109-67-1	NA	NA	NA	NA
2,2,4-Trimethylpentane	540-84-1	NA	NA	NA	NA
2,2-Dimethylbutane	75-83-2	NA	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	NA	NA	NA	NA
2,3-Dimethylbutane	79-29-8	NA	NA	NA	NA
2,3-Dimethylhexane	584-94-1	NA	NA	NA	NA
2,3-Dimethylpentane	565-59-3	NA	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	NA	NA	NA	NA
2,4-Dimethylhexane	589-43-5	NA	NA	NA	NA
2,4-Dimethylpentane	108-08-7	NA	NA	NA	NA
2,5-Dimethylhexane	592-13-2	NA	NA	NA	NA
2-Methyl-1-butene	563-46-2	NA	NA	NA	NA
2-Methyl-2-butene	513-35-9	NA	NA	NA	NA
2-Methylheptane	592-27-8	NA	NA	NA	NA
2-Methylhexane	591-76-4	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	2.32E+02	2.40E+01	1.60E+01	No
2-Methylpentane	107-83-5	NA	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	NA	NA	NA	NA
3-Methyl-1-butene	563-45-1	NA	NA	NA	NA
3-Methylhexane	589-34-4	NA	NA	NA	NA
3-Methylpentane	96-14-0	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	1.20E+02	No
Acetophenone	98-86-2	7.82E+03	7.80E+02	NA	No
Acetylene	74-86-2	NA	NA	NA	NA
Aluminum	7429-90-5	7.80E+04	7.70E+03	NA	No
Anthracene	120-12-7	1.74E+04	1.80E+03	6.80E+00	No
Aromative (e.g. Styrene)		NA	NA	NA	NA
Barium	7440-39-3	1.56E+04	1.50E+03	1.10E+02	No
Benzene	71-43-2	1.78E+01	1.20E+00	2.40E+01	No
Benzo(a)anthracene	56-55-3	1.53E+00	1.10E+00	7.30E-01	No
Benzo(a)pyrene	50-32-8	NA	1.10E-01	6.20E+01	No
Benzo(b)fluoranthene	205-99-2	1.53E+00	1.10E+00	1.80E+01	No
Benzo(ghi)perylene	191-24-2	NA	NA	2.50E+01	No
Benzo(k)fluoranthene	207-08-9	1.53E+01	1.10E+01	7.10E+01	No
Benzyl alcohol	100-51-6	NA	6.30E+02	1.20E+02	No
Biphenyl	92-52-4	8.48E+02	4.70E+00	NA	No
Butylbenzyl phthalate	85-68-7	NA	2.90E+02	9.00E+01	No
Carbon Tetrachloride	56-23-5	1.07E+01	6.50E-01	NA	No
Chromium (total)	7440-47-3	9.66E+01	NA	2.30E+01	No

Table 5-2c (continued)
Health and Ecological Screening Level Comparisons – 10-year Residential Soil Exposures

Contaminant	CAS Nos.	Lesser of NMED Cancer or NonCancer Residential Soil SL (mg/kg)	EPA RSLs - Lesser of the Cancer or NonCancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	NMED, EPA, or LANL ESL Screening Levels Exceeded?
Chrysene	218-01-9	1.53E+02	1.10E+02	3.10E+00	No
cis-2-Butene	590-18-1	NA	NA	NA	NA
cis-2-Pentene	627-20-3	NA	NA	NA	NA
CO	630-08-0	NA	NA	NA	NA
CO2	124-38-9	NA	NA	NA	NA
Copper	7440-50-8	3.13E+03	3.10E+02	1.40E+01	No
Cyclohexane	110-82-7	NA	6.50E+02	NA	No
Cyclopentane	287-92-3	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	1.53E-01	1.10E-01	1.40E+01	No
Diethyl phthalate	84-66-2	4.93E+04	5.10E+03	1.00E+02	No
Dimethyl phthalate	113-11-3	NA	NA	1.00E+01	No
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	6.16E+03	6.30E+02	1.10E-02	No
Di-n-octyl phthalate	117-84-0	NA	6.30E+01	9.10E-01	No
Ethane	74-84-0	NA	NA	NA	NA
Ethyl chloride	75-00-3	1.90E+04	1.40E+03	NA	No
Ethylbenzene	100-41-4	7.51E+01	5.80E+00	NA	No
Ethylene	74-85-1	NA	NA	NA	NA
Fluoranthene	206-44-0	2.32E+03	2.40E+02	1.00E+01	No
HCL / Hydrogen Chloride	7647-01-0	NA	2.80E+06	NA	No
i-Butane	75-28-5	NA	NA	NA	NA
i-Butene	115-11-7	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	1.53E+00	1.10E+00	7.10E+01	No
i-Pentane	78-78-4	NA	NA	NA	NA
i-Propylbenzene / Cumene	98-82-8	2.36E+03	1.90E+02	NA	No
m- & p-Xylene	108-38-3 & 106-42-3	7.64E+02	5.50E+01	1.40E+00	No
Methane	74-82-8	NA	NA	NA	NA
Methyl chloroform	71-55-6	1.44E+04	8.10E+02	2.60E+02	No
Methyl chloride	74-87-3	4.11E+01	1.10E+01	NA	No
Methyl cyclohexane	108-87-2	5.50E+03	NA	NA	No
Methyl cyclopentane	96-37-7	NA	NA	NA	NA
Methylene chloride	75-09-2	4.09E+02	3.50E+01	2.60E+00	No
m-Ethyltoluene	620-14-4	NA	NA	NA	NA
Naphthalene	91-20-3	4.97E+01	3.80E+00	1.00E+00	No
n-Butane	106-97-8	NA	NA	NA	NA
n-Decane	124-18-5	NA	NA	NA	NA
n-Heptane	142-82-5	NA	2.20E+00	NA	No
n-Hexane	110-54-3	6.15E+02	6.10E+01	NA	No
Nitrogen dioxide (peroxide)	10102-44-0	NA	NA	NA	NA
Nitrogen Oxide	10024-97-2	NA	NA	NA	NA
Nitrogen Oxides		NA	NA	NA	NA
n-Nonane	111-84-2	NA	1.10E+00	NA	No
n-Octane	111-65-9	NA	NA	NA	NA
Non-methane Organic Compound		NA	NA	NA	NA
n-Pentane	109-66-0	NA	8.10E+01	NA	No
n-Propylbenzene	103-65-1	NA	3.80E+02	NA	No

Table 5-2c (continued)
Health and Ecological Screening Level Comparisons – 10-year Residential Soil Exposures

Contaminant	CAS Nos.	Lesser of NMED Cancer or NonCancer Residential Soil SL (mg/kg)	EPA RSLs - Lesser of the Cancer or NonCancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	NMED, EPA, or LANL ESL Screening Levels Exceeded?
OCDD *Screening Limits are for TCDD, 2,3,7,8	TCDD CAS no. 1746-01-6	4.90E-05	4.80E-06	2.90E-07	No
o-Ethyltoluene	611-14-3	NA	NA	NA	NA
o-Xylene	95-47-6	8.05E+02	6.50E+01	1.40E+00	No
Perylene	198-55-0	NA	NA	NA	NA
p-Ethyltoluene	622-96-8	NA	NA	NA	NA
Phenanthrene	85-01-8	1.74E+03	NA	5.50E+00	No
Phenol	108-95-2	1.85E+04	1.90E+03	7.90E-01	No
PM10		NA	NA	NA	NA
Propane	74-98-6	NA	NA	NA	NA
Propene / Propylene	115-07-1	NA	2.20E+02	NA	No
Pyrene	129-00-0	1.74E+03	1.80E+02	1.00E+01	No
Styrene / Ethenylbenzene	100-42-5	7.26E+03	6.00E+02	1.20E+00	No
Sulfur Dioxide	7446-09-5	NA	NA	NA	NA
Toluene / Methylbenzene	108-88-3	5.23E+03	4.90E+02	2.30E+01	No
Total Alkanes (Paraffins)	NA	NA	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	NA	NA	NA	NA
Total Non-methane Hydrocarbons / NMHC	NA	NA	NA	NA	NA
Total Unidentified Hydrocarbons	NA	NA	NA	NA	NA
trans-2-Butene	624-64-6	NA	NA	NA	NA
trans-2-Pentene	646-04-8	NA	NA	NA	NA
Vinyl Chloride	75-01-4	7.42E-01	5.90E-02	1.20E-01	No
Vinylidene Chloride / Dichloroethylene, 1,1-	75-35-4	4.40E+02	2.30E+01	1.10E+01	No
Volatile Organic Compounds	NA	NA	NA	NA	NA
Zinc	7440-66-6	2.35E+04	2.30E+03	4.70E+01	No

Notes

1. NA - Chemical Not Available in database
2. U.S. EPA soil carcinogenic and non-carcinogenic screening levels are from the Regional Screening Levels (RSLs) –
Generic Tables. November 2019.
https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables
3. NMED soil carcinogenic and non-carcinogenic screening levels are from the New Mexico Environment Department
Risk Assessment Guidance for Site Investigations and Remediation. Volume I Soil Screening Guidance for Human Health Risk Assessments. Feb. 2019 (Rev. 2, 6/19/2019).
https:/www.env.nm.gov/wp-content/uploads/sites/12/2016/11/Final-NMED-SSG-VOL-I_-Rev.2-6_19_19.pdf
4. ESL minimum values and effected receptors are recorded in the LANL ECORSK Database, on CD, LA-UR-12-24548,
Los Alamos National Laboratory, Los Alamos, New Mexico, 2019.
5. PM10 emissions factor and emissions are the same for PM2.5.

5.1 Discussion of Results

Dispersion modeling was used to predict maximum GLCs of contaminants that occur downwind from the open burning site. Model input parameters were selected that conservatively reflect the characteristics of waste streams treated through open burning at the site. Receptors were used in the modeling to estimate air concentrations close to the site as well as public receptors nearby. The hourly and annual maximum waste quantities to be treated were also used in the model input. Model results indicated the air concentrations and maximum GLCs occur on LANL property within the receptor grid adjacent to the site. Predicted deposition concentrations at public receptors were far less than concentrations within the LANL property boundary. Thus, the maximum impact used in the health screening analysis was the maximum value on LANL property. Impacts at receptors in public areas would be much less.

Model results were applied to emission factors for each predicted contaminant. The air concentration results calculated were compared to air quality standards and recommended human health screening levels where they were identified. All calculations are included in Attachment A and summarized in Tables 5-1 and 5-2a, -2b, and -2c. The results show predicted impacts for acute and annual air concentrations to be below all health screening levels. Additionally, predicted soil deposition for 10-year residential soil exposures over a 10-year period shows impacts to soil concentrations to be less than human health and ecological screening levels.

The air screening analysis conducted by LANL and detailed within this report was designed to provide a very conservative air dispersion and deposition analysis for open burning waste treatment operations conducted at LANL. Input parameters were used as conservatively as deemed reasonable, emission factors were obtained from published information sources that can be utilized as surrogates for waste treated by open burning at LANL, and the quantity of waste assessed was the maximum amount of waste that could possibly be treated at the open burning unit at one time (200 lbs) or over an entire year (6,000 lbs). Based on the conservative criteria above, all potential impacts were calculated to be below identified air and soil screening levels. Additionally, routine burn ground operations are far less than the quantity assessed through this screening analysis. Proposed current and future operations are described within the LANL permit application for the open burning unit. Due to the factors outlined here, current and future operations at the burn ground do not require a more refined risk-based analysis to assess the potential for adverse effects due to migration of waste constituents in the air. Waste treatment operations at the TA-16 Burn Ground can be conducted and considered protective of human health and the environment.

6.0 REFERENCES

Booher, L.E. and Janke, B., 1997. *Air Emissions from Petroleum Hydrocarbon Fires During Controlled Burning*. American Industrial Hygiene Association Journal, 58:359-365. May 1997.

Bjorklund, et.al., 1998a. Bjorklund, J. R., J. F. Bowers, G. C. Dodd, and J. M. White, 1998a. Open Burn/Open Detonation Model (OBODM) User's Guide, Volume I, User's Instructions, DPG Document No. DPG-TR-96-008a, February 1998. https://apps.dtic.mil/dtic/tr/fulltext/u2/a353602.pdf

Bjorklund, et.al., 1998b. Bjorklund, J. R., J. F. Bowers, G. C. Dodd, and J. M. White, 1998b. Open Burn/Open Detonation Model (OBODM) User's Guide, Volume II, Technical Description. DPG Document No. DPGTR-96-008b, April 1998. https://apps.dtic.mil/dtic/tr/fulltext/u2/a345376.pdf

Briggs, G.A., 1970. "Some recent analyses of plume rise observations". Preprint of Paper No. ME-8E presented at the Second International Clean Air Congress, Washington, D.C. 6-11 December 1970.

Briggs, G.A., 1971. "Some recent analyses of plume rise observations". In Proceedings of the Second International Clean Air Congress, Academic Press, New York, 1029-1032.

Briggs, G.A., 1971. "Some recent analyses of plume rise observations". In Proceedings of the Second International Clean Air Congress, Academic Press, New York, 1029-1032.

Briggs, G.A., 1973. "Diffusion estimates for small emissions (Draft)". Air Resources Atmospheric Turbulence and Diffusion Laboratory. ATOL No. 79.

Briggs, G.A., 1975. "Plume rise predictions". In: *Lectures on Air Pollution and Environmental Impact Analyses*. American Meteorological Society, Boston, MA, pp. 59-111.

CA OEHHA, 2015. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. February 2015. https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

CA OEHHA, 2019. Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

Cramer, H.E., H.V. Geary, and J.F. Bowers, 1975. *Diffusion model calculations of long-term and short-term ground-level SO2 concentrations in Allegheny County, Pennsylvania*. Report No. EPA-903/9-75-018, U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

Scire, J.S. et.al., 2000. *A User's Guide for the CALPUFF Dispersion Model (Version 5).* Earth Tech, Inc., Concord, MA, 01742.

EPA, 1983. U.S. EPA AP-42, Compilation of Air Pollutant Emission Factors, Chapter 6, Section 3, Table 6.3-1.

EPA, 2008. U.S. EPA AP-42, Fifth Edition, Volume 1, Chapter 1.5, Liquified Petroleum Gas Combustion, Table 1.5-1.

EPA, 2010. *Course: Basic Concepts in Environmental Sciences, Module 6: Air Pollutants/Control Techniques. Air Pollution Training Institute (APTI).* U.S. Environmental Protection Agency funded, Cooperative Assistance Agreement CT-825724 to North Carolina State University. http://www.epa.gov/apti/bces/module6/dioxins/dioxins.htm. January 29, 2010.

EPA, 2016. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Final. Office of Solid Waste and Emergency Response, EPA520-R-05-006, February 2016.

https://archive.epa.gov/epawaste/hazard/tsd/td/web/html/risk.html#hhrad / https://archive.epa.gov/epawaste/hazard/tsd/td/web/mdb/05hhrapchemdat.mdb

EPA, 2019. Regional Screening Levels (RSLs) – Generic Tables. U.S. Environmental Protection Agency. November 2019. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

EPA, 2002a. *Emissions of Organic Air Toxics from Open Burning*. EPA/600/R-02/076, October 2002.

EPA, 2002b. "Draft Final Open Burning/Open Detonation Permitting Guidelines," February 2002.

EPA, 1997a. "Locating and Estimating Air Emissions from Sources of Dioxins and Furans," EPA-454/R-97-003, http://www.epa.gov/ttnchie1/le/dioxin.pdf, May 1997.

EPA, 1997b. "Chlorinated Dioxin and Furan Formation, Control, and Monitoring," Presented at ICCR Meeting, Research Triangle Park, September 17, 1997

EPA, 1998. "Emission Factors for the Disposal of Energetic Materials by Open Burning and Open Detonation (OB/OD)," EPA/600/R-98/103, August 1998.

LANL, 2019. ECORSK Database, on CD, LA-UR-12-24548, Los Alamos National Laboratory, Los Alamos, New Mexico, 2019.

NMED, 2019a. Air Dispersion Modeling Guidelines. Revised June 6, 2019. https://www.env.nm.gov/wp-content/uploads/sites/2/2017/01/NM_AirDispersionModelingGuidelines_6June2019.pdf

NMED 2010. Los Alamos National Laboratory Hazardous Waste Facility Permit. New Mexico Environment Department, Santa Fe, New Mexico. November 2010 and updates.

NMED, 2019b. New Mexico Environment Department (NMED), 2019. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation. Volume I Soil Screening Guidance for Human Health Risk Assessments.* February 2019 (Revision 2, 6/19/2019). https://www.env.nm.gov/wp-content/uploads/sites/12/2016/11/Final-NMED-SSG-VOL-I_-Rev.2-6_19_19.pdf

Grzegorz Wielgosiński, 2011. The Reduction of Dioxin Emissions from the Processes of Heat and Power Generation, Journal of the Air & Waste Management Association, 61:5, 511-526, DOI: 10.3155/1047-3289.61.5.511. (https://doi.org/10.3155/1047-3289.61.5.511)

Mengmei Zhang, Alfons Buekens & Xiaodong Li, 2017. Open burning as a source of dioxins, Critical Reviews in Environmental Science and Technology, 47:8, 543-620, DOI: 10.1080/10643389.2017.1320154. (https://doi.org/10.1080/10643389.2017.1320154)

[This page has been left intentionally blank.]

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for 1-hour Air Concentration

Basis	
200	lb/hr waste burn
127.2	lb propane/hr
1	g/sec contaminant emission rate
Model Result (X/Q)	
1.05E+01	1-hour maximum value, µg/m3 per g/sec contaminant

Contaminant	CAS No.	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (2) (µg/m^3)	Air Inhalation Emission Concentration (AIEC) - acute (µg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m^3)	Screening Level Exceeded?
1,2,4-Trimethylbenzene	95-63-6	2.43E-04	6.12E-03	6.43E-02	NA	NA	NA
sec-Butylbenzene	135-98-8	5.09E-04	1.28E-02	1.35E-01	NA	NA	NA
1,3,5-Trimethylbenzene	108-67-8	5.57E-04	1.40E-02	1.47E-01	1.25E+05	NA	No
1,3-Butadiene	106-99-0	1.34E-06	3.38E-05	3.55E-04	NA	6.60E+02	No
1-Butene	106-98-9	4.69E-06	1.18E-04	1.24E-03	NA	NA	NA
1-Hexene	592-41-6	2.19E-06	5.52E-05	5.79E-04	NA	NA	NA
1-Pentene	109-67-1	1.72E-06	4.33E-05	4.55E-04	NA	NA	NA
2,2,4-Trimethylpentane	540-84-1	6.97E-06	1.76E-04	1.84E-03	NA	NA	NA
2,2-Dimethylbutane	75-83-2	4.29E-08	1.08E-06	1.14E-05	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	1.38E-06	3.48E-05	3.65E-04	NA	NA	NA
2,3-Dimethylbutane	79-29-8	2.06E-06	5.19E-05	5.45E-04	NA	NA	NA
2,3-Dimethylhexane	584-94-1	5.40E-06	1.36E-04	1.43E-03	NA	NA	NA
2,3-Dimethylpentane	565-59-3	3.33E-06	8.39E-05	8.81E-04	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	1.99E-07	5.01E-06	5.27E-05	NA	NA	NA
2,4-Dimethylhexane	589-43-5	6.42E-06	1.62E-04	1.70E-03	NA	NA	NA
2,4-Dimethylpentane	108-08-7	2.16E-06	5.44E-05	5.72E-04	NA	NA	NA
2,5-Dimethylhexane	592-13-2	1.11E-05	2.80E-04	2.94E-03	NA	NA	NA
2-Methyl-1-butene	563-46-2	1.05E-06	2.65E-05	2.78E-04	NA	NA	NA
2-Methyl-2-butene	513-35-9	9.07E-08	2.29E-06	2.40E-05	NA	NA	NA
2-Methylheptane	592-27-8	4.42E-05	1.11E-03	1.17E-02	NA	NA	NA
2-Methylhexane	591-76-4	1.38E-05	3.48E-04	3.65E-03	NA	NA	NA
2-Methylnaphthalene	91-57-6	2.18E-05	5.49E-04	5.77E-03	NA	NA	NA

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for 1-hour Air Concentration (continued)

Contaminant	CAS No.	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (2) (µg/m³)	Air Inhalation Emission Concentration (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m³)	Screening Level Exceeded?
2-Methylpentane	107-83-5	9.47E-06	2.39E-04	2.51E-03	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	5.90E-05	1.49E-03	1.56E-02	NA	NA	NA
3-Methyl-1-butene	563-45-1	1.99E-07	5.01E-06	5.27E-05	NA	NA	NA
3-Methylhexane	589-34-4	1.55E-05	3.91E-04	4.10E-03	NA	NA	NA
3-Methylpentane	96-14-0	5.08E-06	1.28E-04	1.34E-03	NA	NA	NA
Acenaphthylene	208-96-8	6.71E-06	1.69E-04	1.78E-03	NA	NA	NA
Acetophenone	98-86-2	1.74E-07	4.38E-06	4.60E-05	3.00E+04	NA	No
Acetylene	74-86-2	9.52E-05	2.40E-03	2.52E-02	NA	NA	NA
Aluminum	7429-90-5	7.13E-07	1.80E-05	1.89E-04	NA	NA	NA
Anthracene	120-12-7	1.02E-07	2.57E-06	2.70E-05	6.00E+03	NA	No
Aromative (e.g. Styrene)		2.29E-03	5.77E-02	6.06E-01		NA	NA
Barium	7440-39-3	4.20E-07	1.06E-05	1.11E-04	1.50E+03	NA	No
Benzene	71-43-2	7.84E-05	1.98E-03	2.07E-02	1.30E+03	2.70E+01	No
Benzo(a)anthracene	56-55-3	9.81E-07	2.47E-05	2.60E-04	3.00E+02	NA	No
Benzo(a)pyrene	50-32-8	7.42E-07	1.87E-05	1.96E-04	6.00E+02	NA	No
Benzo(b)fluoranthene	205-99-2	7.84E-07	1.98E-05	2.07E-04	6.00E+02	NA	No
Benzo(ghi)perylene	191-24-2	3.45E-07	8.69E-06	9.13E-05	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	7.46E-07	1.88E-05	1.97E-04	6.00E+02	NA	No
Benzyl alcohol	100-51-6	3.96E-05	9.98E-04	1.05E-02	6.00E+04	NA	No
Biphenyl	92-52-4	6.45E-06	1.63E-04	1.71E-03	NA	NA	NA
Butyl benzyl phthalate	85-68-7	1.22E-07	3.07E-06	3.23E-05	1.50E+04	NA	No
Carbon Tetrachloride	56-23-5	6.89E-08	1.74E-06	1.82E-05	1.90E+03	1.90E+03	No
Chromium	7440-47-3	3.97E-07	1.00E-05	1.05E-04	1.50E+03	NA	No
Chrysene	218-01-9	9.33E-07	2.35E-05	2.47E-04	6.00E+02	NA	No
cis-2-Butene	590-18-1	1.99E-07	5.01E-06	5.27E-05	NA	NA	NA
cis-2-Pentene	627-20-3	9.07E-08	2.29E-06	2.40E-05	NA	NA	NA
Carbon Monoxide (2)	630-08-0	2.98E-02	7.51E-01	8.18E+00	NA	2.30E+04	No
Carbon Dioxide	124-38-9	1.63E+00	4.11E+01	4.31E+02	NA	NA	NA
Copper	7440-50-8	6.31E-06	1.59E-04	1.67E-03	NA	NA	NA
Cyclohexane	110-82-7	2.67E-05	6.73E-04	7.06E-03	NA	NA	NA
Cyclopentane	287-92-3	1.53E-06	3.86E-05	4.05E-04	NA	NA	NA
Dibenz(a,h)anthracene / Dibenzo(a,h)anthracene	53-70-3	2.00E-07	5.04E-06	5.29E-05	3.00E+04	NA	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for 1-hour Air Concentration (continued)

Contaminant	CAS No.	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (2) (μg/m³)	Air Inhalation Emission Concentration (AIEC) - acute (μg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (μg/m³)	Screening Level Exceeded?
Diethyl phthalate	84-66-2	7.00E-08	1.76E-06	1.85E-05	1.50E+04	NA	No
Dimethyl phthalate	113-11-3	1.88E-07	4.74E-06	4.97E-05	1.50E+04	NA	No
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	3.30E-07	8.32E-06	8.73E-05	1.50E+04	NA	No
Di-n-octyl phthalate	117-84-0	9.19E-07	2.32E-05	2.43E-04	5.00E+04	NA	No
Ethane	74-84-0	1.15E-05	2.90E-04	3.04E-03	NA	NA	-
Ethyl chloride / Chloroethane	75-00-3	6.89E-08	1.74E-06	1.82E-05	2.50E+06	NA	No
Ethylbenzene	100-41-4	5.49E-05	1.38E-03	1.45E-02	5.00E+05	NA	No
Ethylene	74-85-1	7.43E-05	1.87E-03	1.97E-02	NA	NA	NA
Fluoranthene	206-44-0	7.85E-07	1.98E-05	2.08E-04	1.50E+01	NA	No
HCL - Hydrochloric Acid	7647-01-0	9.97E-04	2.51E-02	2.64E-01	2.10E+03	2.10E+03	No
i-Butane	75-28-5	1.24E-06	3.12E-05	3.28E-04	NA	NA	NA
i-Butene	115-11-7	2.26E-06	5.70E-05	5.98E-04	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	2.83E-07	7.13E-06	7.49E-05	5.00E+02	NA	No
i-Pentane	78-78-4	1.08E-05	2.72E-04	2.86E-03	NA	NA	NA
i-Propylbenzene / Cumene	98-82-8	1.03E-04	2.60E-03	2.73E-02	2.46E+05	NA	No
m- & p-Xylene	108-38-3 & 106-42-3	4.52E-04	1.14E-02	1.20E-01	2.20E+04	NA	No
Methane	74-82-8	8.72E-05	2.20E-03	2.31E-02	NA	NA	NA
Methyl chloroform / Trichloroethane, 1,1,1-	71-55-6	3.44E-08	8.67E-07	9.10E-06	6.80E+04	6.80E+04	No
Methyl chloride	74-87-3	2.84E-07	7.16E-06	7.51E-05	2.00E+05	NA	No
Methylcyclohexane	108-87-2	1.56E-04	3.93E-03	4.13E-02	NA	NA	NA
Methylcyclopentane	96-37-7	9.93E-06	2.50E-04	2.63E-03	NA	NA	NA
Methylene chloride / dichloromethane	75-09-2	7.46E-07	1.88E-05	1.97E-04	1.40E+04	1.40E+04	No
m-Ethyltoluene	620-14-4	1.28E-04	3.23E-03	3.39E-02	NA	NA	NA
Naphthalene	91-20-3	8.38E-05	2.11E-03	2.22E-02	7.50E+04	NA	No
n-Butane	106-97-8	4.60E-06	1.16E-04	1.22E-03	NA	NA	NA
n-Decane	124-18-5	1.97E-03	4.96E-02	5.21E-01	NA	NA	NA
n-Heptane	142-82-5	5.90E-05	1.49E-03	1.56E-02	NA	NA	NA
n-Hexane	110-54-3	1.60E-05	4.03E-04	4.23E-03	NA	NA	NA
Nitrogen dioxide / Nitrogen peroxide	10102-44-0	4.69E-04	1.18E-02	1.24E-01	NA	4.70E+02	No
Nitrogen Oxide	10024-97-2	6.28E-03	1.58E-01	1.66E+00	NA	NA	NA

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for 1-hour Air Concentration (continued)

Contaminant	CAS No.	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (2) (μg/m^3)	Air Inhalation Emission Concentration (AIEC) - acute (μg/m^3)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (μg/m^3)	Screening Level Exceeded?
Nitrogen Oxides (2)		7.50E-02	1.89E+00	2.04E+01	NA	NA	NA
n-Nonane	111-84-2	1.03E-03	2.60E-02	2.73E-01	NA	NA	NA
n-Octane	111-65-9	2.48E-04	6.25E-03	6.56E-02	NA	NA	NA
Non-methane Organic Compound /NMHC (2)		7.84E-03	1.98E-01	2.11E+00	NA	NA	NA
n-Pentane	109-66-0	9.05E-06	2.28E-04	2.39E-03	NA	NA	NA
n-Propylbenzene	103-65-1	8.16E-05	2.06E-03	2.16E-02	NA	NA	NA
OCDD *Screening Limits are for TetraCDD, 2,3,7,8-	TCDD CAS no. 1746-01-6	1.03E-11	2.60E-10	2.73E-09	1.50E+00	NA	No
o-Ethyltoluene	611-14-3	3.90E-07	9.83E-06	1.03E-04	NA	NA	NA
o-Xylene	95-47-6	1.25E-04	3.15E-03	3.31E-02	2.20E+04	NA	No
Perylene	198-55-0	1.72E-07	4.33E-06	4.55E-05	NA	NA	NA
p-Ethyltoluene	622-96-8	1.53E-04	3.86E-03	4.05E-02	NA	NA	NA
Phenanthrene	85-01-8	7.17E-06	1.81E-04	1.90E-03	1.00E+03	NA	No
Phenol	108-95-2	1.56E-05	3.93E-04	4.13E-03	5.80E+03	5.80E+03	No
PM10 (2)		9.10E-01	2.29E+01	2.41E+02	NA	NA	NA
Propane	74-98-6	2.22E-06	5.59E-05	5.87E-04	NA	NA	NA
Propene	115-07-1	1.30E-05	3.28E-04	3.44E-03	NA	NA	NA
Pyrene	129-00-0	7.06E-07	1.78E-05	1.87E-04	1.50E+04	NA	No
Styrene	100-42-5	4.99E-05	1.26E-03	1.32E-02	2.10E+04	2.10E+04	No
Sulfur Dioxide (2)	7446-09-5	1.22E-03	3.07E-02	6.80E-01	NA	6.60E+02	No
Toluene	108-88-3	1.22E-04	3.07E-03	3.23E-02	3.70E+04	3.70E+04	No
Total Alkanes (Paraffins)	NA	3.50E-03	8.82E-02	9.26E-01	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	1.93E-04	4.86E-03	5.11E-02	NA	NA	NA
Total Non-methane Hydrocarbons - TNMHC	NA	1.20E-02	3.02E-01	3.21E+00	NA	NA	NA
Total Unidentified Hydrocarbons	NA	6.04E-03	1.52E-01	1.60E+00	NA	NA	NA
trans-2-Butene	624-64-6	2.91E-06	7.33E-05	7.70E-04	NA	NA	NA
trans-2-Pentene	646-04-8	1.08E-06	2.72E-05	2.86E-04	NA	NA	NA
Vinyl Chloride	75-01-4	2.23E-07	5.62E-06	5.90E-05	1.80E+05	1.80E+05	**No**
Vinylidene Chloride / Dichloroethylene, 1,1-	75-35-4	2.15E-07	5.42E-06	5.69E-05	7.50E+04	NA	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for 1-hour Air Concentration (continued)

Contaminant	CAS No.	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (2) (µg/m³)	Air Inhalation Emission Concentration (AIEC) - acute (µg/m³)	CA-OEHHA Non-Cancer Reference Exposure Level (REL) - Acute (µg/m³)	Screening Level Exceeded?
Volatile Organic Compounds		5.50E-04	1.39E-02	1.46E-01	NA	NA	NA
Zinc	7440-66-6	6.26E-05	1.58E-03	1.66E-02	3.00E+04	NA	No

Notes

1. NA - Chemical Not Available in database
2. Impacts from propane combustion have been added to waste impact concentrations for nitrogen oxides, carbon monoxide, PM10, sulfur dioxide and NMHC.
3. PM10 emissions factor and emissions are the same for PM2.5
3. Screening concentrations from acute (1 hr) inhalation exposures concentrations (AIEC) from the Companion Database to EPA's Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (EPA 2016). https://archive.epa.gov/epawaste/hazard/tsd/td/web/mdb/05hhrapchemdat.mdb
4. REL 1-hour acute screening concentrations are from the CA OEHHA, 2019, Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019.

https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Annual Air Concentration

Basis	
6,000	lb waste/yr
1	g/sec contaminant emission rate
Model Result (X/Q)	
9.32E-03	Annual maximum value, ug/m3 per g/sec contaminant

Contaminant	CAS No.	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration μg/m³	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (μg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (μg/m3)	Screening Level Exceeded?
1,2,4-Trimethylbenzene	95-63-6	2.43E-04	2.10E-05	1.95E-07	NA	6.30E+00	No
sec-Butylbenzene	135-98-8	5.09E-04	4.39E-05	4.09E-07	NA	NA	NA
1,3,5-Trimethylbenzene	108-67-8	5.57E-04	4.81E-05	4.48E-07	NA	6.30E+00	No
1,3-Butadiene	106-99-0	1.34E-06	1.16E-07	1.08E-09	2.00E+00	2.10E-01	No
1-Butene	106-98-9	4.69E-06	4.05E-07	3.77E-09	NA	NA	NA
1-Hexene	592-41-6	2.19E-06	1.89E-07	1.76E-09	NA	NA	NA
1-Pentene	109-67-1	1.72E-06	1.48E-07	1.38E-09	NA	NA	NA
2,2,4-Trimethylpentane	540-84-1	6.97E-06	6.02E-07	5.61E-09	NA	NA	NA
2,2-Dimethylbutane	75-83-2	4.29E-08	3.70E-09	3.45E-11	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	1.38E-06	1.19E-07	0.00E+00	NA	NA	NA
2,3-Dimethylbutane	79-29-8	2.06E-06	1.78E-07	1.66E-09	NA	NA	NA
2,3-Dimethylhexane	584-94-1	5.40E-06	4.66E-07	4.34E-09	NA	NA	NA
2,3-Dimethylpentane	565-59-3	3.33E-06	2.87E-07	2.68E-09	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	1.99E-07	1.72E-08	1.60E-10	NA	NA	NA
2,4-Dimethylhexane	589-43-5	6.42E-06	5.54E-07	5.16E-09	NA	NA	NA
2,4-Dimethylpentane	108-08-7	2.16E-06	1.86E-07	1.74E-09	NA	NA	NA
2,5-Dimethylhexane	592-13-2	1.11E-05	9.58E-07	8.93E-09	NA	NA	NA
2-Methyl-1-butene	563-46-2	1.05E-06	9.06E-08	8.45E-10	NA	NA	NA
2-Methyl-2-butene	513-35-9	9.07E-08	7.83E-09	7.30E-11	NA	NA	NA
2-Methylheptane	592-27-8	4.42E-05	3.81E-06	3.56E-08	NA	NA	NA
2-Methylhexane	591-76-4	1.38E-05	1.19E-06	1.11E-08	NA	NA	NA
2-Methylnaphthalene	91-57-6	2.18E-05	1.88E-06	1.75E-08	NA	NA	NA
2-Methylpentane	107-83-5	9.47E-06	8.17E-07	7.62E-09	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	5.90E-05	5.09E-06	4.75E-08	NA	NA	NA
3-Methyl-1-butene	563-45-1	1.99E-07	1.72E-08	1.60E-10	NA	NA	NA

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for Annual Air Concentration (continued)

Contaminant	CAS No.	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration μg/m^3	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (μg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (μg/m3)	Screening Level Exceeded?
3-Methylhexane	589-34-4	1.55E-05	1.34E-06	1.25E-08	NA	NA	NA
3-Methylpentane	96-14-0	5.08E-06	4.38E-07	4.09E-09	NA	NA	NA
Acenaphthylene	208-96-8	6.71E-06	5.79E-07	5.40E-09	NA	NA	NA
Acetophenone	98-86-2	1.74E-07	1.50E-08	1.40E-10	NA	NA	NA
Acetylene	74-86-2	9.52E-05	8.22E-06	7.66E-08	NA	NA	NA
Aluminum	7429-90-5	7.13E-07	6.15E-08	5.73E-10	NA	5.20E-01	No
Anthracene	120-12-7	1.02E-07	8.80E-09	8.20E-11	NA	NA	NA
Aromative (e.g. Styrene)		2.29E-03	1.98E-04	1.84E-06	NA	NA	NA
Barium	7440-39-3	4.20E-07	3.62E-08	3.38E-10	NA	5.20E-02	No
Benzene	71-43-2	7.84E-05	6.77E-06	6.31E-08	3.00E+00	3.10E+00	No
Benzo(a)anthracene	56-55-3	9.81E-07	8.47E-08	7.89E-10	NA	NA	NA
Benzo(a)pyrene	50-32-8	7.42E-07	6.40E-08	5.97E-10	NA	2.10E-04	No
Benzo(b)fluoranthene	205-99-2	7.84E-07	6.77E-08	6.31E-10	NA	NA	NA
Benzo(ghi)perylene	191-24-2	3.45E-07	2.98E-08	2.77E-10	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	7.46E-07	6.44E-08	6.00E-10	NA	NA	NA
Benzyl alcohol	100-51-6	3.96E-05	3.42E-06	3.19E-08	NA	NA	NA
Biphenyl, 1,1'-	92-52-4	6.45E-06	5.57E-07	5.19E-09	NA	4.20E-02	No
Butyl benzyl phthalate	85-68-7	1.22E-07	1.05E-08	9.81E-11	NA	NA	NA
Carbon Tetrachloride	56-23-5	6.89E-08	5.95E-09	5.54E-11	4.00E+01	1.00E+01	No
Chromium	7440-47-3	3.97E-07	3.43E-08	3.19E-10	NA	NA	NA
Chrysene	218-01-9	9.33E-07	8.05E-08	7.50E-10	NA	NA	NA
cis-2-Butene	590-18-1	1.99E-07	1.72E-08	1.60E-10	NA	NA	NA
cis-2-Pentene	627-20-3	9.07E-08	7.83E-09	7.30E-11	NA	NA	NA
CO (2)	630-08-0	2.98E-02	2.57E-03	2.49E-05	NA	NA	NA
CO2	124-38-9	1.63E+00	1.41E-01	1.31E-03	NA	NA	NA
Copper	7440-50-8	6.31E-06	5.45E-07	5.08E-09	NA	NA	NA
Cyclohexane	110-82-7	2.67E-05	2.30E-06	2.15E-08	NA	6.30E+02	No
Cyclopentane	287-92-3	1.53E-06	1.32E-07	1.23E-09	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	2.00E-07	1.73E-08	1.61E-10	NA	NA	NA
Diethyl phthalate	84-66-2	7.00E-08	6.04E-09	5.63E-11	NA	NA	NA
Dimethyl phthalate	113-11-3	1.88E-07	1.62E-08	1.51E-10	NA	NA	NA
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	3.30E-07	2.85E-08	2.65E-10	NA	NA	NA
Di-n-octyl phthalate	117-84-0	9.19E-07	7.93E-08	7.39E-10	NA	NA	NA

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for Annual Air Concentration (continued)

Contaminant	CAS No.	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration µg/m^3	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (µg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (µg/m3)	Screening Level Exceeded?
Ethane	74-84-0	1.15E-05	9.92E-07	9.25E-09	NA	NA	NA
Ethyl chloride	75-00-3	6.89E-08	5.95E-09	5.54E-11	3.00E+04	1.00E+03	No
Ethylbenzene	100-41-4	5.49E-05	4.74E-06	4.42E-08	2.00E+03	1.00E+02	No
Ethylene	74-85-1	7.43E-05	6.41E-06	5.98E-08	NA	NA	NA
Fluoranthene	206-44-0	7.85E-07	6.77E-08	6.31E-10	NA	NA	NA
HCL / Hydrogen Chloride	7647-01-0	9.97E-04	8.60E-05	8.02E-07	9.00E+00	2.10E+00	No
i-Butane	75-28-5	1.24E-06	1.07E-07	9.97E-10	NA	NA	NA
i-Butene	115-11-7	2.26E-06	1.95E-07	1.82E-09	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	2.83E-07	2.44E-08	2.28E-10	NA	NA	NA
i-Pentane	78-78-4	1.08E-05	9.32E-07	8.69E-09	NA		NA
i-Propylbenzene / Cumene	98-82-8	1.03E-04	8.89E-06	8.28E-08	NA	4.20E+01	No
m- & p-Xylene	108-38-3 & 106-42-3	4.52E-04	3.90E-05	3.64E-07	NA	1.00E+01	No
Methane	74-82-8	8.72E-05	7.53E-06	7.01E-08	NA	NA	NA
Methyl chloroform / Trichloroethane, 1,1,1-	71-55-6	3.44E-08	2.97E-09	2.77E-11	1.00E+03	5.20E+02	No
Methylchloride / Chloromethane	74-87-3	2.84E-07	2.45E-08	2.28E-10	NA	9.40E+00	No
Methylcyclohexane /	108-87-2	1.56E-04	1.35E-05	1.25E-07	NA	NA	NA
Methylcyclopentane	96-37-7	9.93E-06	8.57E-07	7.99E-09	NA	NA	NA
Methylene chloride	75-09-2	7.46E-07	6.44E-08	6.00E-10	4.00E+02	6.30E+01	No
m-Ethyltoluene	620-14-4	1.28E-04	1.10E-05	1.03E-07	NA		NA
Naphthalene	91-20-3	8.38E-05	7.23E-06	6.74E-08	9.00E+00	3.10E-01	No
n-Butane	106-97-8	4.60E-06	3.97E-07	3.70E-09	NA		NA
n-Decane	124-18-5	1.97E-03	1.70E-04	1.58E-06	NA		NA
n-Heptane	142-82-5	5.90E-05	5.09E-06	4.75E-08	NA	4.20E+01	No
n-Hexane	110-54-3	1.60E-05	1.38E-06	1.29E-08	7.00E+03	7.30E+01	No
Nitrogen dioxide (peroxide)	10102-44-0	4.69E-04	4.05E-05	3.77E-07	NA	NA	NA
Nitrogen Oxide	10024-97-2	6.28E-03	5.42E-04	5.05E-06	NA	NA	NA
Nitrogen Oxides (2)		7.50E-02	6.47E-03	6.19E-05	NA	NA	NA
n-Nonane	111-84-2	1.03E-03	8.89E-05	8.28E-07	NA	2.10E+00	No
n-Octane	111-65-9	2.48E-04	2.14E-05	1.99E-07	NA	NA	NA
Non-methane Organic Compound/NMHC (2)		7.84E-03	6.77E-04	6.43E-06	NA	NA	NA
n-Pentane	109-66-0	9.05E-06	7.81E-07	7.28E-09	NA	1.00E+02	No
n-Propylbenzene	103-65-1	8.16E-05	7.04E-06	6.56E-08	NA	1.00E+02	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16-388 Flash Pad Screening Analysis Worksheet for Annual Air Concentration (continued)

Contaminant	CAS No.	Emission Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration μg/m³	CA-OEHHA Non-Cancer Chronic Reference Exposure Level (REL) (μg/m3)	EPA Resident Air Non-carcinogenic SL for THI = 0.1 (μg/m3)	Screening Level Exceeded?
OCDD *Screening Limits are for TCDD,2,3,7,8-	TCDD CAS no. 1746-01-6	1.03E-11	8.89E-13	8.28E-15	NA	4.20E-06	No
o-Ethyltoluene	611-14-3	3.90E-07	3.37E-08	3.14E-10	NA	NA	-
o-Xylene	95-47-6	1.25E-04	1.08E-05	1.01E-07	NA	1.00E+01	No
Perylene	198-55-0	1.72E-07	1.48E-08	1.38E-10	NA	NA	NA
p-Ethyltoluene	622-96-8	1.53E-04	1.32E-05	1.23E-07	NA	NA	NA
Phenanthrene	85-01-8	7.17E-06	6.19E-07	5.77E-09	NA	NA	NA
Phenol	108-95-2	1.56E-05	1.35E-06	1.25E-08	2.00E+02	2.10E+01	No
PM10 (2)(3)		9.10E-01	7.85E-02	7.32E-04	NA	NA	NA
Propane	74-98-6	2.22E-06	1.92E-07	1.79E-09	NA	NA	NA
Propene / Propylene	115-07-1	1.30E-05	1.12E-06	1.05E-08	3.00E+03	3.10E+02	No
Pyrene	129-00-0	7.06E-07	6.09E-08	5.68E-10	NA	NA	NA
Styrene	100-42-5	4.99E-05	4.31E-06	4.01E-08	9.00E+02	1.00E+02	No
Sulfur Dioxide (2)	7446-09-5	1.22E-03	1.05E-04	2.07E-06	NA	NA	NA
Toluene	108-88-3	1.22E-04	1.05E-05	9.81E-08	3.00E+02	5.20E+02	No
Total Alkanes (Paraffins)	NA	3.50E-03	3.02E-04	2.82E-06	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	1.93E-04	1.67E-05	1.55E-07	NA	NA	NA
Total Non-methane Hydrocarbons / NMHC	NA	1.20E-02	1.04E-03	9.77E-06	NA	NA	NA
Total Unidentified Hydrocarbons	NA	6.04E-03	5.21E-04	4.86E-06	NA	NA	NA
trans-2-Butene	624-64-6	2.91E-06	2.51E-07	2.34E-09	NA	NA	NA
trans-2-Pentene	646-04-8	1.08E-06	9.32E-08	8.69E-10	NA	NA	NA
Vinyl Chloride	75-01-4	2.23E-07	1.92E-08	1.79E-10	NA	1.00E+01	No
Vinylidene Chloride / Dichloroethylene (1,1)	75-35-4	2.15E-07	1.86E-08	1.73E-10	7.00E+01	2.10E+01	No
Volatile Organic Compounds	NA	5.50E-04	4.75E-05	4.42E-07	NA	NA	NA
Zinc	7440-66-6	6.26E-05	5.40E-06	5.04E-08	NA	NA	NA

Notes

1. NA - Chemical Not Available in database
2. Impacts from propane combustion have been added to waste impact concentrations for nitrogen oxides, carbon monoxide, PM10, sulfur dioxide and NMHC.
3. PM10 emissions factor and emissions are the same for PM2.5.
4. Chronic REL annual screening concentrations are from the CA OEHHA, 2019, Consolidated Table Of OEHHA/ARB Approved Risk Assessment Health Values, November 2019. https://ww3.arb.ca.gov/toxics/healthval/contable.pdf
5. U.S. EPA air non-carcinogenic screening levels are from the Regional Screening Levels (RSLs) – Generic Tables. November 2019. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition

Basis

6,000	lb waste/yr
1	g/sec contaminant emission rate
Model Result (X/Q)	
9.32E-03	Annual maximum value, ug/m3 per g/sec contaminant

For each deposition calculation, the following variables are applied. See Excel worksheet for further details and calculations.

1.00E+08	t1/2 days
6.93E-09	Ks
4.62E-02	X

Contaminant	CAS No.	Maximum Annual Concentration ug/m³	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
1,2,4-Trimethylbenzene	95-63-6	1.95E-07	8.44E-04	1.16E-04	NA	NA	NA	7.80E+01	5.00E+01	5.00E+01	NA	NA	No
sec-Butylbenzene	135-98-8	4.09E-07	1.77E-03	2.42E-04	NA	NA	NA	NA	7.80E+02	7.80E+02	NA	NA	No
1,3,5-Trimethylbenzene	108-67-8	4.48E-07	1.94E-03	2.65E-04	NA	NA	NA	NA	2.70E+01	2.70E+01	NA	NA	No
1,3-Butadiene	106-99-0	1.08E-09	4.66E-06	6.37E-07	6.86E-01	2.30E+00	6.86E-01	7.60E-02	1.80E-01	7.60E-02	NA	NA	No
1-Butene	106-98-9	3.77E-09	1.63E-05	2.23E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Hexene	592-41-6	1.76E-09	7.61E-06	1.04E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Pentene	109-67-1	1.38E-09	5.98E-06	8.18E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m³	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
2,2,4-Trimethylpentane	540-84-1	5.61E-09	2.42E-05	3.32E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dimethylbutane	75-83-2	3.45E-11	1.49E-07	2.04E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4-Trimethylpentane	565-75-3	6.97E-06	3.01E-02	4.12E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3-Dimethylbutane	79-29-8	1.66E-09	7.16E-06	9.80E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3-Dimethylhexane	584-94-1	4.34E-09	1.88E-05	2.57E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3-Dimethylpentane	565-59-3	2.68E-09	1.16E-05	1.58E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,4-Trimethyl-1-pentene	107-39-1	1.60E-10	6.91E-07	9.47E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylhexane	589-43-5	5.16E-09	2.23E-05	3.05E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylpentane	108-08-7	1.74E-09	7.51E-06	1.03E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,5-Dimethylhexane	592-13-2	8.93E-09	3.86E-05	5.28E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-1-butene	563-46-2	8.45E-10	3.65E-06	5.00E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-2-butene	513-35-9	7.30E-11	3.15E-07	4.31E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylheptane	592-27-8	3.56E-08	1.54E-04	2.10E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylhexane	591-76-4	1.11E-08	4.80E-05	6.56E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	1.75E-08	7.57E-05	1.04E-05	NA	2.32E+02	2.32E+02	NA	2.40E+01	2.40E+01	1.60E+01	Montane Shrew	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m³	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
2-Methylpentane	107-83-5	7.62E-09	3.29E-05	4.51E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Ethylhexane, 3-Methylheptane	589-81-1	4.75E-08	2.05E-04	2.81E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methyl-1-butene	563-45-1	1.60E-10	6.91E-07	9.47E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylhexane	589-34-4	1.25E-08	5.39E-05	7.37E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylpentane	96-14-0	4.09E-09	1.77E-05	2.42E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	5.40E-09	2.33E-05	3.19E-06	NA	NA	NA	NA	NA	NA	1.20E+02	Montane Shrew	No
Acetophenone	98-86-2	1.40E-10	6.05E-07	8.28E-08	NA	7.82E+03	7.82E+03	NA	7.80E+02	7.80E+02	NA	NA	No
Acetylene	74-86-2	7.66E-08	3.31E-04	4.53E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	7429-90-5	5.73E-10	2.48E-06	3.39E-07	NA	7.80E+04	7.80E+04	NA	7.70E+03	7.70E+03	NA	NA	No
Anthracene	120-12-7	8.20E-11	3.54E-07	4.85E-08	NA	1.74E+04	1.74E+04	NA	1.80E+03	1.80E+03	6.80E+00	Generic Plant	No
Aromative (e.g. Styrene)		1.84E-06	7.96E-03	1.09E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	3.38E-10	1.46E-06	2.00E-07	NA	1.56E+04	1.56E+04	NA	1.50E+03	1.50E+03	1.10E+02	Generic Plant	No
Benzene	71-43-2	6.31E-08	2.72E-04	3.73E-05	1.78E+01	1.14E+02	1.78E+01	1.20E+00	8.20E+00	1.20E+00	2.40E+01	Deer Mouse	No
Benzo(a)anthracene	56-55-3	7.89E-10	3.41E-06	4.67E-07	1.53E+00	NA	1.53E+00	1.10E+00	NA	1.10E+00	7.30E-01	American Robin	No
Benzo(a)pyrene	50-32-8	5.97E-10	2.58E-06	3.53E-07	NA	NA	NA	1.10E-01	1.80E+00	1.10E-01	6.20E+01	Montane Shrew	No
Benzo(b)fluoranthene	205-99-2	6.31E-10	2.72E-06	3.73E-07	1.53E+00		1.53E+00	1.10E+00	NA	1.10E+00	1.80E+01	Generic Plant	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
Benzo(ghi)perylene	191-24-2	2.77E-10	1.20E-06	1.64E-07	NA	NA	NA	NA	NA	NA	2.50E+01	Montane Shrew	No
Benzo(k)fluoranthene	207-08-9	6.00E-10	2.59E-06	3.55E-07	1.53E+01	NA	1.53E+01	1.10E+01	NA	1.10E+01	7.10E+01	Montane Shrew	No
Benzyl alcohol	100-51-6	3.19E-08	1.38E-04	1.88E-05	NA	NA	NA	NA	6.30E+02	6.30E+02	1.20E+02	Deer Mouse	No
Biphenyl	92-52-4	5.19E-09	2.24E-05	3.07E-06	8.48E+02	3.91E+04	8.48E+02	8.70E+01	4.70E+00	4.70E+00	NA	NA	No
Butyl benzyl phthalate	85-68-7	9.81E-11	4.24E-07	5.80E-08	NA	NA	NA	2.90E+02	1.30E+03	2.90E+02	9.00E+01	Montane Shrew	No
Carbon Tetrachloride	56-23-5	5.54E-11	2.39E-07	3.28E-08	1.07E+01	1.44E+02	1.07E+01	6.50E-01	1.00E+01	6.50E-01	NA	NA	No
Chromium	7440-47-3	3.19E-10	1.38E-06	1.89E-07	9.66E+01	4.52E+04	9.66E+01	NA	NA	NA	2.30E+01	American Robin	No
Chrysene	218-01-9	7.50E-10	3.24E-06	4.44E-07	1.53E+02	NA	1.53E+02	1.10E+02	NA	1.10E+02	3.10E+00	Montane Shrew	No
cis-2-Butene	590-18-1	1.60E-10	6.91E-07	9.47E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-2-Pentene	627-20-3	7.30E-11	3.15E-07	4.31E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Monoxide (2)	630-08-0	2.49E-05	1.07E-01	1.47E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Dioxide	124-38-9	1.31E-03	5.66E+00	7.75E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	5.08E-09	2.19E-05	3.00E-06	NA	3.13E+03	3.13E+03	NA	3.10E+02	3.10E+02	1.40E+01	American Robin	No
Cyclohexane	110-82-7	2.15E-08	9.28E-05	1.27E-05	NA	NA	NA	NA	6.50E+02	6.50E+02	NA	NA	No
Cyclopentane	287-92-3	1.23E-09	5.32E-06	7.28E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene /	53-70-3	1.61E-10	6.95E-07	9.51E-08	1.53E-01	NA	1.53E-01	1.10E-01	NA	1.10E-01	1.40E+01	Montane Shrew	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m³	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
Dibenzo(a,h)anthracene													
Diethyl phthalate	84-66-2	5.63E-11	2.43E-07	3.33E-08	NA	4.93E+04	4.93E+04	NA	5.10E+03	5.10E+03	1.00E+02	Generic Plant	No
Dimethyl phthalate	113-11-3	1.51E-10	6.53E-07	8.94E-08	NA	NA	NA	NA	NA	NA	1.00E+01	Earthworm	No
Di-n-butyl phthalate / Dibutyl Phthalate	84-74-2	2.65E-10	1.15E-06	1.57E-07	NA	6.16E+03	6.16E+03	NA	6.30E+02	6.30E+02	1.10E-02	American Robin	No
Di-n-octyl phthalate	117-84-0	7.39E-10	3.19E-06	4.37E-07	NA	NA	NA	NA	6.30E+01	6.30E+01	9.10E-01	Montane Shrew	No
Ethane	74-84-0	9.25E-09	4.00E-05	5.47E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl chloride / Chloroethane	75-00-3	5.54E-11	2.39E-07	3.28E-08	NA	1.90E+04	1.90E+04	NA	1.40E+03	1.40E+03	NA	NA	No
Ethylbenzene	100-41-4	4.42E-08	1.91E-04	2.61E-05	7.51E+01	3.93E+03	7.51E+01	5.80E+00	3.40E+02	5.80E+00	NA	NA	No
Ethylene	74-85-1	5.98E-08	2.58E-04	3.53E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	6.31E-10	2.73E-06	3.73E-07	NA	2.32E+03	2.32E+03	NA	2.40E+02	2.40E+02	1.00E+01	Earthworm	No
HCL - Hydrochloric Acid	7647-01-0	8.02E-07	3.46E-03	4.74E-04	NA	NA	NA	NA	2.80E+06	2.80E+06	NA	NA	No
i-Butane	75-28-5	9.97E-10	4.31E-06	5.90E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA
i-Butene	115-11-7	1.82E-09	7.85E-06	1.08E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	2.28E-10	9.83E-07	1.35E-07	1.53E+00	NA	1.53E+00	1.10E+00	NA	1.10E+00	7.10E+01	Montane Shrew	No
i-Pentane	78-78-4	8.69E-09	3.75E-05	5.14E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
i-Propylbenzene / Cumene	98-82-8	8.28E-08	3.58E-04	4.90E-05	NA	2.36E+03	2.36E+03	NA	1.90E+02	1.90E+02	NA	NA	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
m- & p-Xylene	108-38-3 & 106-42-3	3.64E-07	1.57E-03	2.15E-04	NA	7.64E+02	7.64E+02	NA	5.50E+01	5.50E+01	1.40E+00	Montane Shrew	No
Methane	74-82-8	7.01E-08	3.03E-04	4.15E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloroform / Trichloroethane, 1,1,1-	71-55-6	2.77E-11	1.20E-07	1.64E-08	NA	1.44E+04	1.44E+04	NA	8.10E+02	8.10E+02	2.60E+02	Montane Shrew	No
Methyl chloride	74-87-3	2.28E-10	9.87E-07	1.35E-07	4.11E+01	2.68E+02	4.11E+01	NA	1.10E+01	1.10E+01	NA	NA	No
Methylcyclohexane	108-87-2	1.25E-07	5.42E-04	7.42E-05	NA	5.50E+03	5.50E+03	NA	NA	NA	NA	NA	No
Methylcyclopentane	96-37-7	7.99E-09	3.45E-05	4.72E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride / dichloromethane	75-09-2	6.00E-10	2.59E-06	3.55E-07	7.66E+02	4.09E+02	4.09E+02	5.70E+01	3.50E+01	3.50E+01	2.60E+00	Deer Mouse	No
m-Ethyltoluene	620-14-4	1.03E-07	4.45E-04	6.09E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	6.74E-08	2.91E-04	3.99E-05	4.97E+01	1.62E+02	4.97E+01	3.80E+00	1.30E+01	3.80E+00	1.00E+00	Generic Plant	No
n-Butane	106-97-8	3.70E-09	1.60E-05	2.19E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Decane	124-18-5	1.58E-06	6.85E-03	9.37E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Heptane	142-82-5	4.75E-08	2.05E-04	2.81E-05	NA	NA	NA	NA	2.20E+00	2.20E+00	NA	NA	No
n-Hexane	110-54-3	1.29E-08	5.56E-05	7.61E-06	NA	6.15E+02	6.15E+02	NA	6.10E+01	6.10E+01	NA	NA	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
Nitrogen dioxide / Nitrogen peroxide	10102-44-0	3.77E-07	1.63E-03	2.23E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen Oxide	10024-97-2	5.05E-06	2.18E-02	2.99E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen Oxides (2)		6.19E-05	2.67E-01	3.66E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nonane	111-84-2	8.28E-07	3.58E-03	4.90E-04	NA	NA	NA	NA	1.10E+00	1.10E+00	NA	NA	No
n-Octane	111-65-9	1.99E-07	8.62E-04	1.18E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-methane Organic Compound /NMHC (2)		6.31E-06	2.72E-02	3.73E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Pentane	109-66-0	7.28E-09	3.14E-05	4.31E-06	NA	NA	NA	NA	8.10E+01	8.10E+01	NA	NA	No
n-Propylbenzene	103-65-1	6.56E-08	2.84E-04	3.88E-05	NA	NA	NA	NA	3.80E+02	3.80E+02	NA	NA	No
OCDD *Screening Limits are for TetraCDD, 2,3,7,8-	TCDD CAS no. 1746-01-6	8.28E-15	3.58E-11	4.90E-12	4.90E-05	5.06E-05	4.90E-05	4.80E-06	5.10E-06	4.80E-06	2.90E-07	Montane Shrew	No
o-Ethyltoluene	611-14-3	3.14E-10	1.36E-06	1.86E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	1.01E-07	4.34E-04	5.95E-05	NA	8.05E+02	8.05E+02	NA	6.50E+01	6.50E+01	1.40E+00	Montane Shrew	No
Perylene	198-55-0	1.38E-10	5.98E-07	8.18E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Ethyltoluene	622-96-8	1.23E-07	5.32E-04	7.28E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	5.77E-09	2.49E-05	3.41E-06	NA	1.74E+03	1.74E+03	NA	NA	NA	5.50E+00	Earthworm	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
Phenol	108-95-2	1.25E-08	5.42E-05	7.42E-06	NA	1.85E+04	1.85E+04	NA	1.90E+03	1.90E+03	7.90E-01	Generic Plant	No
PM10 (2)		7.32E-04	3.16E+00	4.33E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propane	74-98-6	1.79E-09	7.71E-06	1.06E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propene	115-07-1	1.05E-08	4.52E-05	6.18E-06	NA	NA	NA	NA	2.20E+02	2.20E+02	NA	NA	No
Pyrene	129-00-0	5.68E-10	2.45E-06	3.36E-07	NA	1.74E+03	1.74E+03	NA	1.80E+02	1.80E+02	1.00E+01	Earthworm	No
Styrene	100-42-5	4.01E-08	1.73E-04	2.37E-05	NA	7.26E+03	7.26E+03	NA	6.00E+02	6.00E+02	1.20E+00	Earthworm	No
Sulfur Dioxide (2)	7446-09-5	2.07E-06	8.93E-03	1.22E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	9.81E-08	4.24E-04	5.80E-05	NA	5.23E+03	5.23E+03	NA	4.90E+02	4.90E+02	2.30E+01	Montane Shrew	No
Total Alkanes (Paraffins)	NA	2.82E-06	1.22E-02	1.67E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Alkenes (Olefins) (e.g. Ethylene)	NA	1.55E-07	6.71E-04	9.18E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Non-methane Hydrocarbons - TNMHC	NA	9.77E-06	4.22E-02	5.78E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Unidentified Hydrocarbons	NA	4.86E-06	2.10E-02	2.87E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-2-Butene	624-64-6	2.34E-09	1.01E-05	1.38E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-2-Pentene	646-04-8	8.69E-10	3.75E-06	5.14E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	75-01-4	1.79E-10	7.75E-07	1.06E-07	7.42E-01	1.13E+02	7.42E-01	5.90E-02	7.00E+00	5.90E-02	1.20E-01	Montane Shrew	No

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m^3	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?
Vinylidene Chloride / Dichloroethylene, 1,1-	75-35-4	1.73E-10	7.47E-07	1.02E-07	NA	4.40E+02	4.40E+02	NA	2.30E+01	2.30E+01	1.10E+01	Montane Shrew	No
Volatile Organic Compounds	NA	4.42E-07	1.91E-03	2.62E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	5.04E-08	2.18E-04	2.98E-05	NA	2.35E+04	2.35E+04	NA	2.30E+03	2.30E+03	4.70E+01	American Robin	No

Notes

Soil concentrations calculated from annual model result using procedures from *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, CA OEHHA, February 2015.

No degradation is assumed using half-live of 1.00E+08 which overpredicts for organic compounds.

Calculation used described below.

C_s = Dep * X / (K_s * SD * BD * T_t)

Dep = Deposition on the affected soil area per day (ug/m^2/d)

Dep = GLC * Dep-rate * 86,400

GLC = The chemical specific annual ground level concentration from OBODM result and emission factor (ug/m^3)

Dep-rate = 0.05 m/sec (default value for uncontrolled source)

86,400 = Seconds per day conversion factor

X = [{$e^{-Ks * Tf}$ - $e^{-Ks * To}$} / K_s] + T_t

e = 2.718

K_s = Soil elimination constant

3650 T_f = End of evaluation period (d)

0 T_o = Beginning of evaluation period (d)

3650 T_t = Total days of exposure period T_f - T_o (d)

Additional default values

0.01 SD = Soil mixing depth (m) = 0.01 for soil ingestion or dermal pathway (analysis is on Laboratory property)

Attachment A
EXCEL Table Results Used for Model Results Evaluation

TA-16 Burn Ground Screening Analysis Worksheet for Soil Deposition (continued)

Contaminant	CAS No.	Maximum Annual Concentration ug/m³	Deposition (Dep) ug/m2/day	10 Year Soil Concentration mg/kg	NMED Cancer - Residential Soil TR=1E-05 (mg/kg)	NMED Non-Cancer Residential Soil Screening Level (mg/kg)	Lesser of NMED Cancer or Non Cancer Residential Soil SL (mg/kg)	Carcinogenic Target Risk - EPA SL - Resident Soil based on TR=1E-06 (mg/kg)	Noncancer Child HI EPA RSLs - Resident Soil based on THI =0.1 (mg/kg)	EPA RSLs - the lesser of the Cancer or Non Cancer Residential Soil - RSL (mg/kg)	Minimum LANL ESL mg/kg	Receptor	NMED, EPA, LANL ESL Screening Levels Exceeded?

1,333 BD = Soil bulk density (kg/m³)

1. NA - Chemical Not Available in database
2. U.S. EPA soil carcinogenic and non-carcinogenic screening levels are from the Regional Screening Levels (RSLs) – Generic Tables. November 2019. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables
3. NMED soil carcinogenic and non-carcinogenic screening levels are from the New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation. Volume I Soil Screening Guidance for Human Health Risk Assessments. February 2019 (Revision 2, 6/19/2019). https://www.env.nm.gov/wp-content/uploads/sites/12/2016/11/Final-NMED-SSG-VOL-I_-Rev.2-6_19_19.pdf
4. ESL minimum values and effected receptors are recorded in the LANL ECORSK Database, on CD, LA-UR-12-24548, Los Alamos National Laboratory, Los Alamos, New Mexico, 2019.
5. PM10 emissions factor and emissions are the same for PM2.5.

Supplement 4-13

Air Sampling at Open Burning Treatment Unit

LA-UR-20-24479

Technical Area (TA) 16-388 Open Burning Air Sampling Summary for Resource Conservation and Recovery Act (RCRA) Permitting at Los Alamos National Laboratory (LA-UR-12-22096)

Andrew Green and Shannon Allen ENV-ES

In March 2011 the Environmental Data and Analysis Group (ENV-EDA) AIRNET team conducted sampling of suites of dioxins, furans and metals in support of the RCRA permit for Los Alamos National Laboratory (LANL) operated by LANS, LLC. This document is a brief description of the work that was performed by the AIRNET team in the vicinity of the Technical Area (TA) 16-388 flash pad, located within the TA-16 boundaries. The TA-16-388 flash pad is comprised of a 22 by 22 foot (ft) concrete pad, with a 3 ft high wall on three sides. Two propane burners are used to treat hazardous waste within a metal tray. Individual burn treatment events typically last approximately 0.5 hours. Shannon Allen headed up the field team of Joan Lujan, Melissa Coronado, William Smith, and Louis Naranjo. Shannon coordinated the equipment purchase and sample analysis. Andrew Green performed the data analysis with support from Tammy Diaz.

Waste Streams Treated

Air samples were collected during five different treatment events, each occurring on different days (03/08/11, 03/09/11, 03/10/11, 03/15/11, 03/16/11). The treatment events consisted of wastes that contain water and high explosives waste resulting from high explosives machining operations. The specific explosives treated were PBX 9501 (95% HMX, 2.5% Estane, 2.5% BDNPA), PBX 9502 (95% TATB, 5% KEL-F 800); and a mixture of DAAF (3,3'-Diamino-4,4' azoxyfurazan), and water. Water saturated high explosives was the principal waste stream treated at the TA-16-388 flash pad.

Dioxin and Furan Detection Equipment and Methodology

Dioxin and furan samples were collected using a TE-1000 PUF (poly-urethane foam) high volume air sampler purchased from Tisch Environmental, Inc. Samplers were run one to three hours at approximately 35 cubic feet per minute. Collection duration was based upon the length of the burn. One field blank was collected for each treatment event. Samples were placed in a cooler with ice for transportation to the Sample Management Office, and were subsequently shipped in a cooler with ice to Test America in Knoxville, Tennessee for TO-9a analysis by the LANL ENV Sample Management Office.

Metals Detection Equipment and Methodology

Metals samples were collected using high volume air samplers purchased from Hi-Q Environmental Products Company, and an 8x10 inch polypropylene filter. Samplers were run one to three hours at approximately 40 cubic feet per minute. Collection duration was based upon the length of the burn. One field blank polypropylene filter was collected for each treatment event. Sample filters were placed in glassine envelopes, sealed in ziplock bags, and shipped to ALS Laboratories in Ft. Collins, Colorado by the LANL ENV Sample Management Office.

Sampling Location Selection and Methodology

Two TE-1000 poly-urethane foam (PUF) samplers and two Hi-Q high volume samplers were used for collection at each treatment event. The down wind direction was determined by observing a wind sock prior to setting up for collection for each event. Samplers were placed 25ft to 75ft from the flash pad. One TE-1000 PUF sampler and one Hi-Q sampler were placed in the observed down-wind direction. Another identical set was placed in the second most dominant down-wind direction (based on observations) to maximize the odds of sampling the plume in the event of a wind direction shift. Samplers were placed as close to the flash pad as seemed reasonably possible without sustaining equipment damage. All samplers were powered using extension cords, so no generator emissions were present.

Data Analysis

The field data were coordinated with the data analysis results to derive volume concentrations which were then compared to acute air inhalation exposure concentrations listed in the companion database of the 2005 US Environmental Protection Agency (EPA) *Human Health Hazard Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA530-R-05-006) when available. Other acute inhalation screening levels were identified within the 1999 *Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels for Airborne Toxicants,* drafted by the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency. The details of these comparisons are attached to this document as Table 1.

Concluding Remarks

Data were collected following the standard protocol for such measurements.

Comparisons with identified screening levels indicate operations that were monitored did not exceed any appropriate state or federal levels specified for the analytes monitored.

References

2005, EPA. Human Health Hazard Risk Assessment Protocol for Hazardous Waste Combustion Facilities Final. United States Environmental Protection Agency. Office of Solid Waste and Emergency Response. EPA530-R-05-006. September 2005. http://www.epa.gov/osw/hazard/tsd/td/combust/risk.htm

1999, California Office of Environmental Health Hazardous Assessment (OEHHA). Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels for Airborne Toxicants. Technical Report. Office of

Environmental Health Hazard Assessment, California EPA. March 1999.
http://oehha.ca.gov/air/acute_rels/acuterel.html

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5532	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Heptachlorodibenzodioxin[1,2,3,4	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Heptachlorodibenzodioxins	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Heptachlorodibenzodioxins	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Heptachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Heptachlorodibenzodioxins	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Heptachlorodibenzodioxins	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Heptachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Heptachlorodibenzodioxins	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Heptachlorodibenzodioxins	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Heptachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Heptachlorodibenzodioxins	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Heptachlorodibenzodioxins	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Heptachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Heptachlorodibenzodioxins	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Heptachlorodibenzodioxins	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Heptachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5535	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Heptachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Heptachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Heptachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Heptachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Heptachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Heptachlorodibenzofurans (Total)	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Heptachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzodioxin[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5538	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzodioxin[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzodioxin[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzodioxins (Total)	1.4	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzodioxins (Total)	2.8	pg/Filter	0.17	64.8	11.02	0.25			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzodioxins (Total)	1.3	pg/Filter	0.17792	114	20.28	0.06			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.1797	162	29.11	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzodioxins (Total)	50	pg/Filter	0.17049	162.6	27.72	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzodioxins (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.19	118.8	22.14	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.16871	126.6	21.36	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.1979	53.4	10.57	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17	64.8	11.02	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17601	123.6	21.76	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17792	114	20.28	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5541	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17815	158.4	28.22	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.16878	159	26.84	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzofuran[1,2,3,4,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzofuran[1,2,3,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5545	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzofuran[2,3,4,6,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Hexachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Hexachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Hexachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Hexachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Hexachlorodibenzofurans (Total)	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Hexachlorodibenzofurans (Total)	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.19	118.8	22.1	4.52			1.50E-03		1.50E-06		
RE16-11-5533	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.16871	126.6	21.4	4.68			1.50E-03		1.50E-06		
RE16-11-5534	Octachlorodibenzodioxin[1,2,3,4,	2.1	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.1979	53.4	10.6	9.46			1.50E-03		1.50E-06		
RE16-11-5536	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.17	64.8	11	9.08			1.50E-03		1.50E-06		
RE16-11-5537	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.17601	123.6	21.8	4.60			1.50E-03		1.50E-06		
RE16-11-5539	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.17792	114	20.3	4.93			1.50E-03		1.50E-06		
RE16-11-5540	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.17815	158.4	28.2	3.54			1.50E-03		1.50E-06		
RE16-11-5543	Octachlorodibenzodioxin[1,2,3,4,	9.9	pg/Filter	0.16878	159	26.8	0.37			1.50E-03		1.50E-06		
RE16-11-5544	Octachlorodibenzodioxin[1,2,3,4,	2.6	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.1797	162	29.1	3.44			1.50E-03		1.50E-06		
RE16-11-5546	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter	0.17049	162.6	27.7	3.61			1.50E-03		1.50E-06		
RE16-11-5547	Octachlorodibenzodioxin[1,2,3,4,	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.19	118.8	22.1	4.52			1.50E-03		1.50E-06		
RE16-11-5533	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.16871	126.6	21.4	4.68			1.50E-03		1.50E-06		
RE16-11-5534	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.1979	53.4	10.6	9.46			1.50E-03		1.50E-06		
RE16-11-5536	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.17	64.8	11	9.08			1.50E-03		1.50E-06		
RE16-11-5537	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.17601	123.6	21.8	4.60			1.50E-03		1.50E-06		
RE16-11-5539	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.17792	114	20.3	4.93			1.50E-03		1.50E-06		
RE16-11-5540	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.17815	158.4	28.2	3.54			1.50E-03		1.50E-06		
RE16-11-5543	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.16878	159	26.8	3.73			1.50E-03		1.50E-06		
RE16-11-5544	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.1797	162	29.1	3.44			1.50E-03		1.50E-06		
RE16-11-5546	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter	0.17049	162.6	27.7	3.61			1.50E-03		1.50E-06		
RE16-11-5547	Octachlorodibenzofuran[1,2,3,4,6	100	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5532	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Pentachlorodibenzodioxin[1,2,3,7	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Pentachlorodibenzodioxins	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Pentachlorodibenzodioxins	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Pentachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Pentachlorodibenzodioxins	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Pentachlorodibenzodioxins	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Pentachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Pentachlorodibenzodioxins	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Pentachlorodibenzodioxins	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Pentachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Pentachlorodibenzodioxins	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Pentachlorodibenzodioxins	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Pentachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Pentachlorodibenzodioxins	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Pentachlorodibenzodioxins	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Pentachlorodibenzodioxins	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Pentachlorodibenzofuran[1,2,3,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5535	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Pentachlorodibenzofuran[2,3,4,7,	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Pentachlorodibenzofurans	50	pg/Filter	0.19	118.8	22.1	2.26			1.50E-03		1.50E-06		
RE16-11-5533	Pentachlorodibenzofurans	50	pg/Filter	0.16871	126.6	21.4	2.34			1.50E-03		1.50E-06		
RE16-11-5534	Pentachlorodibenzofurans	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Pentachlorodibenzofurans	50	pg/Filter	0.1979	53.4	10.6	4.73			1.50E-03		1.50E-06		
RE16-11-5536	Pentachlorodibenzofurans	50	pg/Filter	0.17	64.8	11	4.54			1.50E-03		1.50E-06		
RE16-11-5537	Pentachlorodibenzofurans	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Pentachlorodibenzofurans	50	pg/Filter	0.17601	123.6	21.8	2.30			1.50E-03		1.50E-06		
RE16-11-5539	Pentachlorodibenzofurans	50	pg/Filter	0.17792	114	20.3	2.47			1.50E-03		1.50E-06		
RE16-11-5540	Pentachlorodibenzofurans	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Pentachlorodibenzofurans	50	pg/Filter	0.17815	158.4	28.2	1.77			1.50E-03		1.50E-06		
RE16-11-5543	Pentachlorodibenzofurans	50	pg/Filter	0.16878	159	26.8	1.86			1.50E-03		1.50E-06		
RE16-11-5544	Pentachlorodibenzofurans	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Pentachlorodibenzofurans	50	pg/Filter	0.1797	162	29.1	1.72			1.50E-03		1.50E-06		
RE16-11-5546	Pentachlorodibenzofurans	50	pg/Filter	0.17049	162.6	27.7	1.80			1.50E-03		1.50E-06		
RE16-11-5547	Pentachlorodibenzofurans	50	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.19	118.8	22.1	0.45			1.50E-03		1.50E-06		
RE16-11-5533	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.16871	126.6	21.4	0.47			1.50E-03		1.50E-06		
RE16-11-5534	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.1979	53.4	10.6	0.95			1.50E-03		1.50E-06		
RE16-11-5536	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.17	64.8	11	0.91			1.50E-03		1.50E-06		
RE16-11-5537	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.17601	123.6	21.8	0.46			1.50E-03		1.50E-06		
RE16-11-5539	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.17792	114	20.3	0.49			1.50E-03		1.50E-06		
RE16-11-5540	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.17815	158.4	28.2	0.35			1.50E-03		1.50E-06		
RE16-11-5543	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.16878	159	26.8	0.37			1.50E-03		1.50E-06		
RE16-11-5544	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.1797	162	29.1	0.34			1.50E-03		1.50E-06		
RE16-11-5546	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter	0.17049	162.6	27.7	0.36			1.50E-03		1.50E-06		
RE16-11-5547	Tetrachlorodibenzodioxin[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.19	118.8	22.1	0.45			1.50E-03		1.50E-06		
RE16-11-5533	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.16871	126.6	21.4	0.47			1.50E-03		1.50E-06		
RE16-11-5534	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.1979	53.4	10.6	0.95			1.50E-03		1.50E-06		
RE16-11-5536	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.17	64.8	11	0.91			1.50E-03		1.50E-06		
RE16-11-5537	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0				1.50E-03		1.50E-06		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5538	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.17601	123.6	21.8	0.46			1.50E-03		1.50E-06		
RE16-11-5539	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.17792	114	20.3	0.49			1.50E-03		1.50E-06		
RE16-11-5540	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.17815	158.4	28.2	0.35			1.50E-03		1.50E-06		
RE16-11-5543	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.16878	159	26.8	0.37			1.50E-03		1.50E-06		
RE16-11-5544	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.1797	162	29.1	0.34			1.50E-03		1.50E-06		
RE16-11-5546	Tetrachlorodibenzodioxins (Total)	10	pg/Filter	0.17049	162.6	27.7	0.36			1.50E-03		1.50E-06		
RE16-11-5547	Tetrachlorodibenzodioxins (Total)	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.19	118.8	22.1	0.45			1.50E-03		1.50E-06		
RE16-11-5533	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.16871	126.6	21.4	0.47			1.50E-03		1.50E-06		
RE16-11-5534	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.1979	53.4	10.6	0.95			1.50E-03		1.50E-06		
RE16-11-5536	Tetrachlorodibenzofuran[2,3,7,8-	0.88	pg/Filter	0.17	64.8	11	0.08			1.50E-03		1.50E-06		
RE16-11-5537	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.17601	123.6	21.8	0.46			1.50E-03		1.50E-06		
RE16-11-5539	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.17792	114	20.3	0.49			1.50E-03		1.50E-06		
RE16-11-5540	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.17815	158.4	28.2	0.35			1.50E-03		1.50E-06		
RE16-11-5543	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.16878	159	26.8	0.37			1.50E-03		1.50E-06		
RE16-11-5544	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.1797	162	29.1	0.34			1.50E-03		1.50E-06		
RE16-11-5546	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter	0.17049	162.6	27.7	0.36			1.50E-03		1.50E-06		
RE16-11-5547	Tetrachlorodibenzofuran[2,3,7,8-	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5532	Tetrachlorodibenzofurans	10	pg/Filter	0.19	118.8	22.1	0.45			1.50E-03		1.50E-06		
RE16-11-5533	Tetrachlorodibenzofurans	10	pg/Filter	0.16871	126.6	21.4	0.47			1.50E-03		1.50E-06		
RE16-11-5534	Tetrachlorodibenzofurans	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5535	Tetrachlorodibenzofurans	10	pg/Filter	0.1979	53.4	10.6	0.95			1.50E-03		1.50E-06		
RE16-11-5536	Tetrachlorodibenzofurans	0.88	pg/Filter	0.17	64.8	11	0.08			1.50E-03		1.50E-06		
RE16-11-5537	Tetrachlorodibenzofurans	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5538	Tetrachlorodibenzofurans	10	pg/Filter	0.17601	123.6	21.8	0.46			1.50E-03		1.50E-06		
RE16-11-5539	Tetrachlorodibenzofurans	10	pg/Filter	0.17792	114	20.3	0.49			1.50E-03		1.50E-06		
RE16-11-5540	Tetrachlorodibenzofurans	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5541	Tetrachlorodibenzofurans	10	pg/Filter	0.17815	158.4	28.2	0.35			1.50E-03		1.50E-06		
RE16-11-5543	Tetrachlorodibenzofurans	10	pg/Filter	0.16878	159	26.8	0.37			1.50E-03		1.50E-06		
RE16-11-5544	Tetrachlorodibenzofurans	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5545	Tetrachlorodibenzofurans	10	pg/Filter	0.1797	162	29.1	0.34			1.50E-03		1.50E-06		
RE16-11-5546	Tetrachlorodibenzofurans	10	pg/Filter	0.17049	162.6	27.7	0.36			1.50E-03		1.50E-06		
RE16-11-5547	Tetrachlorodibenzofurans	10	pg/Filter			0				1.50E-03		1.50E-06		
RE16-11-5522	Aluminum	27	ug/FILT	1.11852	114	128	0.21	detect		none specified				
RE16-11-5523	Aluminum	12	ug/FILT	1.10436	126	139	0.09	detect		none specified				
RE16-11-5524	Aluminum	20	ug/FILT			0				none specified				
RE16-11-5525	Aluminum	11	ug/FILT	1.10436	54	59.6	0.18	detect		none specified				
RE16-11-5526	Aluminum	81	ug/FILT	1.10436	60	66.3	1.22	detect		none specified				
RE16-11-5527	Aluminum	31	ug/FILT	1.10436	120	133	0.23	detect		none specified				
RE16-11-5528	Aluminum	26	ug/FILT	1.10436	108	119	0.22	detect		none specified				
RE16-11-5529	Aluminum	200	ug/FILT	1.0902	156	170	1.18	detect		none specified				
RE16-11-5530	Aluminum	98	ug/FILT	1.10436	156	172	0.57	detect		none specified				

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5531	Aluminum	14	ug/FILT	1.0902	162	177	0.08	detect		none specified				
RE16-11-5542	Aluminum	28	ug/FILT	1.0902	162	177	0.16	detect	10	none specified				
RE16-11-5522	Antimony	0.032	ug/FILT	1.11852	114	128	0.00			1.50E+00		1.50E+03		
RE16-11-5523	Antimony	0.024	ug/FILT	1.10436	126	139	0.00			1.50E+00		1.50E+03		
RE16-11-5524	Antimony	0.032	ug/FILT			0	0.00			1.50E+00		1.50E+03		
RE16-11-5525	Antimony	0.06	ug/FILT	1.10436	54	59.6	0.00			1.50E+00		1.50E+03		
RE16-11-5526	Antimony	0.06	ug/FILT	1.10436	60	66.3	0.00			1.50E+00		1.50E+03		
RE16-11-5527	Antimony	0.06	ug/FILT	1.10436	120	133	0.00			1.50E+00		1.50E+03		
RE16-11-5528	Antimony	[illegible]	[illegible]	1.10436	108	119	0.00	detect		1.50E+00		1.50E+03		
RE16-11-5529	Antimony			1.0902	156	170	0.00			1.50E+00		1.50E+03		
RE16-11-5530	Antimony			1.10436	156	172	0.00			1.50E+00		1.50E+03		
RE16-11-5531	Antimony			1.0902	162	177	0.00			1.50E+00		1.50E+03		
RE16-11-5542	Antimony			1.0902	162	177	0.00		1	1.50E+00		1.50E+03		
RE16-11-5522	Arsenic			1.11852	114	128	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5523	Arsenic			1.10436	126	139	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5524	Arsenic					0	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5525	Arsenic			1.10436	54	59.6	0.01			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5526	Arsenic			1.10436	60	66.3	0.01			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5527	Arsenic			1.10436	120	133	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5528	Arsenic			1.10436	108	119	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5529	Arsenic			1.0902	156	170	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5530	Arsenic			1.10436	156	172	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5531	Arsenic			1.0902	162	177	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5542	Arsenic			1.0902	162	177	0.00			1.90E-04	1.90E-01	1.90E-01		
RE16-11-5522	Barium			1.11852	114	128	0.00	detect		1.50E+00		1.50E+03		
RE16-11-5523	Barium	0.16	ug/FILT	1.10436	126	139	0.00			1.50E+00		1.50E+03		
RE16-11-5524	Barium	0.58	ug/FILT			0	0.00			1.50E+00		1.50E+03		
RE16-11-5525	Barium	0.3	ug/FILT	1.10436	54	59.6	0.01	detect		1.50E+00		1.50E+03		
RE16-11-5526	Barium	1	ug/FILT	1.10436	60	66.3	0.02	detect		1.50E+00		1.50E+03		
RE16-11-5527	Barium	0.8	ug/FILT	1.10436	120	133	0.01	detect		1.50E+00		1.50E+03		
RE16-11-5528	Barium	0.63	ug/FILT	1.10436	108	119	0.01	detect		1.50E+00		1.50E+03		
RE16-11-5529	Barium	1.2	ug/FILT	1.0902	156	170	0.01	detect		1.50E+00		1.50E+03		
RE16-11-5530	Barium	1.8	ug/FILT	1.10436	156	172	0.01	detect		1.50E+00		1.50E+03		
RE16-11-5531	Barium	0.42	ug/FILT	1.0902	162	177	0.00	detect		1.50E+00		1.50E+03		
RE16-11-5542	Barium	1.2	ug/FILT	1.0902	162	177	0.01	detect	9	1.50E+00		1.50E+03		
RE16-11-5522	Beryllium	0.1	ug/FILT	1.11852	114	128	0.00			5.00E-03		5.00E+00		
RE16-11-5523	Beryllium	0.1	ug/FILT	1.10436	126	139	0.00			5.00E-03		5.00E+00		
RE16-11-5524	Beryllium	0.1	ug/FILT			0	0.00			5.00E-03		5.00E+00		
RE16-11-5525	Beryllium	0.1	ug/FILT	1.10436	54	59.6	0.00			5.00E-03		5.00E+00		
RE16-11-5526	Beryllium	0.1	ug/FILT	1.10436	60	66.3	0.00			5.00E-03		5.00E+00		
RE16-11-5527	Beryllium	0.1	ug/FILT	1.10436	120	133	0.00			5.00E-03		5.00E+00		
RE16-11-5528	Beryllium	0.1	ug/FILT	1.10436	108	119	0.00			5.00E-03		5.00E+00		
RE16-11-5529	Beryllium	0.1	ug/FILT	1.0902	156	170	0.00			5.00E-03		5.00E+00		
RE16-11-5530	Beryllium	0.1	ug/FILT	1.10436	156	172	0.00			5.00E-03		5.00E+00		
RE16-11-5531	Beryllium	0.1	ug/FILT	1.0902	162	177	0.00			5.00E-03		5.00E+00		
RE16-11-5542	Beryllium	0.1	ug/FILT	1.0902	162	177	0.00			5.00E-03		5.00E+00		
RE16-11-5522	Cadmium	0.042	ug/FILT	1.11852	114	128	0.00			3.00E-02		3.00E+01		
RE16-11-5523	Cadmium	0.09	ug/FILT	1.10436	126	139	0.00	detect		3.00E-02		3.00E+01		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5524	Cadmium	0.13	ug/FILT			0	0.00			3.00E-02		3.00E+01		
RE16-11-5525	Cadmium	0.12	ug/FILT	1.10436	54	59.6	0.00	detect		3.00E-02		3.00E+01		
RE16-11-5526	Cadmium	0.63	ug/FILT	1.10436	60	66.3	0.01	detect		3.00E-02		3.00E+01		
RE16-11-5527	Cadmium	1.1	ug/FILT	1.10436	120	133	0.01	detect		3.00E-02		3.00E+01		
RE16-11-5528	Cadmium	0.97	ug/FILT	1.10436	108	119	0.01	detect		3.00E-02		3.00E+01		
RE16-11-5529	Cadmium	12	ug/FILT	1.0902	156	170	0.07	detect		3.00E-02		3.00E+01		
RE16-11-5530	Cadmium	11	ug/FILT	1.10436	156	172	0.06	detect		3.00E-02		3.00E+01		
RE16-11-5531	Cadmium	0.024	ug/FILT	1.0902	162	177	0.00			3.00E-02		3.00E+01		
RE16-11-5542	Cadmium	0.38	ug/FILT	1.0902	162	177	0.00	detect	8	3.00E-02		3.00E+01		
RE16-11-5522	Calcium	34	ug/FILT	1.11852	114	128	0.27			none specified				
RE16-11-5523	Calcium	30	ug/FILT	1.10436	126	139	0.22			none specified				
RE16-11-5524	Calcium	21	ug/FILT			0	0.00			none specified				
RE16-11-5525	Calcium	38	ug/FILT	1.10436	54	59.6	0.64			none specified				
RE16-11-5526	Calcium	30	ug/FILT	1.10436	60	66.3	0.45			none specified				
RE16-11-5527	Calcium	62	ug/FILT	1.10436	120	133	0.47			none specified				
RE16-11-5528	Calcium	50	ug/FILT	1.10436	108	119	0.42			none specified				
RE16-11-5529	Calcium	38	ug/FILT	1.0902	156	170	0.22			none specified				
RE16-11-5530	Calcium	48	ug/FILT	1.10436	156	172	0.28			none specified				
RE16-11-5531	Calcium	58	ug/FILT	1.0902	162	177	0.33			none specified				
RE16-11-5542	Calcium	42	ug/FILT	1.0902	162	177	0.24			none specified				
RE16-11-5522	Chromium	0.51	ug/FILT	1.11852	114	128	0.00			1.50E+00		1.50E+03		
RE16-11-5523	Chromium	0.56	ug/FILT	1.10436	126	139	0.00			1.50E+00		1.50E+03		
RE16-11-5524	Chromium	0.6	ug/FILT			0	0.00			1.50E+00		1.50E+03		
RE16-11-5525	Chromium	0.22	ug/FILT	1.10436	54	59.6	0.00			1.50E+00		1.50E+03		
RE16-11-5526	Chromium	0.56	ug/FILT	1.10436	60	66.3	0.01			1.50E+00		1.50E+03		
RE16-11-5527	Chromium	1	ug/FILT	1.10436	120	133	0.01			1.50E+00		1.50E+03		
RE16-11-5528	Chromium	0.95	ug/FILT	1.10436	108	119	0.01			1.50E+00		1.50E+03		
RE16-11-5529	Chromium	0.87	ug/FILT	1.0902	156	170	0.01			1.50E+00		1.50E+03		
RE16-11-5530	Chromium	0.86	ug/FILT	1.10436	156	172	0.00			1.50E+00		1.50E+03		
RE16-11-5531	Chromium	0.29	ug/FILT	1.0902	162	177	0.00			1.50E+00		1.50E+03		
RE16-11-5542	Chromium	0.4	ug/FILT	1.0902	162	177	0.00			1.50E+00		1.50E+03		
RE16-11-5522	Cobalt	0.2	ug/FILT	1.11852	114	128	0.00			none specified				
RE16-11-5523	Cobalt	0.02	ug/FILT	1.10436	126	139	0.00			none specified				
RE16-11-5524	Cobalt	0.024	ug/FILT			0	0.00			none specified				
RE16-11-5525	Cobalt	0.2	ug/FILT	1.10436	54	59.6	0.00			none specified				
RE16-11-5526	Cobalt	0.03	ug/FILT	1.10436	60	66.3	0.00			none specified				
RE16-11-5527	Cobalt	0.092	ug/FILT	1.10436	120	133	0.00			none specified				
RE16-11-5528	Cobalt	0.036	ug/FILT	1.10436	108	119	0.00			none specified				
RE16-11-5529	Cobalt	0.05	ug/FILT	1.0902	156	170	0.00			none specified				
RE16-11-5530	Cobalt	0.15	ug/FILT	1.10436	156	172	0.00			none specified				
RE16-11-5531	Cobalt	0.2	ug/FILT	1.0902	162	177	0.00			none specified				
RE16-11-5542	Cobalt	0.062	ug/FILT	1.0902	162	177	0.00			none specified				
RE16-11-5522	Copper	0.87	ug/FILT	1.11852	114	128	0.01			none specified	1.00E+02	1.00E+02		
RE16-11-5523	Copper	1.7	ug/FILT	1.10436	126	139	0.01			none specified	1.00E+02	1.00E+02		
RE16-11-5524	Copper	0.55	ug/FILT			0	0.00			none specified	1.00E+02	1.00E+02		
RE16-11-5525	Copper	1.9	ug/FILT	1.10436	54	59.6	0.03			none specified	1.00E+02	1.00E+02		
RE16-11-5526	Copper	1.1	ug/FILT	1.10436	60	66.3	0.02			none specified	1.00E+02	1.00E+02		
RE16-11-5527	Copper	1.8	ug/FILT	1.10436	120	133	0.01			none specified	1.00E+02	1.00E+02		

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5528	Copper	3.2	ug/FILT	1.10436	108	119	0.03	detect		none specified	1.00E+02	1.00E+02		
RE16-11-5529	Copper	2.8	ug/FILT	1.0902	156	170	0.02	detect		none specified	1.00E+02	1.00E+02		
RE16-11-5530	Copper	1.5	ug/FILT	1.10436	156	172	0.01			none specified	1.00E+02	1.00E+02		
RE16-11-5531	Copper	1.3	ug/FILT	1.0902	162	177	0.01			none specified	1.00E+02	1.00E+02		
RE16-11-5542	Copper	2.6	ug/FILT	1.0902	162	177	0.01	detect	3	none specified	1.00E+02	1.00E+02		
RE16-11-5522	Iron	36	ug/FILT	1.11852	114	128	0.28	detect		none specified				
RE16-11-5523	Iron	15	ug/FILT	1.10436	126	139	0.11			none specified				
RE16-11-5524	Iron	38	ug/FILT			0	0.00			none specified				
RE16-11-5525	Iron	7.1	ug/FILT	1.10436	54	59.6	0.12			none specified				
RE16-11-5526	Iron	24	ug/FILT	1.10436	60	66.3	0.36	detect		none specified				
RE16-11-5527	Iron	53	ug/FILT	1.10436	120	133	0.40	detect		none specified				
RE16-11-5528	Iron	45	ug/FILT	1.10436	108	119	0.38	detect		none specified				
RE16-11-5529	Iron	82	ug/FILT	1.0902	156	170	0.48	detect		none specified				
RE16-11-5530	Iron	110	ug/FILT	1.10436	156	172	0.64	detect		none specified				
RE16-11-5531	Iron	17	ug/FILT	1.0902	162	177	0.10			none specified				
RE16-11-5542	Iron	42	ug/FILT	1.0902	162	177	0.24	detect	7	none specified				
RE16-11-5522	Lead	0.63	ug/FILT	1.11852	114	128	0.00	detect		1.50E-01		1.50E+02		
RE16-11-5523	Lead	1.7	ug/FILT	1.10436	126	139	0.01	detect		1.50E-01		1.50E+02		
RE16-11-5524	Lead	2.1	ug/FILT			0	0.00			1.50E-01		1.50E+02		
RE16-11-5525	Lead	1.6	ug/FILT	1.10436	54	59.6	0.03	detect		1.50E-01		1.50E+02		
RE16-11-5526	Lead	11	ug/FILT	1.10436	60	66.3	0.17	detect		1.50E-01		1.50E+02		
RE16-11-5527	Lead	19	ug/FILT	1.10436	120	133	0.14	detect		1.50E-01		1.50E+02		
RE16-11-5528	Lead	35	ug/FILT	1.10436	108	119	0.29	detect		1.50E-01		1.50E+02		
RE16-11-5529	Lead	180	ug/FILT	1.0902	156	170	1.06	detect		1.50E-01		1.50E+02		
RE16-11-5530	Lead	190	ug/FILT	1.10436	156	172	1.10	detect		1.50E-01		1.50E+02		
RE16-11-5531	Lead	0.34	ug/FILT	1.0902	162	177	0.00	detect		1.50E-01		1.50E+02		
RE16-11-5542	Lead	6.7	ug/FILT	1.0902	162	177	0.04	detect	10	1.50E-01		1.50E+02		
RE16-11-5522	Magnesium	5.2	ug/FILT	1.11852	114	128	0.04			none specified				
RE16-11-5523	Magnesium	4.7	ug/FILT	1.10436	126	139	0.03			none specified				
RE16-11-5524	Magnesium	8.1	ug/FILT			0	0.00			none specified				
RE16-11-5525	Magnesium	20	ug/FILT	1.10436	54	59.6	0.34			none specified				
RE16-11-5526	Magnesium	4.6	ug/FILT	1.10436	60	66.3	0.07			none specified				
RE16-11-5527	Magnesium	8.6	ug/FILT	1.10436	120	133	0.06			none specified				
RE16-11-5528	Magnesium	8.1	ug/FILT	1.10436	108	119	0.07			none specified				
RE16-11-5529	Magnesium	15	ug/FILT	1.0902	156	170	0.09			none specified				
RE16-11-5530	Magnesium	14	ug/FILT	1.10436	156	172	0.08			none specified				
RE16-11-5531	Magnesium	6	ug/FILT	1.0902	162	177	0.03			none specified				
RE16-11-5542	Magnesium	5	ug/FILT	1.0902	162	177	0.03			none specified				
RE16-11-5522	Manganese	0.34	ug/FILT	1.11852	114	128	0.00			none specified				
RE16-11-5523	Manganese	0.25	ug/FILT	1.10436	126	139	0.00			none specified				
RE16-11-5524	Manganese	0.25	ug/FILT			0	0.00			none specified				
RE16-11-5525	Manganese	0.078	ug/FILT	1.10436	54	59.6	0.00			none specified				
RE16-11-5526	Manganese	0.33	ug/FILT	1.10436	60	66.3	0.00			none specified				
RE16-11-5527	Manganese	1.2	ug/FILT	1.10436	120	133	0.01	detect		none specified				
RE16-11-5528	Manganese	0.63	ug/FILT	1.10436	108	119	0.01	detect		none specified				
RE16-11-5529	Manganese	0.8	ug/FILT	1.0902	156	170	0.00	detect		none specified				
RE16-11-5530	Manganese	1.3	ug/FILT	1.10436	156	172	0.01	detect		none specified				
RE16-11-5531	Manganese	0.35	ug/FILT	1.0902	162	177	0.00			none specified				

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5542	Manganese	0.57	ug/FILT	1.0902	162	177	0.00	detect	5	none specified				
RE16-11-5522	Nickel	0.24	ug/FILT	1.11852	114	128	0.00			6.00E-03	6.00E+02	6.00E+00		
RE16-11-5523	Nickel	1.2	ug/FILT	1.10436	126	139	0.01	detect		6.00E-03	6.00E+02	6.00E+00		
RE16-11-5524	Nickel	0.36	ug/FILT			0	0.00			6.00E-03	6.00E+02	6.00E+00		
RE16-11-5525	Nickel	0.35	ug/FILT	1.10436	54	59.6	0.01			6.00E-03	6.00E+02	6.00E+00		
RE16-11-5526	Nickel	2.1	ug/FILT	1.10436	60	66.3	0.03	detect		6.00E-03	6.00E+02	6.00E+00		
RE16-11-5527	Nickel	4.5	ug/FILT	1.10436	120	133	0.03	detect		6.00E-03	6.00E+02	6.00E+00		
RE16-11-5528	Nickel	1.1	ug/FILT	1.10436	108	119	0.01	detect		6.00E-03	6.00E+02	6.00E+00		
RE16-11-5529	Nickel	2.1	ug/FILT	1.0902	156	170	0.01	detect		6.00E-03	6.00E+02	6.00E+00		
RE16-11-5530	Nickel	8.7	ug/FILT	1.10436	156	172	0.05	detect		6.00E-03	6.00E+02	6.00E+00		
RE16-11-5531	Nickel	0.64	ug/FILT	1.0902	162	177	0.00			6.00E-03	6.00E+02	6.00E+00		
RE16-11-5542	Nickel	4	ug/FILT	1.0902	162	177	0.02	detect	7	6.00E-03	6.00E+02	6.00E+00		
RE16-11-5522	Potassium	200	ug/FILT	1.11852	114	128	1.57			none specified				
RE16-11-5523	Potassium	200	ug/FILT	1.10436	126	139	1.44			none specified				
RE16-11-5524	Potassium	200	ug/FILT			0	0.00			none specified				
RE16-11-5525	Potassium	200	ug/FILT	1.10436	54	59.6	3.35			none specified				
RE16-11-5526	Potassium	18	ug/FILT	1.10436	60	66.3	0.27			none specified				
RE16-11-5527	Potassium	200	ug/FILT	1.10436	120	133	1.51			none specified				
RE16-11-5528	Potassium	200	ug/FILT	1.10436	108	119	1.68			none specified				
RE16-11-5529	Potassium	200	ug/FILT	1.0902	156	170	1.18			none specified				
RE16-11-5530	Potassium	200	ug/FILT	1.10436	156	172	1.16			none specified				
RE16-11-5531	Potassium	200	ug/FILT	1.0902	162	177	1.13			none specified				
RE16-11-5542	Potassium	200	ug/FILT	1.0902	162	177	1.13			none specified				
RE16-11-5522	Selenium	0.2	ug/FILT	1.11852	114	128	0.00			1.47E+00		1.47E+03		
RE16-11-5523	Selenium	0.2	ug/FILT	1.10436	126	139	0.00			1.47E+00		1.47E+03		
RE16-11-5524	Selenium	0.2	ug/FILT			0	0.00			1.47E+00		1.47E+03		
RE16-11-5525	Selenium	0.2	ug/FILT	1.10436	54	59.6	0.00			1.47E+00		1.47E+03		
RE16-11-5526	Selenium	0.2	ug/FILT	1.10436	60	66.3	0.00			1.47E+00		1.47E+03		
RE16-11-5527	Selenium	0.2	ug/FILT	1.10436	120	133	0.00			1.47E+00		1.47E+03		
RE16-11-5528	Selenium	0.2	ug/FILT	1.10436	108	119	0.00			1.47E+00		1.47E+03		
RE16-11-5529	Selenium	0.2	ug/FILT	1.0902	156	170	0.00			1.47E+00		1.47E+03		
RE16-11-5530	Selenium	0.2	ug/FILT	1.10436	156	172	0.00			1.47E+00		1.47E+03		
RE16-11-5531	Selenium	0.2	ug/FILT	1.0902	162	177	0.00			1.47E+00		1.47E+03		
RE16-11-5542	Selenium	0.2	ug/FILT	1.0902	162	177	0.00			1.47E+00		1.47E+03		
RE16-11-5522	Silver	0.034	ug/FILT	1.11852	114	128	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5523	Silver	0.014	ug/FILT	1.10436	126	139	0.00			3.00E-01		3.00E+02		
RE16-11-5524	Silver	0.044	ug/FILT			0	0.00			3.00E-01		3.00E+02		
RE16-11-5525	Silver	0.1	ug/FILT	1.10436	54	59.6	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5526	Silver	0.046	ug/FILT	1.10436	60	66.3	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5527	Silver	0.098	ug/FILT	1.10436	120	133	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5528	Silver	0.22	ug/FILT	1.10436	108	119	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5529	Silver	0.022	ug/FILT	1.0902	156	170	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5530	Silver	0.038	ug/FILT	1.10436	156	172	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5531	Silver	0.032	ug/FILT	1.0902	162	177	0.00	detect		3.00E-01		3.00E+02		
RE16-11-5542	Silver	0.01	ug/FILT	1.0902	162	177	0.00		8	3.00E-01		3.00E+02		
RE16-11-5522	Sodium	200	ug/FILT	1.11852	114	128	1.57			none specified				
RE16-11-5523	Sodium	24	ug/FILT	1.10436	126	139	0.17			none specified				
RE16-11-5524	Sodium	200	ug/FILT			0	0.00			none specified				

Sample Name	Analyte Description	Std Result	Std Result Unit	Flow rate (m^3/min)	Flow time (min)	Flow vol m^3	Conc. In air (pg or ug/m^3)	Detection	# of Detects per Analyte	Acute Inhalation Exposure levels (mg/m^3)	CA Acute Reference Exposure Levels (RELs) (mg/m^3)	Conversion of exposure levels to pg or ug/m^3	Exceed Acute Conc?	# of real exceeds per analyte
RE16-11-5525	Sodium	200	ug/FILT	1.10436	54	59.6	3.35			none specified				
RE16-11-5526	Sodium	150	ug/FILT	1.10436	60	66.3	2.26			none specified				
RE16-11-5527	Sodium	200	ug/FILT	1.10436	120	133	1.51			none specified				
RE16-11-5528	Sodium	200	ug/FILT	1.10436	108	119	1.68			none specified				
RE16-11-5529	Sodium	42	ug/FILT	1.0902	156	170	0.25			none specified				
RE16-11-5530	Sodium	48	ug/FILT	1.10436	156	172	0.28			none specified				
RE16-11-5531	Sodium	200	ug/FILT	1.0902	162	177	1.13			none specified				
RE16-11-5542	Sodium	58	ug/FILT	1.0902	162	177	0.33			none specified				
RE16-11-5522	Thallium	0.006	ug/FILT	1.11852	114	128	0.00			3.00E-01		3.00E+02		
RE16-11-5523	Thallium	0.01	ug/FILT	1.10436	126	139	0.00			3.00E-01		3.00E+02		
RE16-11-5524	Thallium	0.006	ug/FILT			0	0.00			3.00E-01		3.00E+02		
RE16-11-5525	Thallium	0.04	ug/FILT	1.10436	54	59.6	0.00			3.00E-01		3.00E+02		
RE16-11-5526	Thallium	0.04	ug/FILT	1.10436	60	66.3	0.00			3.00E-01		3.00E+02		
RE16-11-5527	Thallium	0.012	ug/FILT	1.10436	120	133	0.00			3.00E-01		3.00E+02		
RE16-11-5528	Thallium	0.04	ug/FILT	1.10436	108	119	0.00			3.00E-01		3.00E+02		
RE16-11-5529	Thallium	0.04	ug/FILT	1.0902	156	170	0.00			3.00E-01		3.00E+02		
RE16-11-5530	Thallium	0.04	ug/FILT	1.10436	156	172	0.00			3.00E-01		3.00E+02		
RE16-11-5531	Thallium	0.04	ug/FILT	1.0902	162	177	0.00			3.00E-01		3.00E+02		
RE16-11-5542	Thallium	0.04	ug/FILT	1.0902	162	177	0.00			3.00E-01		3.00E+02		
RE16-11-5522	Vanadium	0.2	ug/FILT	1.11852	114	128	0.00			none specified				
RE16-11-5523	Vanadium	0.2	ug/FILT	1.10436	126	139	0.00			none specified				
RE16-11-5524	Vanadium	0.2	ug/FILT			0	0.00			none specified				
RE16-11-5525	Vanadium	0.2	ug/FILT	1.10436	54	59.6	0.00			none specified				
RE16-11-5526	Vanadium	0.2	ug/FILT	1.10436	60	66.3	0.00			none specified				
RE16-11-5527	Vanadium	0.2	ug/FILT	1.10436	120	133	0.00			none specified				
RE16-11-5528	Vanadium	0.2	ug/FILT	1.10436	108	119	0.00			none specified				
RE16-11-5529	Vanadium	0.056	ug/FILT	1.0902	156	170	0.00			none specified				
RE16-11-5530	Vanadium	0.058	ug/FILT	1.10436	156	172	0.00			none specified				
RE16-11-5531	Vanadium	0.2	ug/FILT	1.0902	162	177	0.00			none specified				
RE16-11-5542	Vanadium	0.2	ug/FILT	1.0902	162	177	0.00			none specified				
RE16-11-5522	Zinc	2.5	ug/FILT	1.11852	114	128	0.02			3.00E+01		3.00E+04		
RE16-11-5523	Zinc	4.6	ug/FILT	1.10436	126	139	0.03	detect		3.00E+01		3.00E+04		
RE16-11-5524	Zinc	2	ug/FILT			0	0.00			3.00E+01		3.00E+04		
RE16-11-5525	Zinc	7.9	ug/FILT	1.10436	54	59.6	0.13	detect		3.00E+01		3.00E+04		
RE16-11-5526	Zinc	5.3	ug/FILT	1.10436	60	66.3	0.08	detect		3.00E+01		3.00E+04		
RE16-11-5527	Zinc	17	ug/FILT	1.10436	120	133	0.13	detect		3.00E+01		3.00E+04		
RE16-11-5528	Zinc	12	ug/FILT	1.10436	108	119	0.10	detect		3.00E+01		3.00E+04		
RE16-11-5529	Zinc	7.3	ug/FILT	1.0902	156	170	0.04	detect		3.00E+01		3.00E+04		
RE16-11-5530	Zinc	8.1	ug/FILT	1.10436	156	172	0.05	detect		3.00E+01		3.00E+04		
RE16-11-5531	Zinc	20	ug/FILT	1.0902	162	177	0.11	detect		3.00E+01		3.00E+04		
RE16-11-5542	Zinc	5.3	ug/FILT	1.0902	162	177	0.03	detect	9	3.00E+01		3.00E+04		

Supplement 4-14

Thermal Measurements at the TA-16-388 Flash Pad

LA-UR-20-24479

Table of Contents

Contents

1.0 Introduction

The single remaining active open burning treatment unit at the Los Alamos National Laboratory is known as the TA-16-388 Flash Pad and is used to treat explosives and explosives-contaminated hazardous waste utilizing two propane burners in an open air environment. As part of the Resource Conservation and Recovery Act (RCRA) application process for this unit, the U.S. Department of Energy (DOE) and the Los Alamos National Security, LLC (LANS) have determined that an exercise to verify treatment temperatures at the unit was necessary. This report details the thermal measurements collected from two open burning treatment events conducted at the TA-16-388 Flash Pad and discusses how those temperatures may have an effect on combustion products from treatment events at the unit. The treatment events occurred on April 3, 2013 and April 18, 2013. The wastes treated during the test were the most routinely treated waste stream for open burning.

In order to provide definitive verification of the burner output temperature, three different measurement types were used. Type K thermocouples provided contact measurements on and around the screen or cage that surrounds the waste within the burn tray. Non-contact temperature measurements were made using an infrared pyrometer and an infrared thermal imager. Two different pyrometers were used during testing, one during each of the two tests. All three measurement methodologies were used for each test.

2.0 Thermal Measurement Set-Up and Methodology

Three different measurement methods were employed in order to give the most comprehensive thermal profile of the burn in the treatment unit. For all treatment events, waste material is placed within a screen cage inside the burn tray to minimize the escape of any embers from the area during treatment. Thermocouples were arranged around the screen in which the waste material is placed for burning. A pyrometer was aimed at the screen in the first test and at a graphite target in the second test. The graphite target was utilized in the second test to lessen the variation of the pyrometer signal that was present during the April 3rd test due to turbulence. The graphite target created a larger mass for the pyrometer to be aimed at that was less susceptible to movement created by the burner outputs. Finally, a thermal imager was placed where it could view the entire burning area in the unit. This placement provided both spot measurements and a complete picture of the treatment temperatures achieved in the unit. All equipment used in the two tests is either itself NIST (National Institute of Standards and Technology)-traceable, or was verified using NIST-traceable equipment. Signals from the thermocouples and the pyrometers were data-logged using a Graphtec GL800 midi Data Logger. All signals were logged at a rate of 5 per second.

A thermocouple is a temperature measurement device consisting of a junction of two dissimilar metals. When the junction is heated, a voltage will be created that is temperature-dependent. This voltage is then converted to a calibrated temperature reading. The type K thermocouples used during testing have a temperature range from -330°F to 2100°F. In both tests, Type K thermocouples were placed at several points in and around the burn tray (Figure 1).

A pyrometer was set up to measure temperature at the surface of the screen (Figure 1). A pyrometer is a non-contact temperature measurement device that detects thermal radiation to determine the temperature of an object's surface without contacting the object. The measurement of the thermal radiation is output as a current signal that is converted to the corresponding temperature by the data logger. Two different pyrometers were used in each of the two tests, one reading from 1652°F to 4532°F and the other reading from 914°F to 3632°F.

A thermal imager works in a manner similar to a pyrometer. It is a non-contact device that detects infrared energy and converts it to an electrical signal. The images created depict different temperatures as different colors and are included within Attachments A and B of this report. A color key for the images is shown on each page. In each thermogram, the waste screen or cage (Ar1) is outlined in blue. The pyrometer was aimed at the waste; the approximate target area is indicated by the crosshairs (marked as "Sp1" on each thermogram). The thermal imager was set to capture an image every 10 seconds.

3.0 Data Analysis

The following sections describe the temperature verification activities associated with each of the waste treatment events measured. The sections include a general description of the waste treated, the location and type of instruments used to measure temperature, and a description of the type of data obtained from each test. Excerpts from the images that were generated from the thermal imager are included as Attachments A and B of this report. Full sets of images and data from the pyrometers and thermocouples are included with the electronic copy of the permit modification request to the New Mexico Environment Department- Hazardous Waste Bureau (NMED-HWB) only and are not included as part of this report due to their size.

3.1 Temperature Verification Test – April 3, 2013

On April 3, 2013, 22.7 pounds of hazardous waste were treated at the TA-16-388 Flash Pad. The waste stream treated consisted of explosives-contaminated filter socks that are generated during explosives machining operations. The filter socks are used to filter explosives from water used as a cooling agent during machining operations. Types of explosives that may be present in the machining waste include PBX 9501, PBX 9502, TNT, COMP-B, PETN, PBX 9404, PBX 9407, X-0211, LX-07 and XTX-8003. The waste stream is characterized with the Environmental Protection Agency (EPA) Hazardous Waste Number D003. The waste stream is part of the routinely treated explosives machining waste stream and the treatment event took place for 38 minutes. As shown in Figure 2, the burners were briefly turned off and re-started three times near the end of this test so the operator could visually check for the presence of unburned waste material.

Type K thermocouples were used to record the temperatures at several locations around the waste material. Thermocouples were placed on the east, west, and north sides of the screen enclosing the material (Figure 1). In this test the pyrometer was aimed directly at the waste screen/flames. The pyrometer used for this test begins measuring temperature at 1650°F. Within one minute, the waste temperature as measured with the pyrometer rose to over 1900°F, and to over 2300°F within four minutes.

Figure 2 presents all thermocouple and pyrometer data obtained during the April 3, 2013 test. The temperature during the 38 minute treatment process remains relatively steady during the treatment process with the exception of the times that the burners are turned off. Figure 2 also shows the loss of data when the north and east thermocouples lost connection due to damage by the direct flame. The variability in the data depicted by the green and purple lines, as well as the strong dips in the purple line while the propane burners are on, are indicative of data loss even though the lines follow the same general pattern of the still working thermocouples. However, the exact point at which the thermocouple connection was lost during the treatment process is unknown.

The thermal images (thermograms) in Attachment A of this report depict the overall thermal profile of the burn area throughout the test[1]. The thermal imager was set to capture an image every 10 seconds, and the data shows that the temperature of the screened or waste cage area (shown as Ar1) rose to over 2000°F within one minute. The thermograms within Attachment A in addition to the thermocouple and pyrometer data in Figure 2 show that the temperature within the burn cage stays at a relatively constant temperature throughout the treatment process.

3.2 Temperature Verification Test – April 18, 2013

On April 18, 2013, 40 pounds of the explosive PBX 9501 and 36.5 pounds of the explosive PBX 9502 were treated at the TA-16-388 Flash Pad. The waste treated is also part of the routinely treated explosives machining waste stream and consisted of explosives generated from machining operations and was a mixture of PBX 9501 and PBX 9502 explosives cuttings and shavings with water. The waste stream is characterized with the EPA Hazardous Waste Number D003. The waste treatment event took place for 43 minutes. The burners were briefly turned off and re-started twice near the end of this test in order to visually determine the presence of unburned waste material.

Type K thermocouples were placed in the same locations used during the April 3 test, with the addition of a thermocouple on the north side of the waste containment screen or cage (Figure 1). For this burning operation, thermocouples with longer sheath material were used in order to prevent the connection point burn out that occurred in the April 3, 2013 test. Data was again collected from the north, west, and south thermocouples (Figure 1).

The pyrometer used during this tests begins measuring temperature at 914°F. In this test, the pyrometer was aimed at a ½ inch thick graphite target. Due to the presence of this target, the ramp time of the

[1] *Note that the time stamp shown in each thermal image is 1 hour behind the time shown in the corresponding Figure 2 data, because the thermal imager's clock had not been re-set to Daylight Savings Time (e.g., 7:55am on the thermogram corresponds to 8:55 am on Figure 2).*

pyrometer was slower during this test than the April 3 test. It took approximately two minutes for the pyrometer temperature to rise above 1500°F due to the thermal mass of the graphite target. The pyrometer temperature reached 2000°F within 5 minutes of turning the burners on. The decrease in peak temperature compared to the April 3 test was due to the graphite target being measured rather than the direct flame.

Figure 3 presents the pyrometer and thermocouple data obtained during this test. During the 43 minute treatment event, the temperatures within the screen are well above 1500°F and remain relatively steady while the propane burners are on. The slower rise in temperature that was mentioned in the north, west, and south thermocouples was due to inadvertent contact of the thermocouples with the steel burn tray used to contain the waste materials. Due to the large thermal mass of the tray, the time necessary to bring that mass to temperature is considerably longer than the time required to bring the material and area around it up to the normal operating temperature.

The thermal imager was placed in approximately the same location as the April 3 burn and the thermograms within Attachment B of this report show that the temperature of the cage area containing the waste material (shown as Ar1) rose to over 2000°F. Images were captured every 10 seconds[2] and showed a steady temperature profile. Additionally, after the propane burners were turned off initially, only one of the burners was reignited to finish the treatment process. Temperature measurements after that point still indicate a greater than 2000°F maximum overall temperature for the screened area and a temperature above 1900°F in the middle of the screened area.

4.0 Results

The data collected during these tests demonstrated that the waste is being fully treated in the TA-16-388 Flash Pad at an operating temperature above 2000 °F. The thermal image data collected, along with the pyrometer data, show that the overall temperature in the unit rises quickly and consistently operates at above 2000°F during open burning waste treatment operations. The geometry of the burn pan is such that flames from the two propane burners intersect the waste inside the burn cage that is within the burn tray. The data indicate that the waste temperature rises rapidly – from ambient to above 1500 ˚F – in approximately 60 seconds as shown in Figure 2.

As the temperature begins to rise, the waste begins to lose water via evaporation, as the water in both of the waste streams tested is heated by the two propane burners. Organics, including the explosives within the waste, begin thermal decomposition into gaseous products at the same time that the water is evaporating. In general, the combustion products or emissions from most energetic materials treated by open burning in an unconfined state will be represented by water, carbon dioxide, carbon monoxide, oxides of nitrogen. Saturated short chain hydrocarbons, acetylene, ethylene, propene, benzene, toluene, and particulate matter may also be formed, but are rapidly oxidized to primarily water and

[2] *Note that the time stamp shown in each thermal image is 1 hour behind the time shown in the corresponding Figure 3 data, because the thermal imager's clock had not been re-set to Daylight Savings Time (e.g., 7:38am on the thermogram corresponds to 8:38 am on Figure 3).*

carbon dioxide. Chlorinated materials in the waste, such as plastics or the binders within the explosives, also undergo the thermal decomposition process. (Mitchell & Suggs, 1998)

The thermal images and thermocouple/pyrometer graphs show that during the initial 60 seconds after the start of the burn, temperatures inside the screened area in the burn tray holding the waste are between 400 and 1400˚F. After this point in the burn test, temperatures within the burn cage area are consistently above 1500˚F. In each of the burn test events, high temperatures, over 1500˚F were maintained and the each of the tests occurred for more than 30 minutes. Most treatment events at the TA-16-388 Flash Pad last approximately 30 minutes.

One of the concerns about emissions products associated with open burning treatment activities is the potential to produce dioxins and furan congeners. Products of incomplete combustion, like dioxins and furans, form at a temperature range of approximately 550 to 1115 ˚F (Kulkarni, Crespo, and Afonso, 2007). Dioxins and furans are destroyed at temperatures above 1400˚F (EPA, 2010) and will be decomposed predominantly into gaseous combustion products such as the oxidized compounds of carbon and nitrogen, water, and minute quantities of diatomic chlorine and hydrogen chloride can be expected.

Additional information on the formation and destruction of dioxins and furans can be found from the American Chemistry Council’s (2003) *Dioxin Fact Sheet.* The sheet highlights that there are three conditions necessary to prevent formation and increase the destruction of any dioxins and furans present due to incomplete combustion of waste:

1. The waste must be combusted at a high temperature to ensure efficient waste destruction,
2. The waste must have adequate combustion time, and
3. The heat must be distributed evenly through turbulence in the combustion zone.

During the ramp-up of temperature in the first 60 seconds of an open burning treatment, the temperature within the screened area will pass through the temperature zone necessary for dioxin and furan formation. However, because the waste within the burn tray is also coming up to temperature, incomplete combustion products will be minimized during that time frame. Additionally, the thermographs in Attachments A and B show that waste temperature rises above 1500 ˚F by the time 60 seconds have elapsed. The waste temperature continues to rise to above 2000 ˚F, where it is maintained for the rest of the 30-minute duration of a burn cycle. At high combustion temperatures, dioxins are not thermodynamically stable and decomposition is favored (Huan and Buekens, 1995). The temperature necessary for destruction of dioxin and furan congeners is met in every burn operation. In addition, the propane burners are fixed at the burn tray that contains the waste for the entire treatment event; therefore, the waste receives sufficient dwell time within the combustion zone to further reduce the potential for dioxin/furan formation.

The third condition, turbulence in the area where waste treatment is occurring, is induced by the combination of flames directed at the waste from the two propane burners and the formation of combustion gases immediately above the waste. The thermographs clearly depict the turbulence of the gases immediately above the waste cage throughout the burn event. They show that the temperature of combustion gases exceeds 2000˚F within 30 seconds after the burners are ignited. Within 50 seconds after ignition, gas temperatures are greater than 2300 ˚F.

Also, dwell time for air surrounding the screened burn area is relatively short when compared to a confined environment. The availability of air surrounding the treatment event and the turbulence created by the propane burners, lead to quick cooling time as gaseous combustion products escape from the immediate burn area. Fast cooling of these gases minimizes the likelihood of dioxin and furan formation when compared to that of a confined environment (Environment Australia, 1999) for every open burning treatment operation.

5.0 Conclusions

This report provides evidence that the thermal treatment unit at the TA-16-388 Flash Pad is capable of providing sufficient temperatures and time to treat the explosive and explosive contaminated waste streams managed at the unit. Temperatures attained at the unit exceed 1400°F within 60 seconds of the start of the burn and temperatures above 1500°F (>2000°F routinely) can be maintained continuously for the duration of the burn while the propane burners are in operation. The temperatures observed in the tests resulted in decomposition of the waste streams and the data provided objective feedback regarding burn conditions and operational factors that potentially affect the burns. These included determining the range of burn duration times and other factors associated with the potential production of combustion products.

Dioxins and furans that may be formed as incomplete combustion products due to open burning treatment operations are decomposed during the 30 minute treatment period. Thermal data collected using thermocouples, pyrometers, and a thermal imager show the temperature within the burn tray where the waste is held reaches and sustains temperatures that are great enough to decompose dioxins and furans. Standard operations for waste treatment at the unit also meet three other factors that are known to minimize the potential for the formation of dioxins and furans during thermal treatment. Therefore, the thermal data and images from both tests clearly demonstrate that conditions to prevent formation of dioxins and furans are present throughout every open burning treatment operation at the TA-16-388 Flash Pad open burning treatment unit. The amount of dioxins and furans expected to be added to the air due to open burning treatment events will be minimal, not measurable, and likely not contribute to ground level concentrations.

6.0 References

Environment Australia, 1999. *Incineration and Dioxins: Review of Formation Processes,* consultancy report prepared by Environmental and Safety Services for Environment Australia, Commonwealth Department of the Environment and Heritage, Canberra.

Environmental Protection Agency (EPA), 2010. Course: Basic Concepts in Environmental Sciences, Module 6: Air Pollutants/Control Techniques. Air Pollution Training Institute (APTI). U.S.

Environmental Protection Agency funded, Cooperative Assistance Agreement CT-825724 to North Carolina State University. January 29, 2010.

Huan, H., and A. Buekens, 1995. *On the Mechanisms of Dioxin Formation in Combustion Processes.* Chemosphere, Vol. 31, No. 9, pp. 4099-4117. Department of Chemical Engineering and Industrial Chemistry, Free University of Brussels, Pleinlaan 2, 1050 Brussels, Belgium. 1995

Mitchell, W.J., Jack Suggs. 1998. *Emission Factors for the Disposal of Energetic Materials by Open Burning and Open detonation (OB/OD)*. EPA/600/R-98/103. Research Triangle Park, NC. August 1998.

Kulkarni, Prashant S., João G. Crespo, Carlos A. M. Afonso. 2007. *Dioxins sources and current remediation technologies – A review.* Science Direct. Environmental International 34 (2008) 139-153. September 2007.

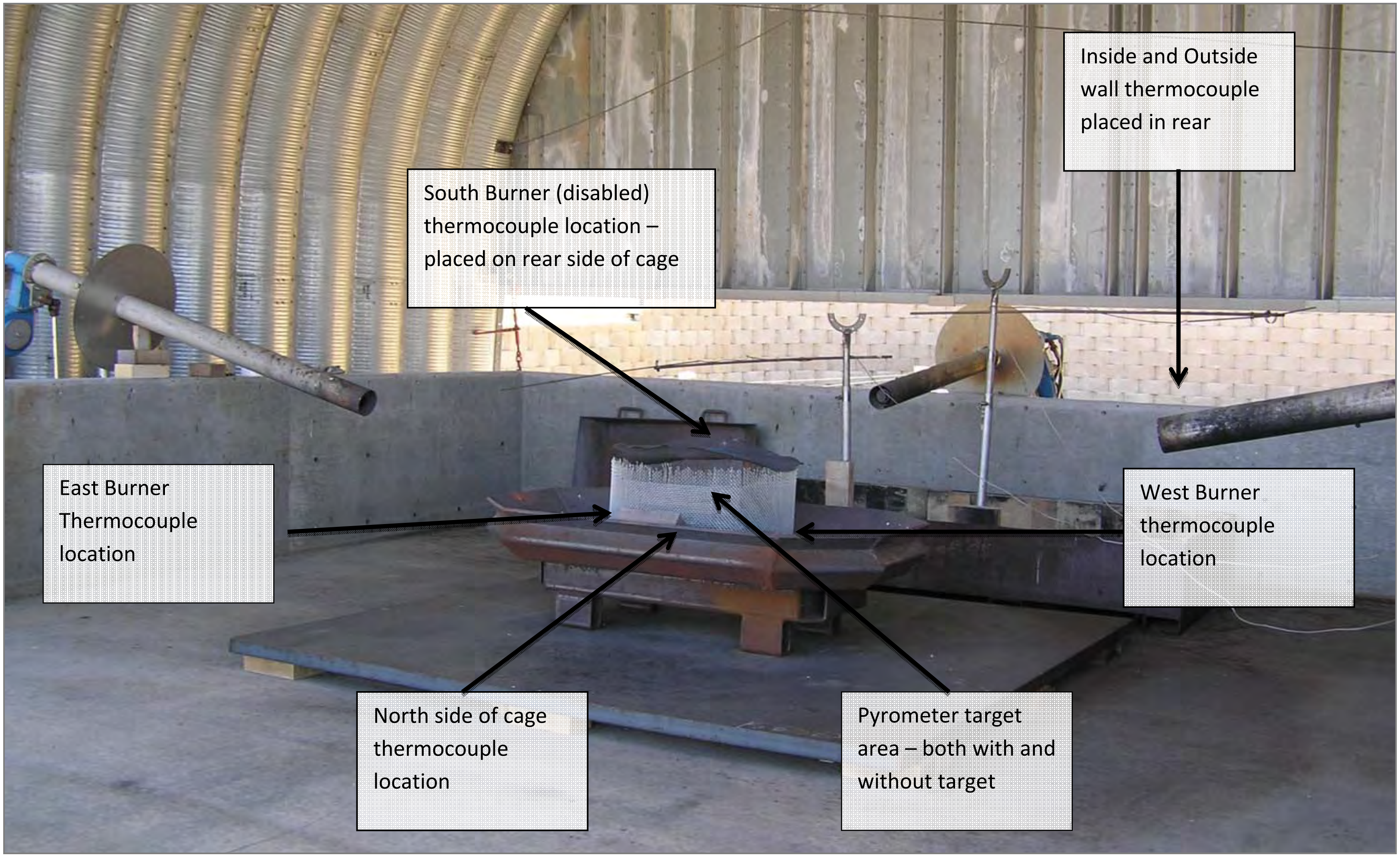


FIGURE 1 – MEASUREMENT LOCATIONS

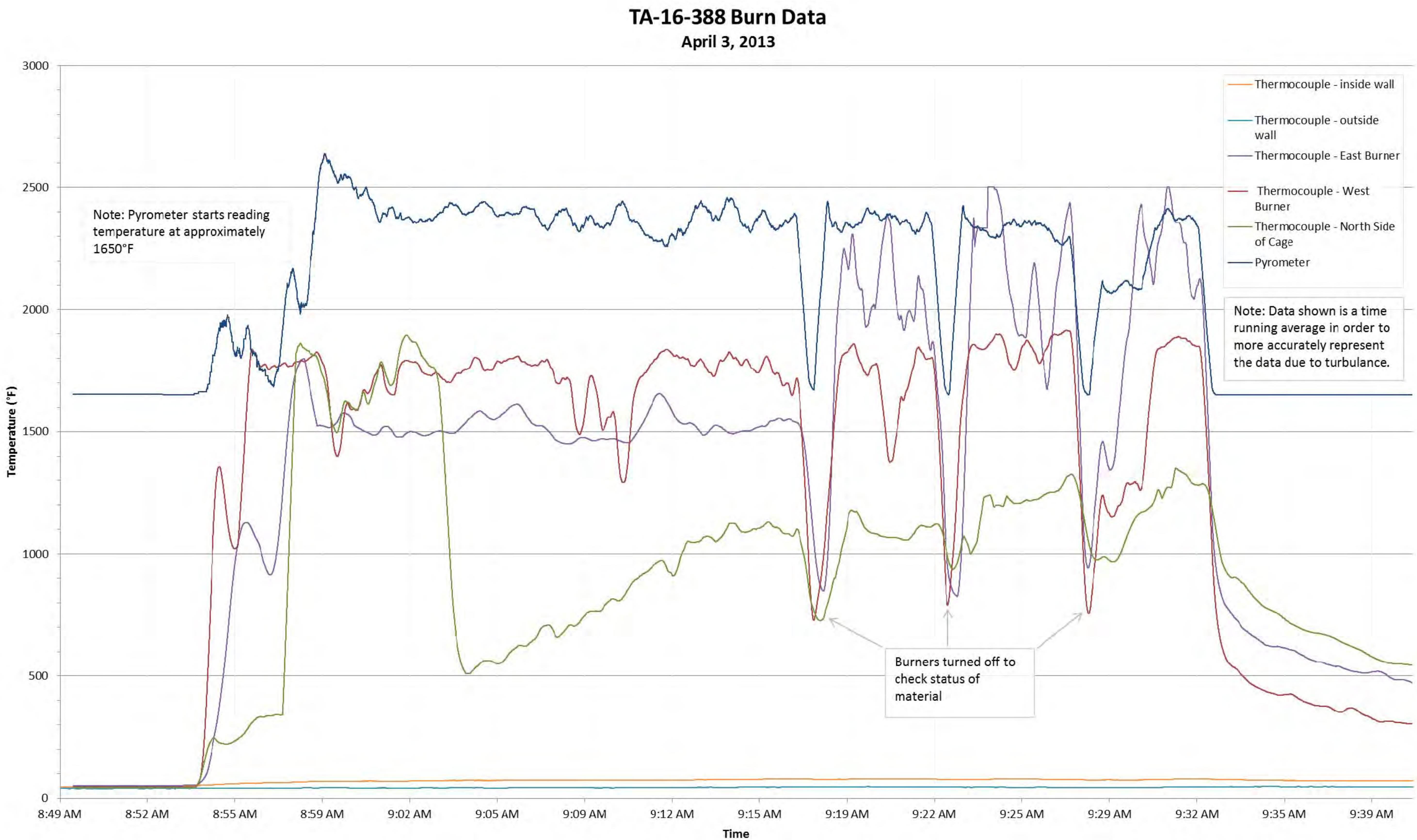


FIGURE 2 - APRIL 3, 2013

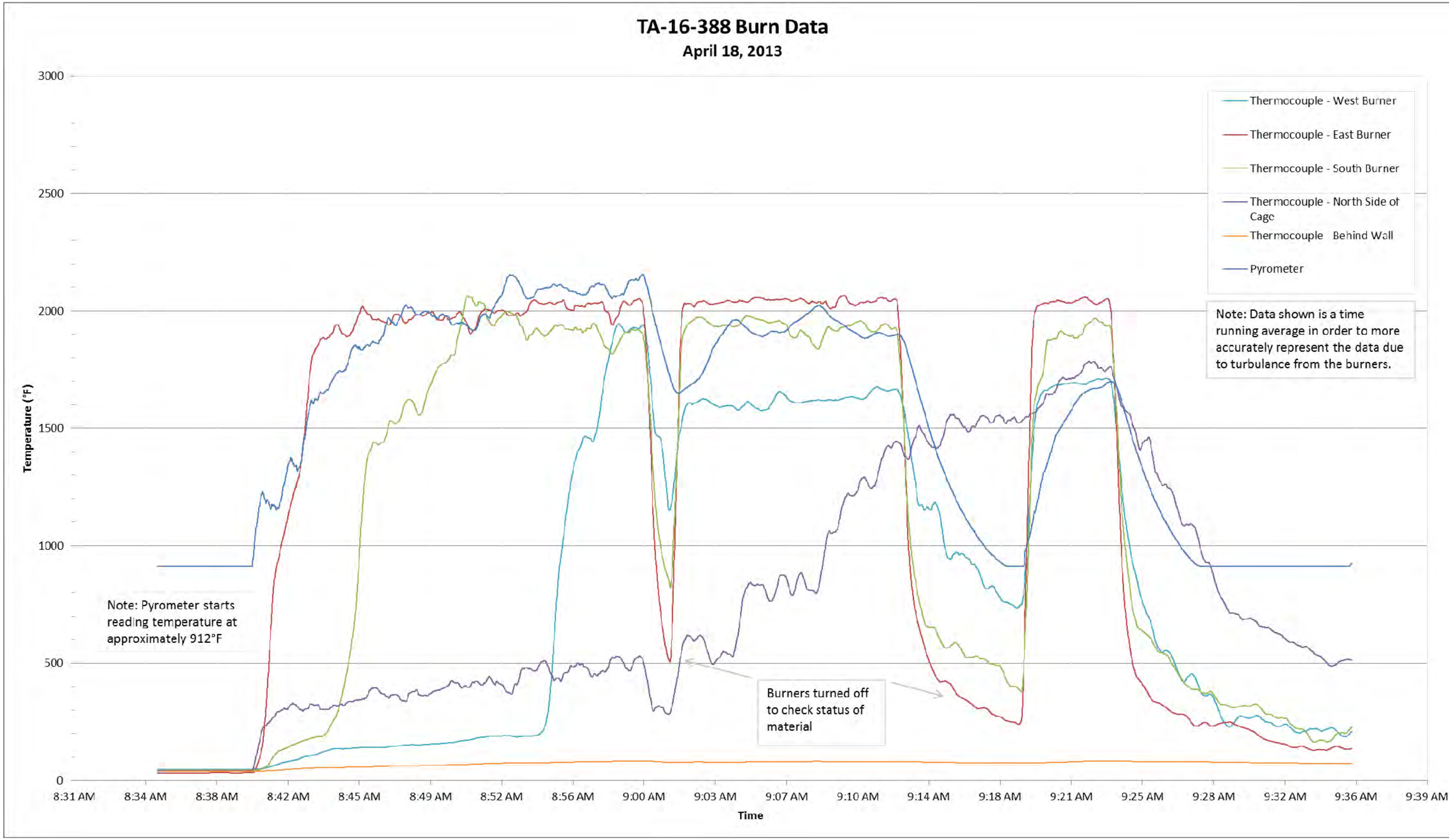
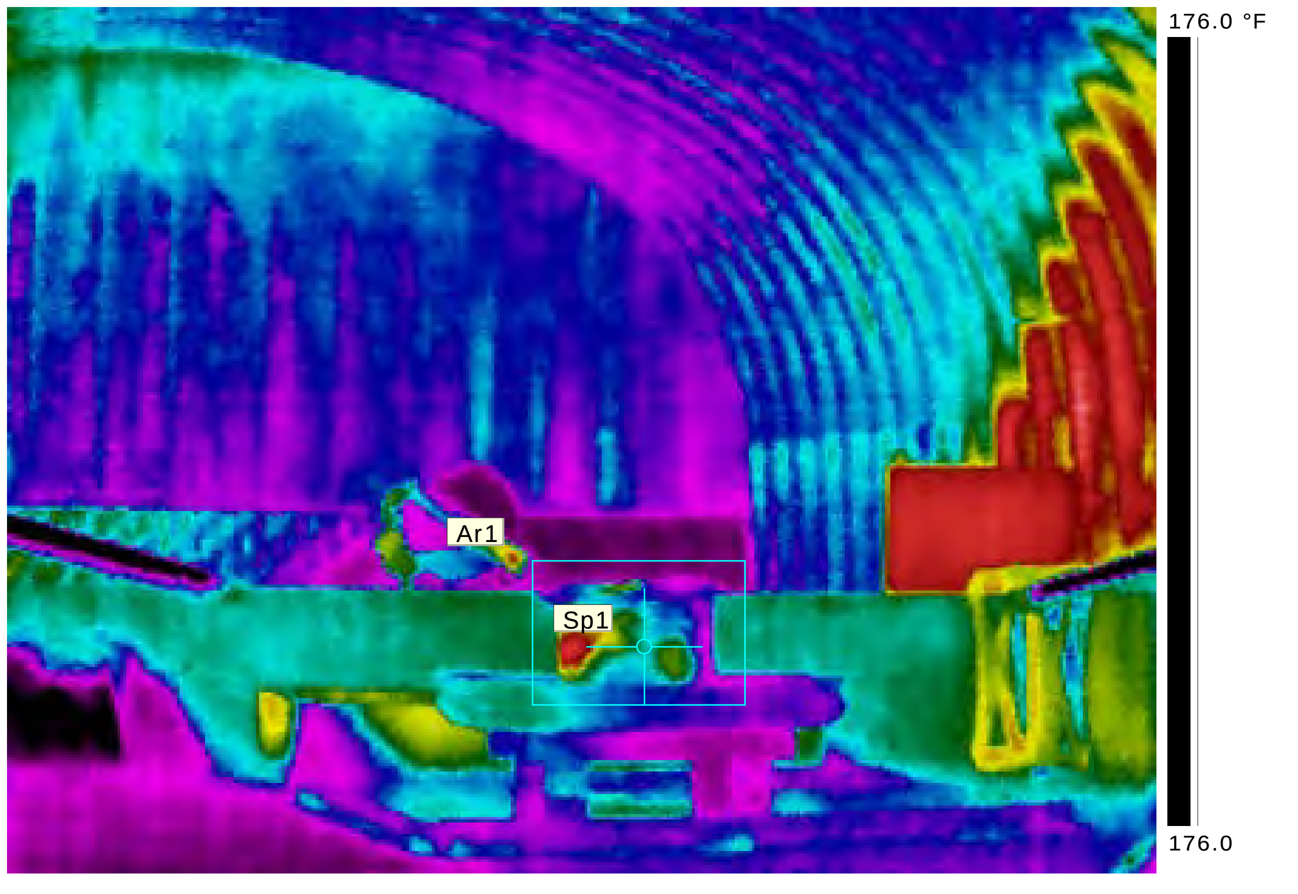


FIGURE 3 - APRIL 18, 2013

Attachment A – Excerpt of April 3, 2013 Thermal Images

Thermogram Image.Date 4/3/2013

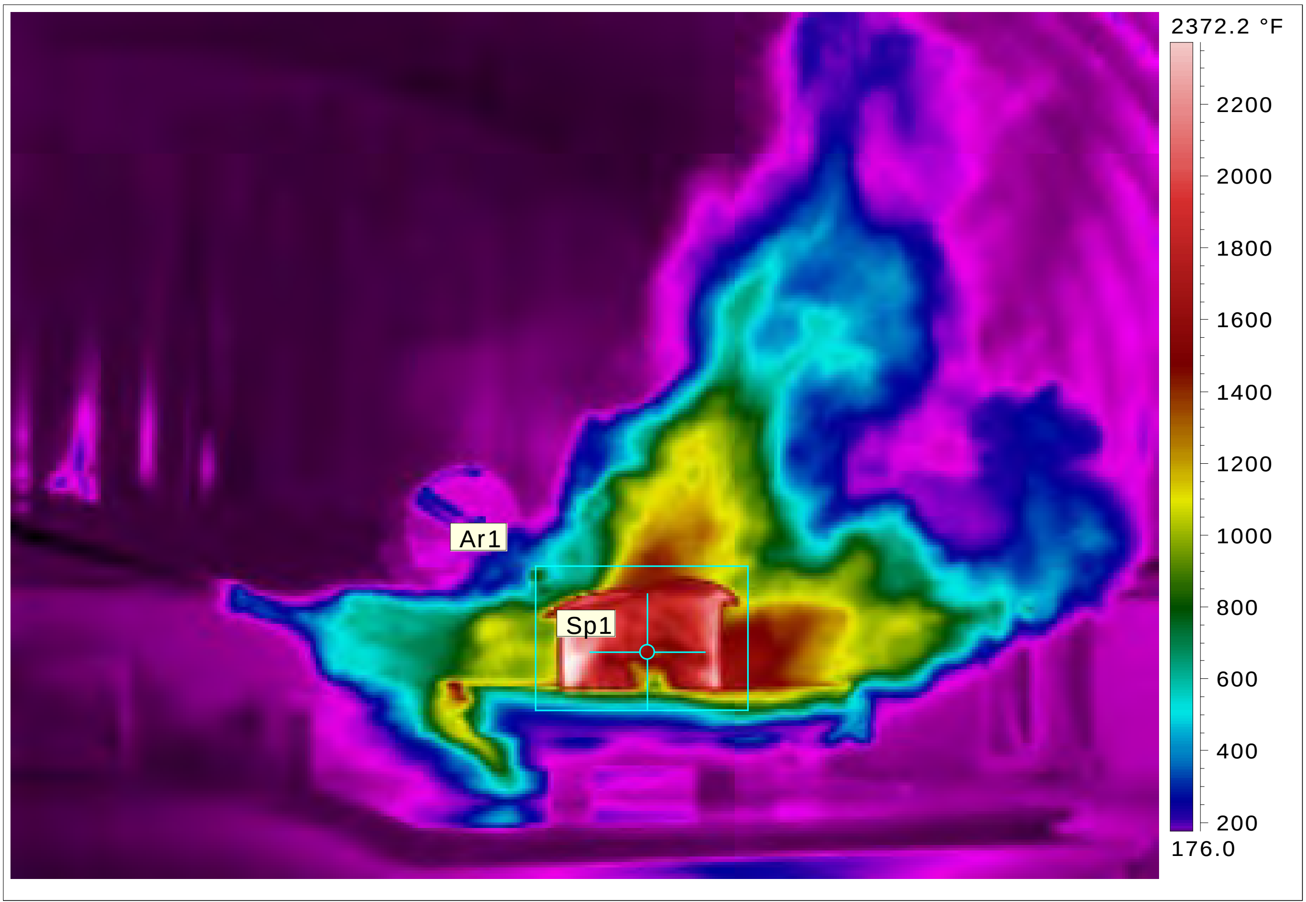


Ar1 Max. Temperature	<176.0 °F
Sp1 Temperature	<176.0 °F
Date	4/3/2013
Image Time	7:55:16 AM
Emissivity	0.69

Directly before burn start

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	**Report Date:** June 5, 2013

Thermogram Image.Date 4/3/2013

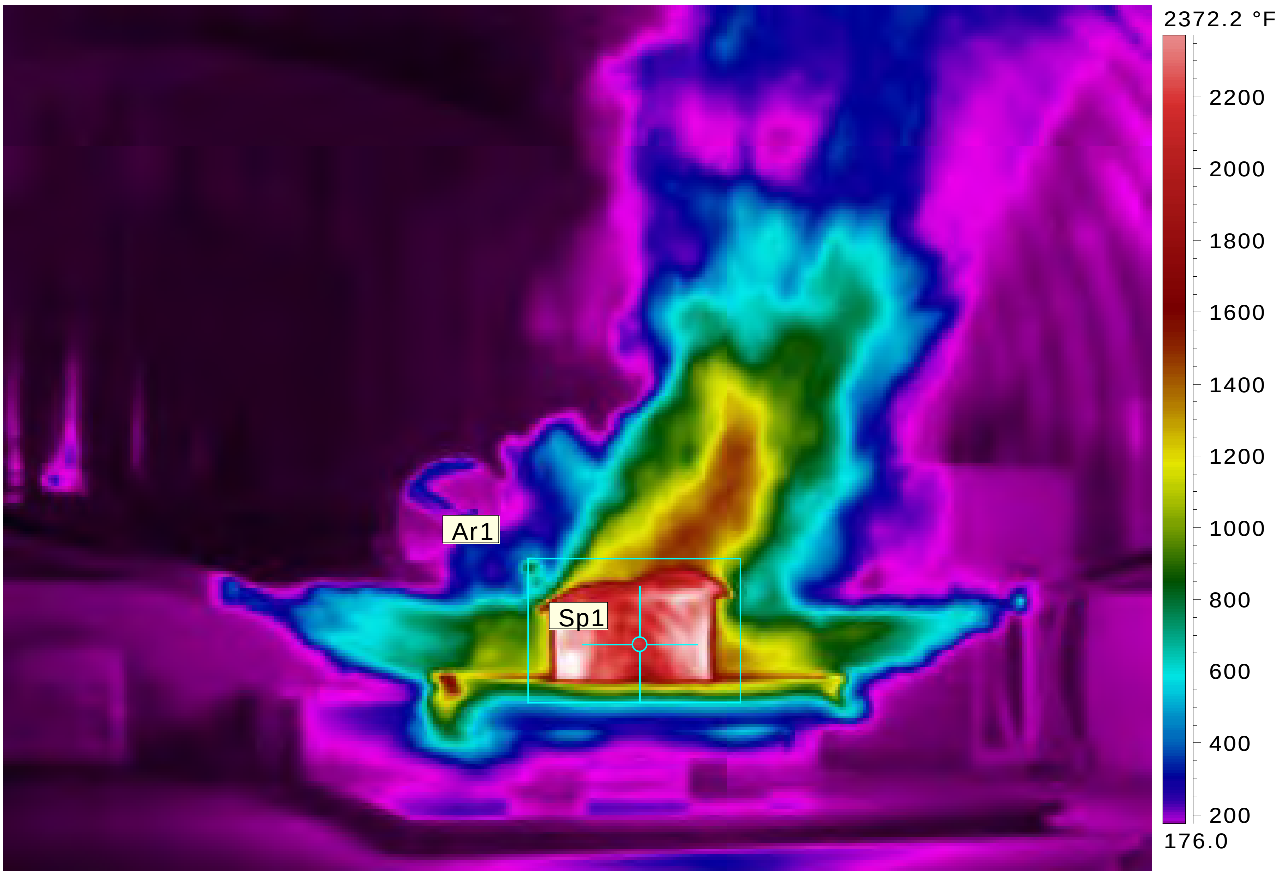


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1495.6 °F
Date	4/3/2013
Image Time	7:59:08 AM
Emissivity	0.69

Approximately 4 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	**Report Date:** June 5, 2013

Thermogram Image.Date 4/3/2013

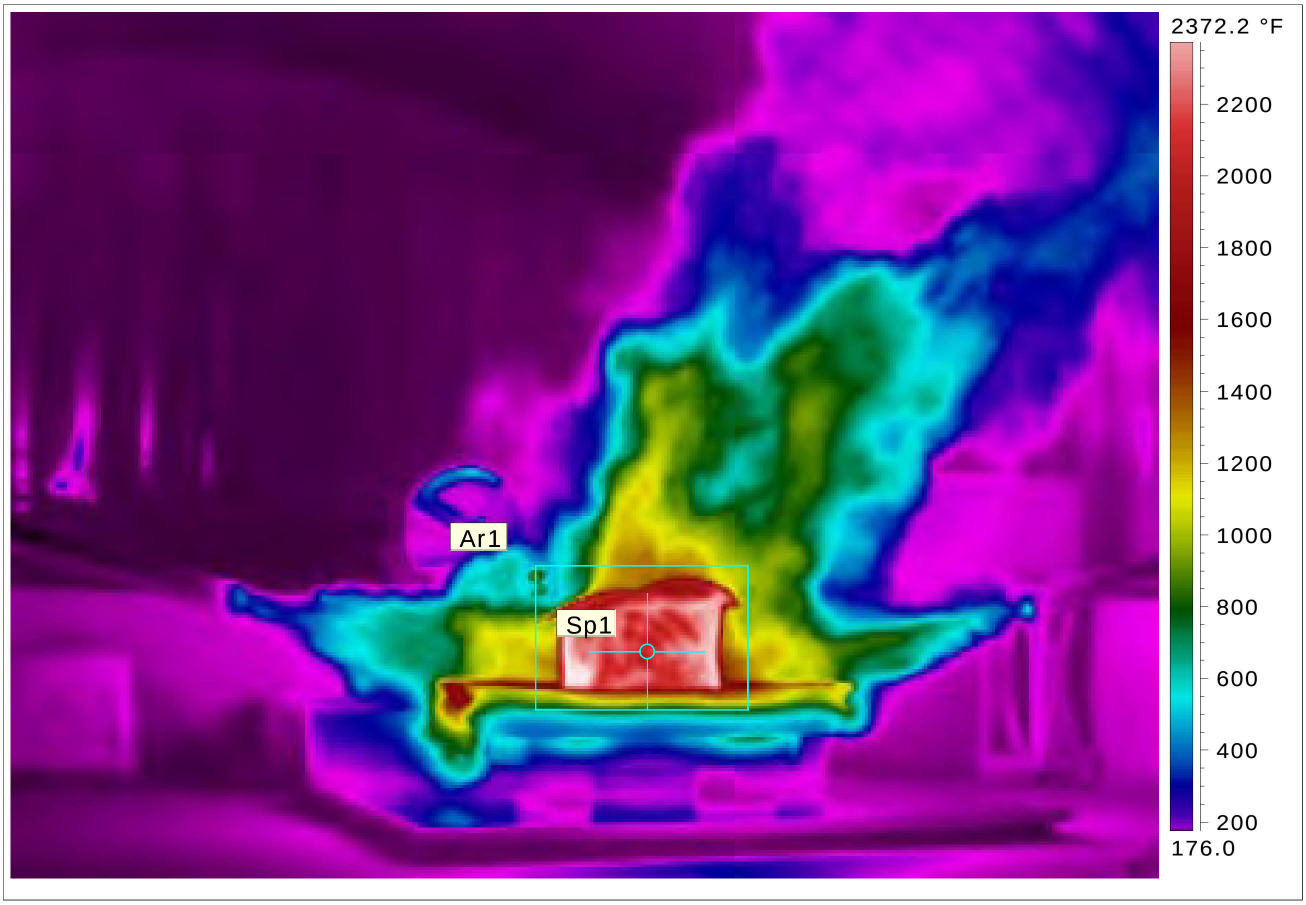


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	2131.8 °F
Date	4/3/2013
Image Time	8:02:09 AM
Emissivity	0.69

Approximately 7 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013

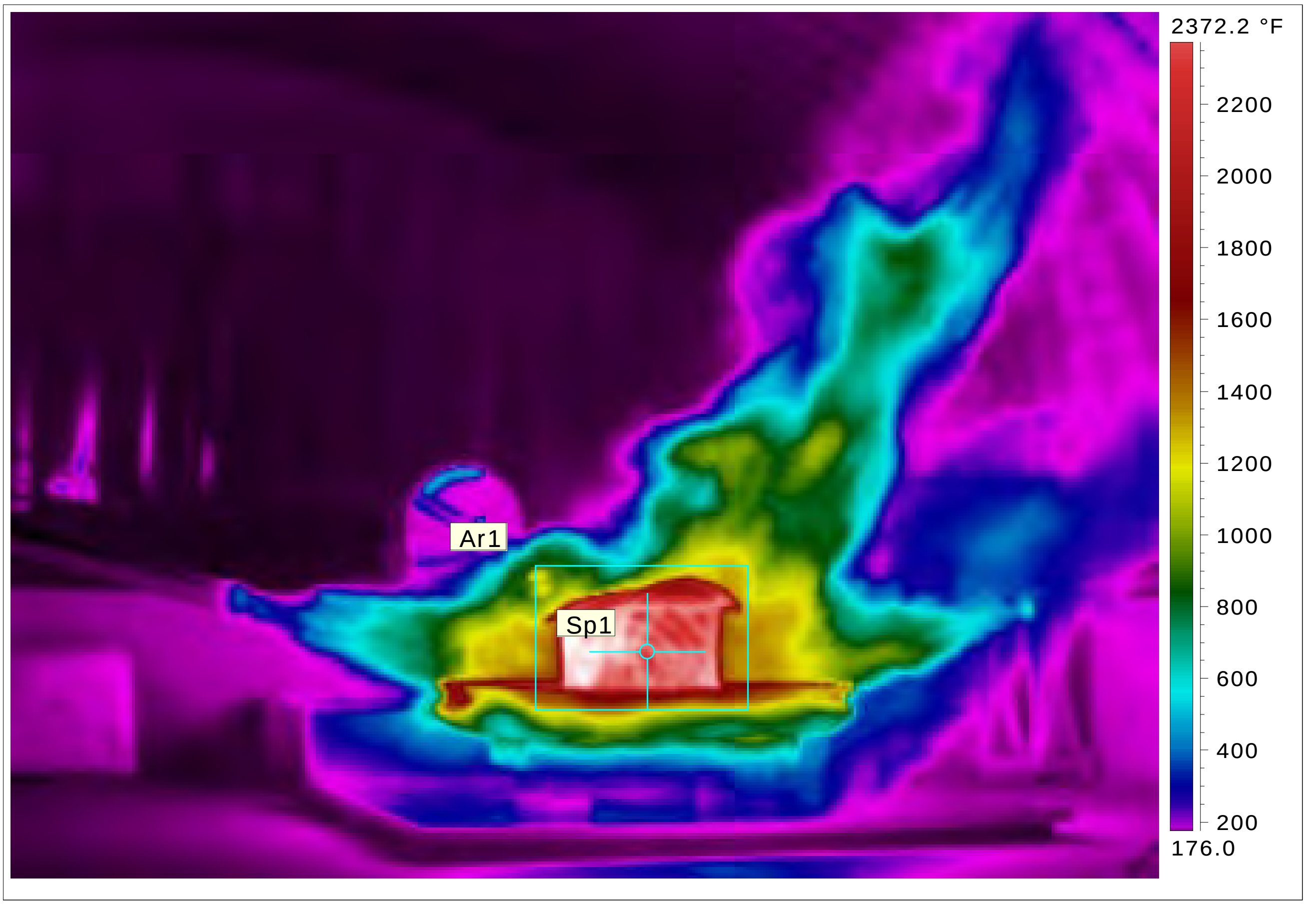


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	2082.6 °F
Date	4/3/2013
Image Time	8:05:00 AM
Emissivity	0.69

Approximately 10 minutes after burn start time

	Thermography Inspection at **TA-16 388 Open Burn Site**	**Report Date:** June 5, 2013

Thermogram Image.Date 4/3/2013

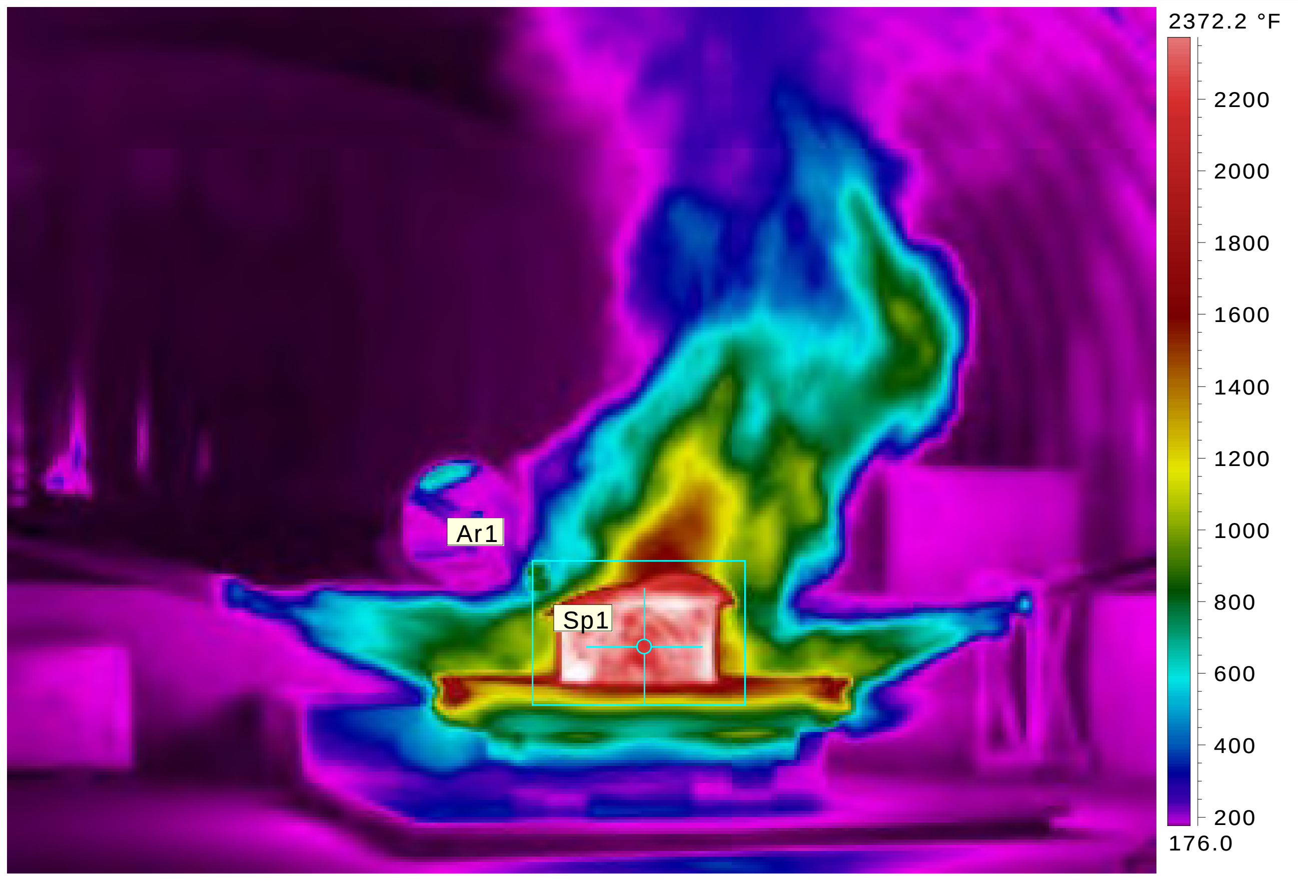


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	*2329.3 °F
Date	4/3/2013
Image Time	8:09:02 AM
Emissivity	0.69

Approximately 14 minutes after burn start time

	Thermography Inspection at **TA-16 388 Open Burn Site**	**Report Date:** **June 5, 2013**

Thermogram Image.Date 4/3/2013

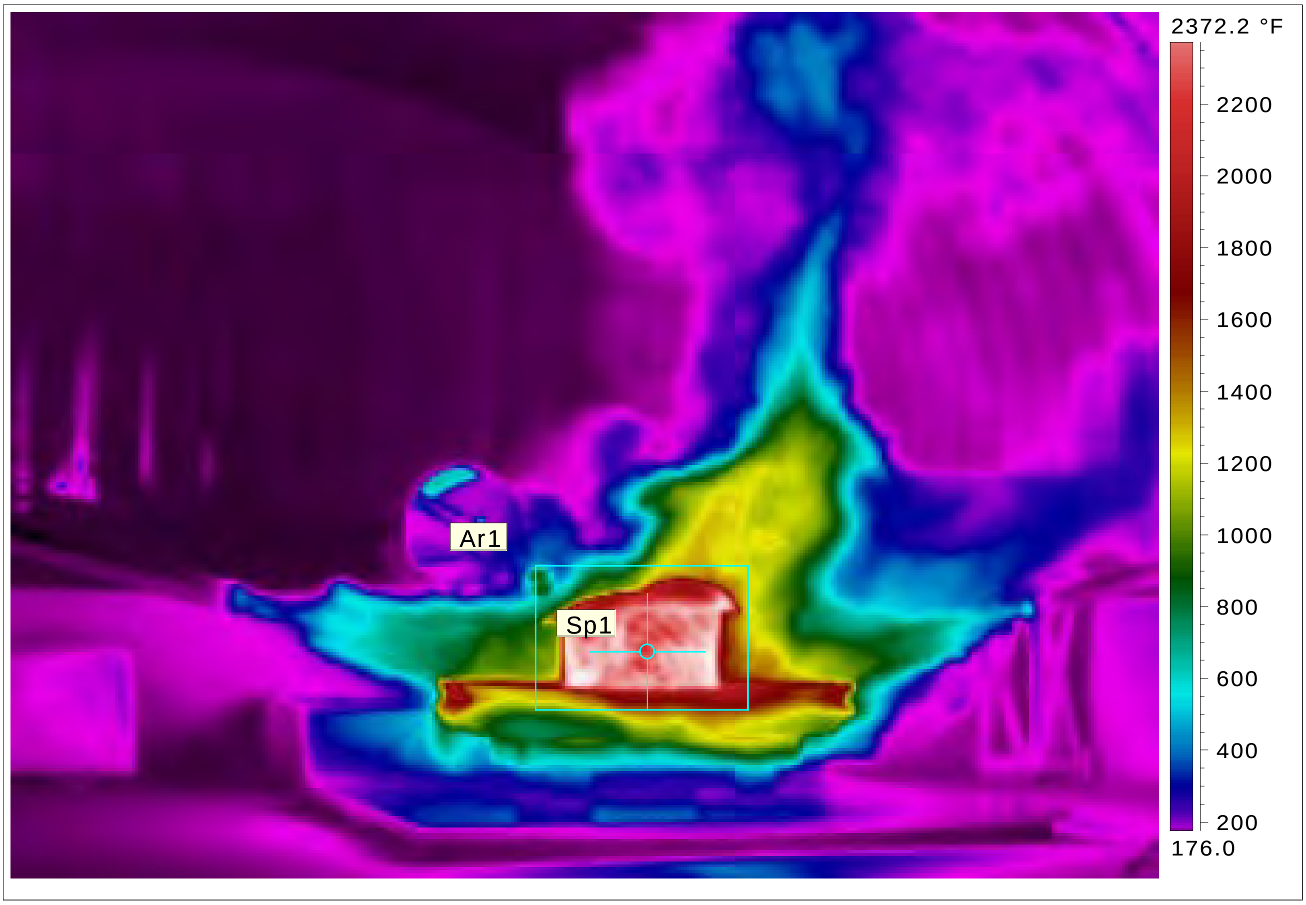


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	*2225.3 °F
Date	4/3/2013
Image Time	8:12:03 AM
Emissivity	0.69

Approximately 17 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013

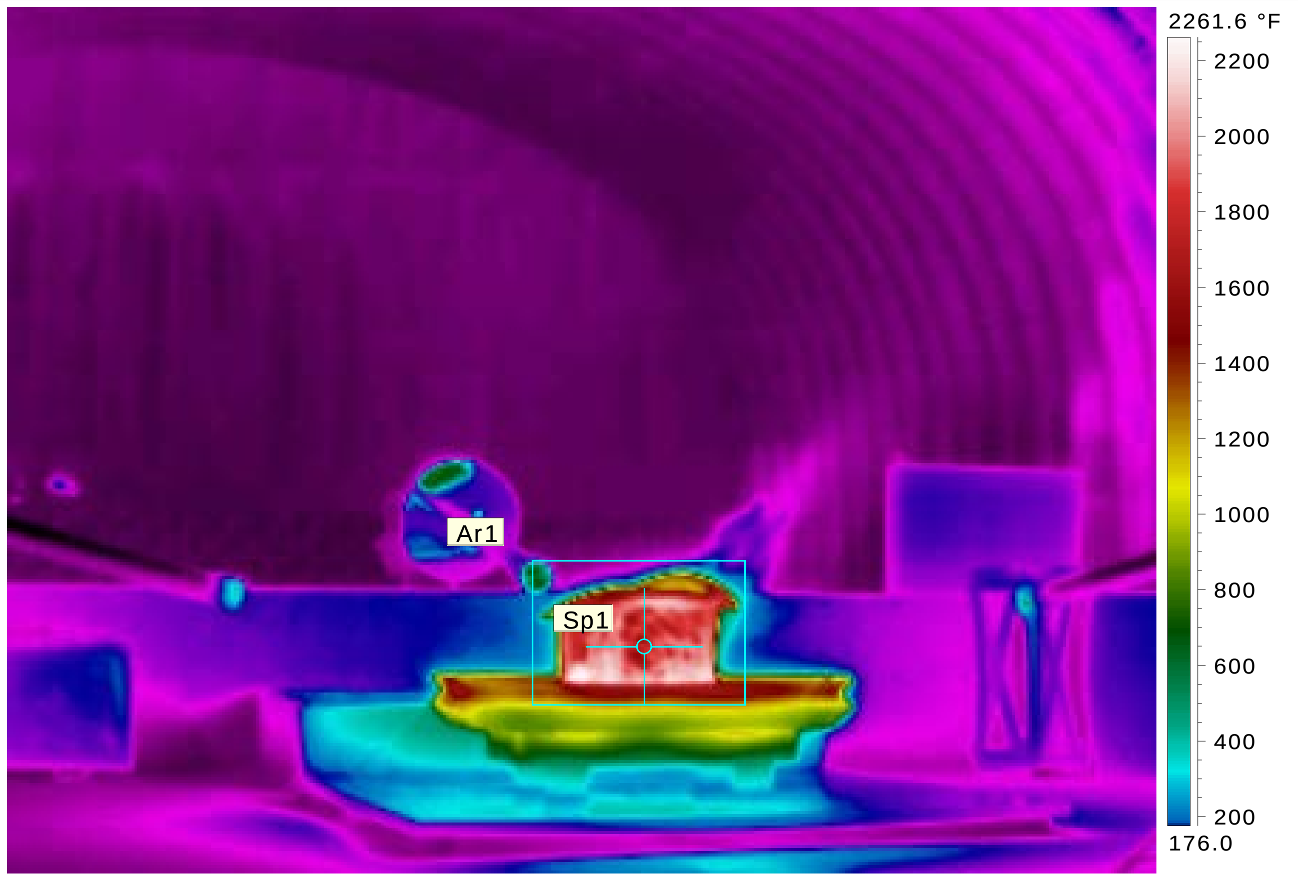


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	*2290.4 °F
Date	4/3/2013
Image Time	8:15:00 AM
Emissivity	0.69

Approximately 20 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	**Report Date:** June 5, 2013

Thermogram Image.Date 4/3/2013

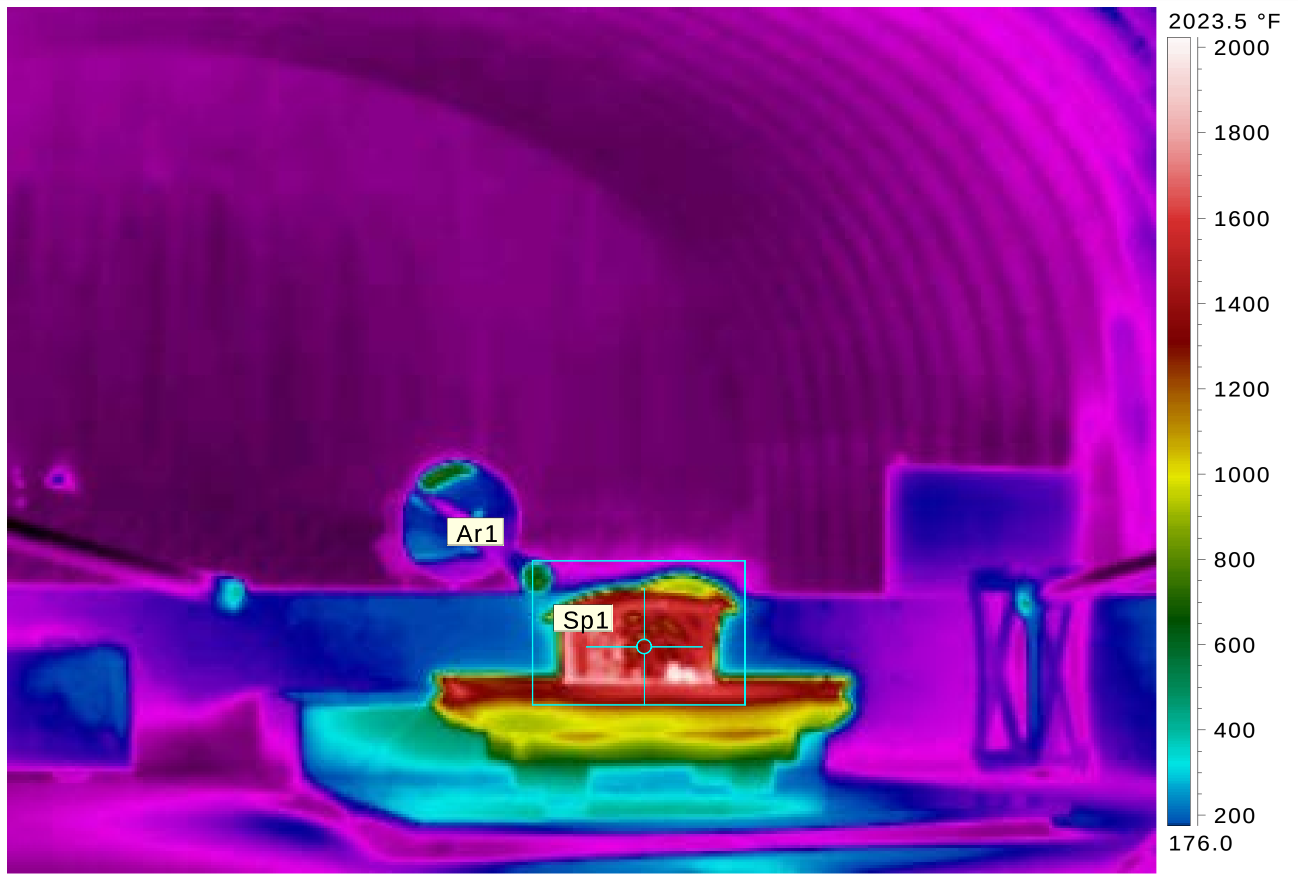


Ar1 Max. Temperature	*2241.4 °F
Sp1 Temperature	1823.8 °F
Date	4/3/2013
Image Time	8:18:37 AM
Emissivity	0.69

Approximately 24 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST.1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013

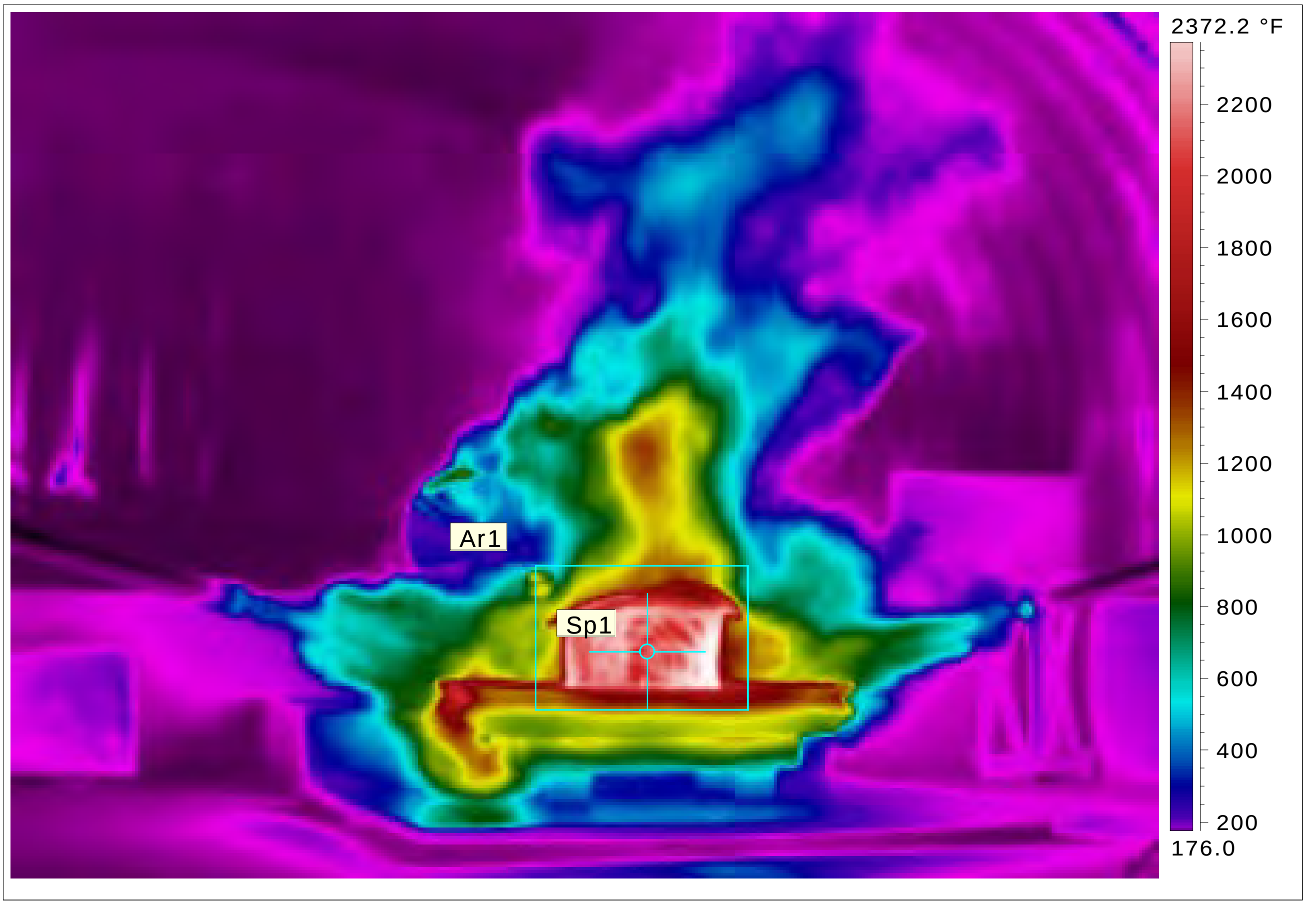


Ar1 Max. Temperature	2013.7 °F
Sp1 Temperature	1445.1 °F
Date	4/3/2013
Image Time	8:23:49 AM
Emissivity	0.69

Approximately 29 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013

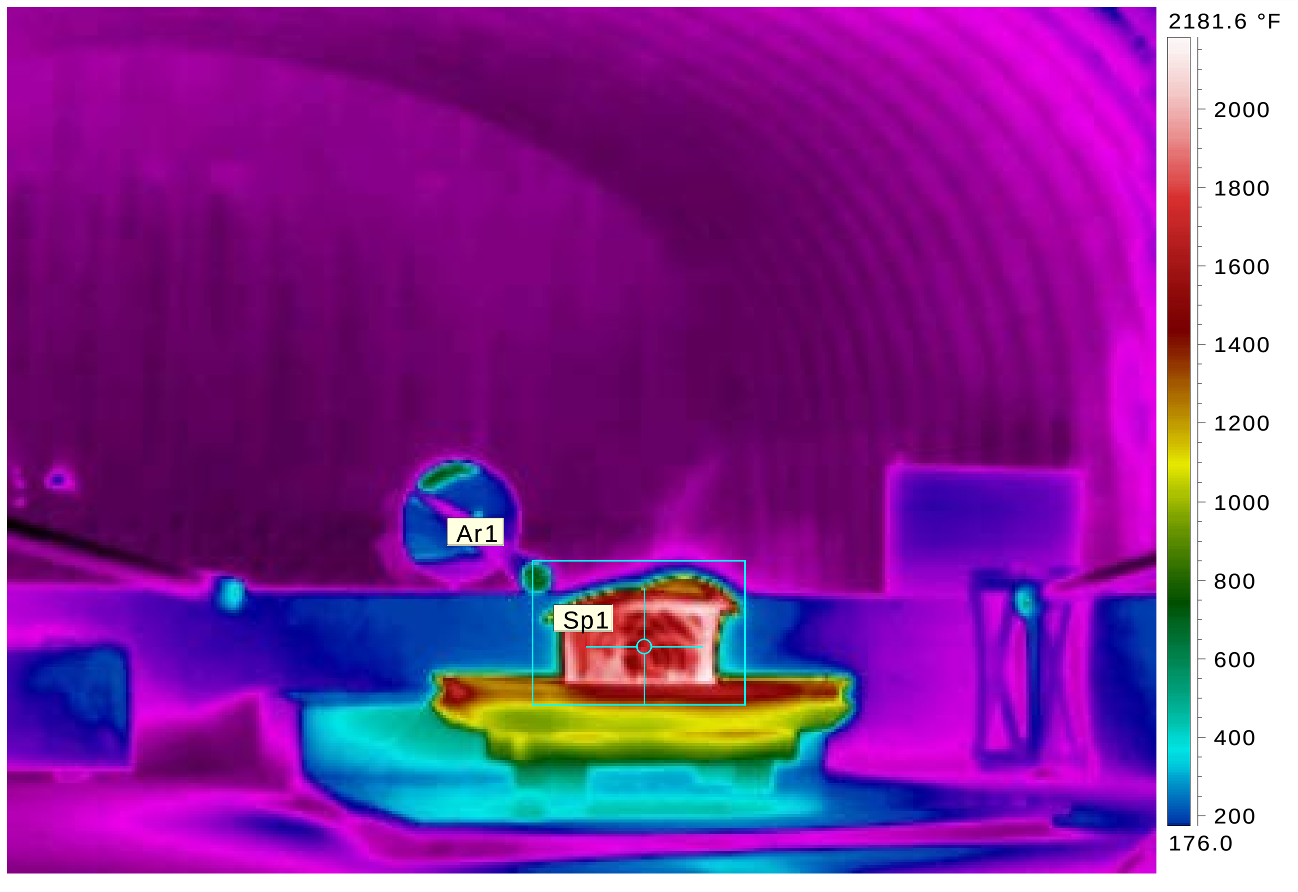


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	2115.1 °F
Date	4/3/2013
Image Time	8:25:00 AM
Emissivity	0.69

Approximately 30 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013

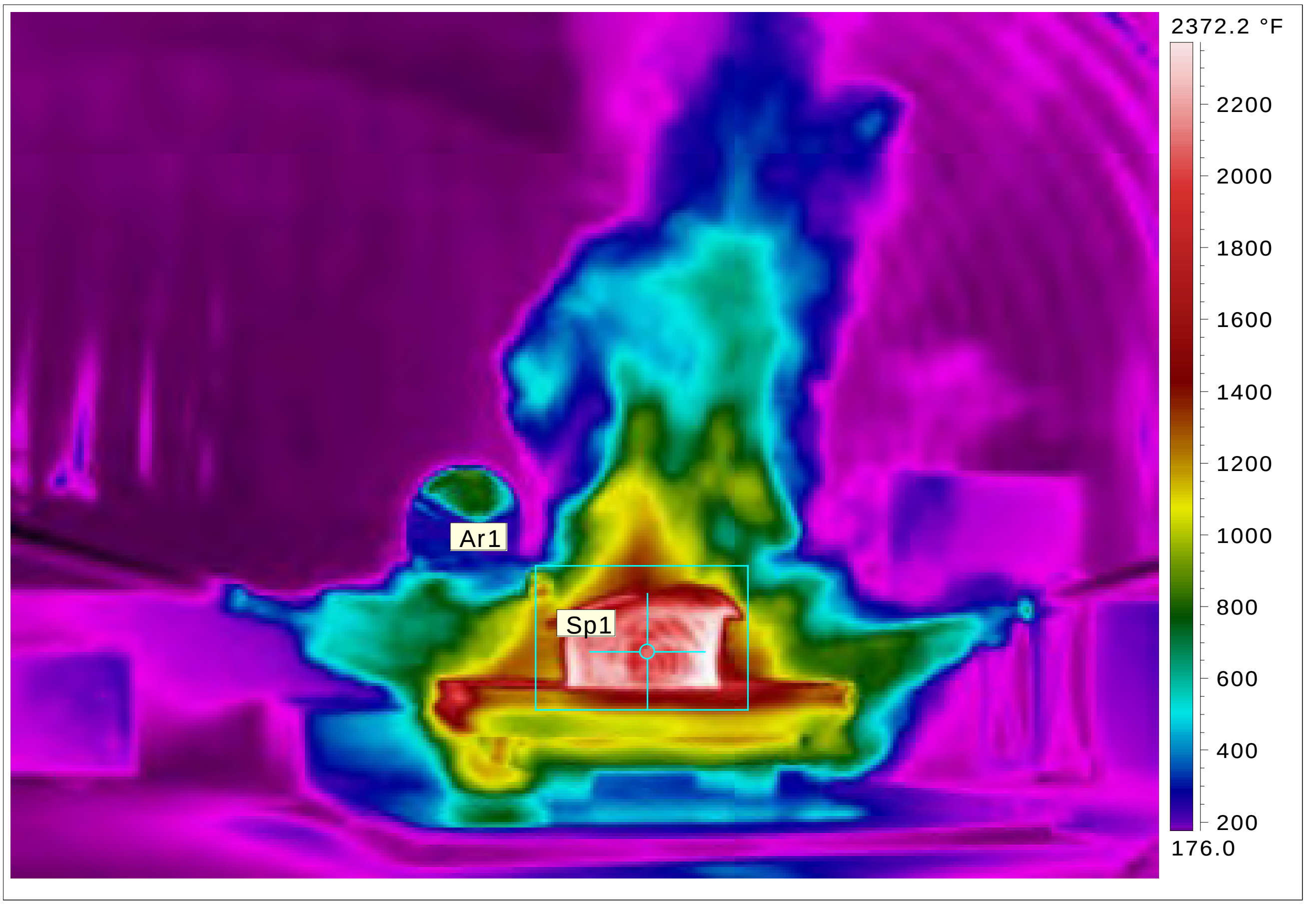


Ar1 Max. Temperature	2177.0 °F
Sp1 Temperature	1720.0 °F
Date	4/3/2013
Image Time	8:29:02 AM
Emissivity	0.69

Approximately 34 minutes after burn start time

	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013

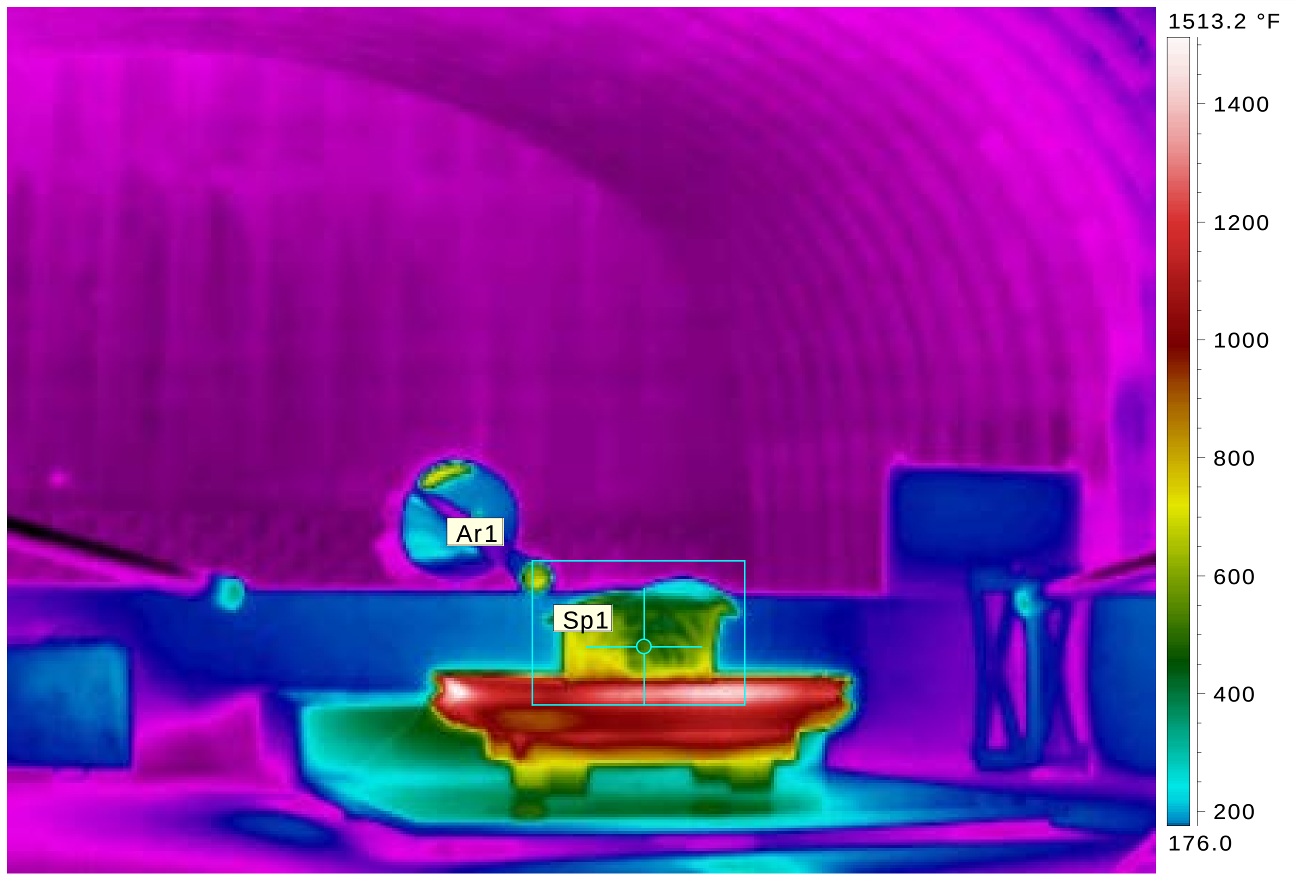


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	2110.3 °F
Date	4/3/2013
Image Time	8:32:13 AM
Emissivity	0.69

Approximately 37 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/3/2013



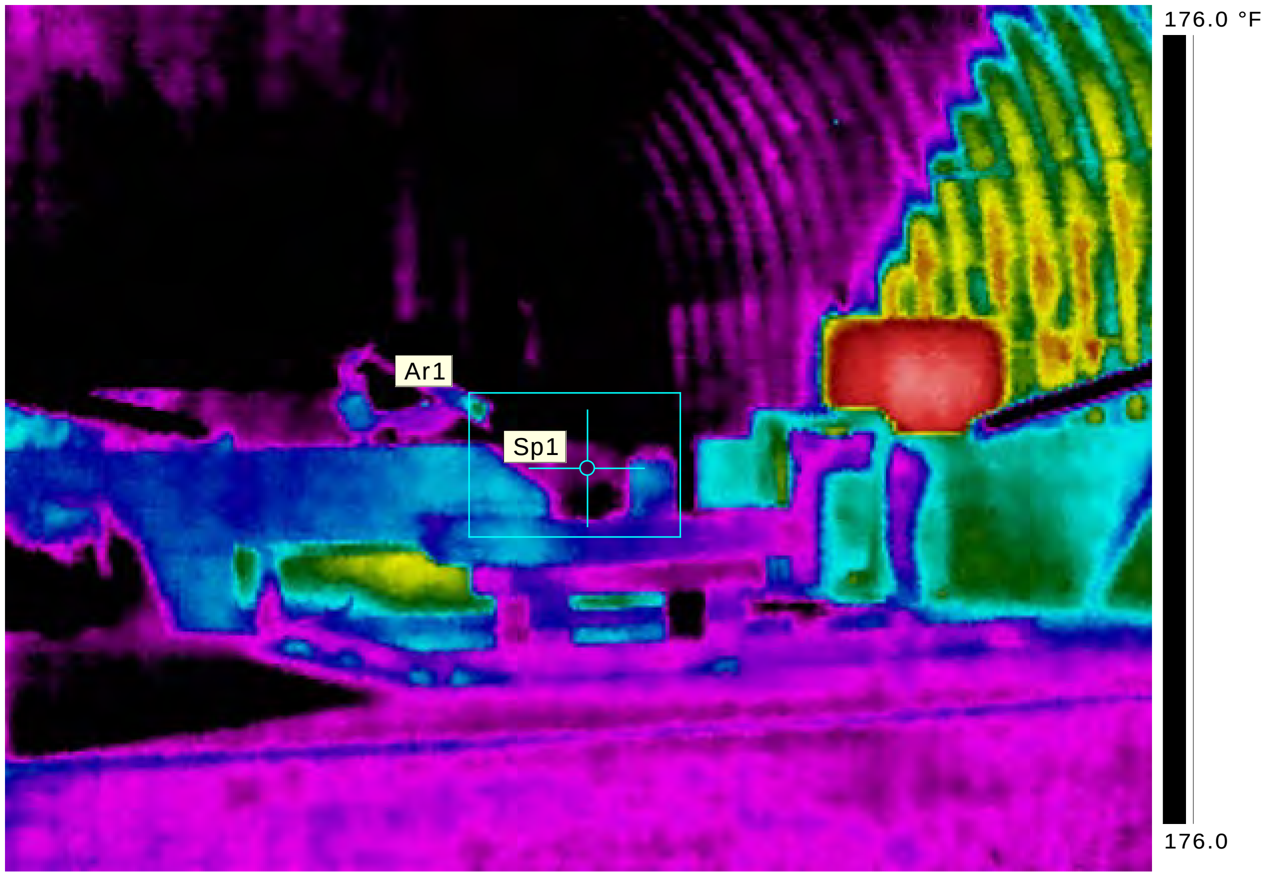
Ar1 Max. Temperature	1439.3 °F
Sp1 Temperature	530.5 °F
Date	4/3/2013
Image Time	8:35:10 AM
Emissivity	0.69

Approximately 40 minutes after burn start time

Attachment B – Excerpt of April 18, 2013 Thermal Images

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

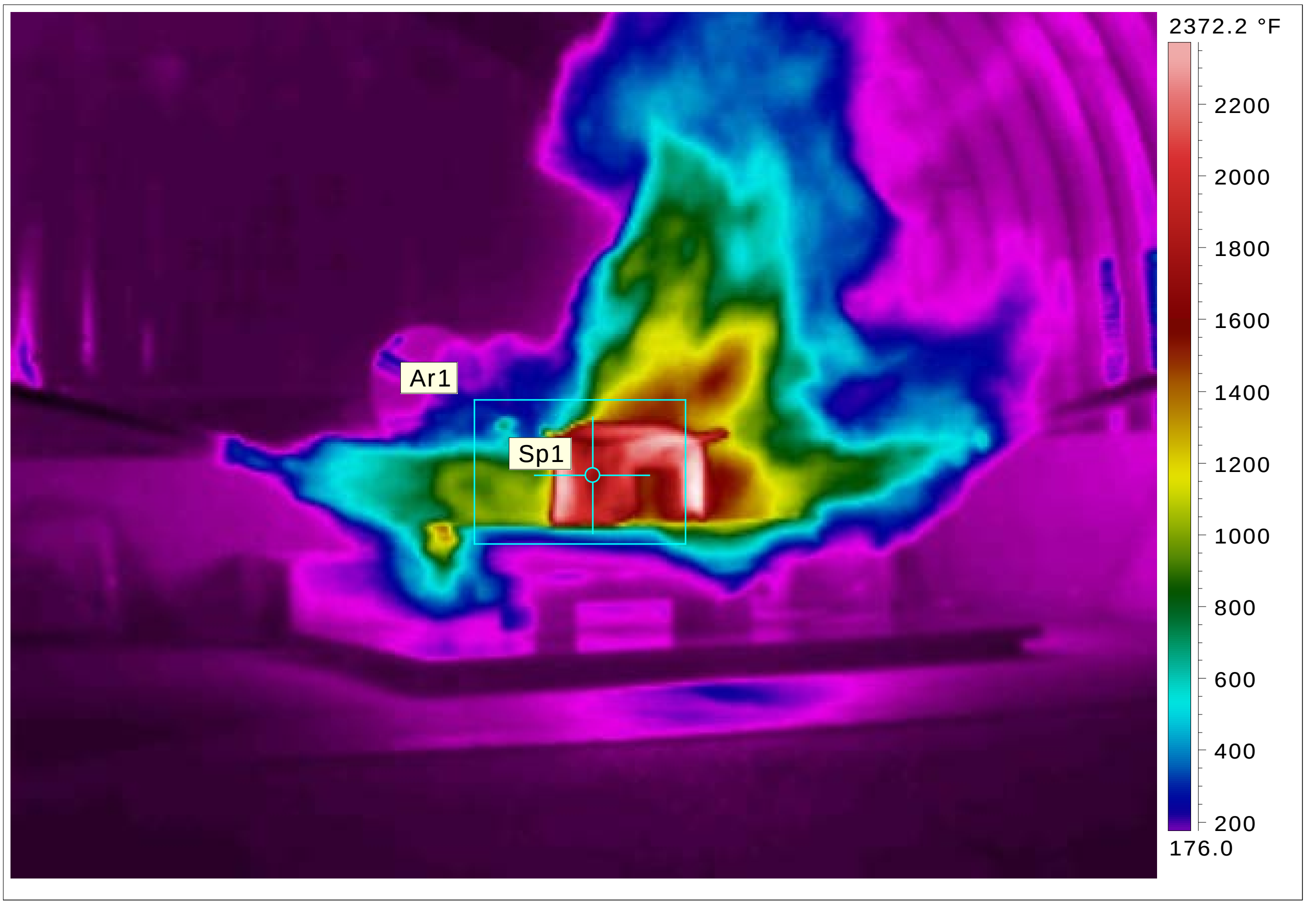


Ar1 Max. Temperature	<176.0 °F
Sp1 Temperature	<176.0 °F
Date	4/18/2013
Image Time	7:38:50 AM
Emissivity	0.69

Directly before burn start

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

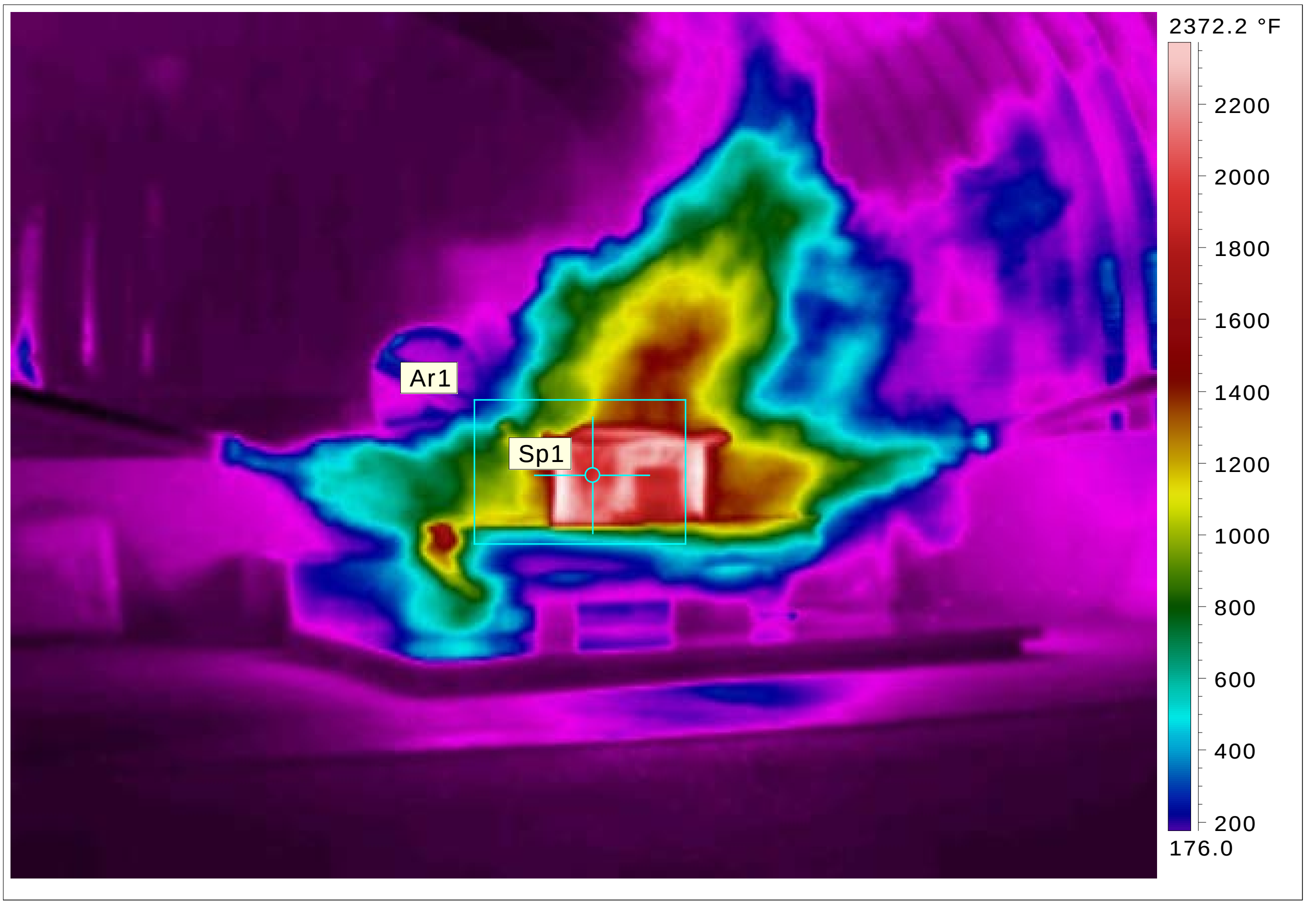


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1721.2 °F
Date	4/18/2013
Image Time	7:42:02 AM
Emissivity	0.69

Approximately 3 minutes after burn start time

	Thermography Inspection at # TA-16 388 Open Burn Site	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

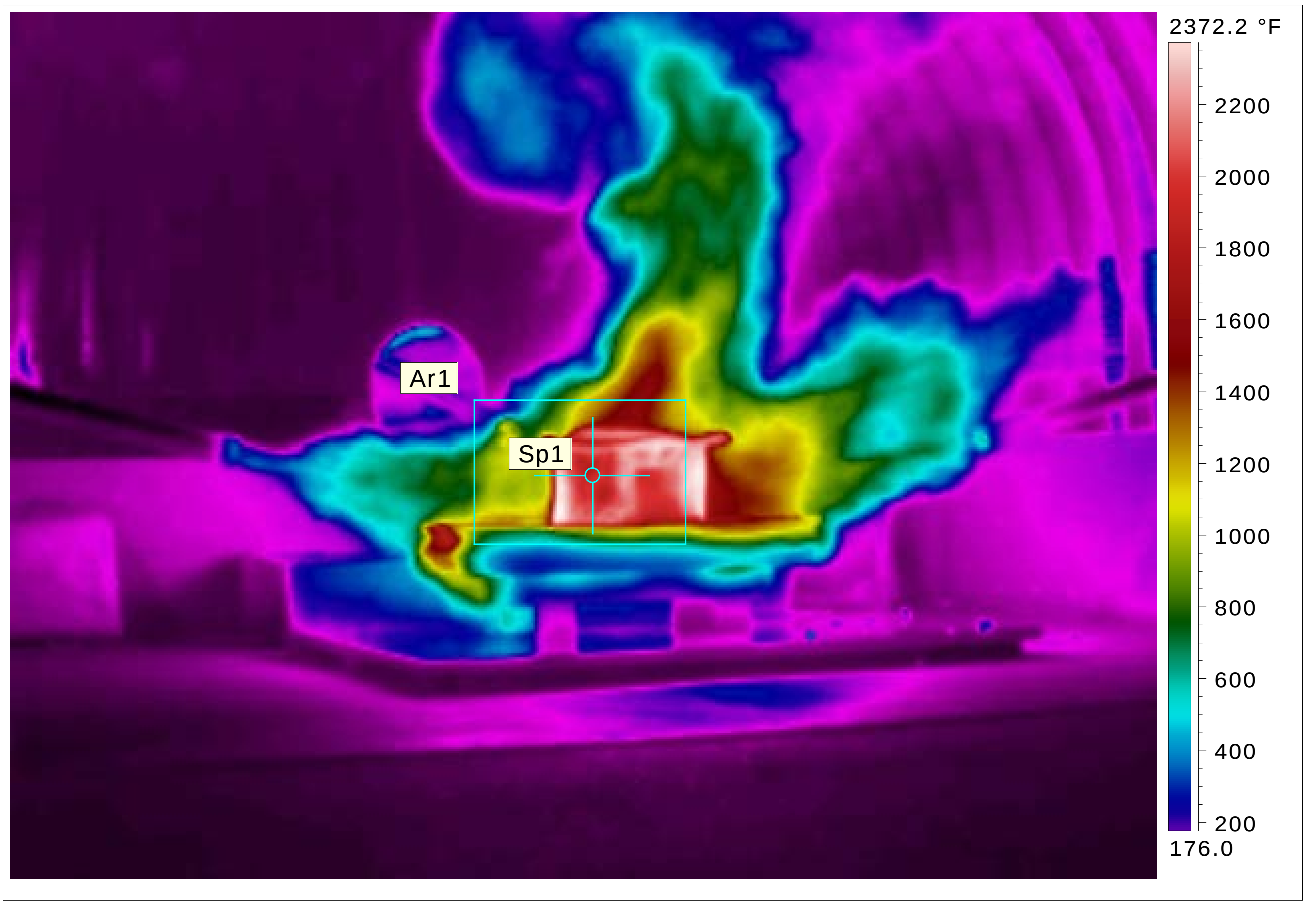


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1951.0 °F
Date	4/18/2013
Image Time	7:45:04 AM
Emissivity	0.69

Approximately 6 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

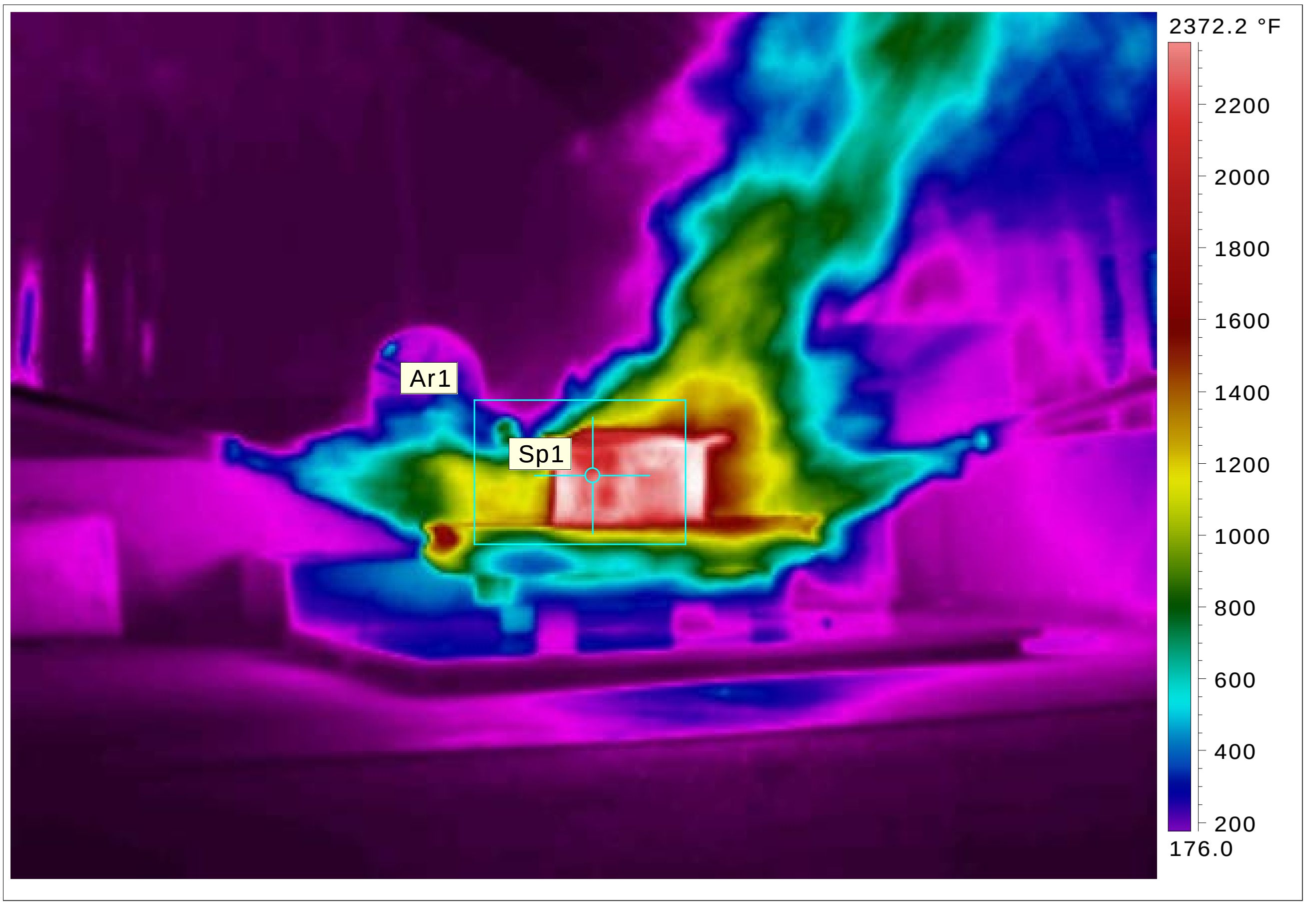


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1953.0 °F
Date	4/18/2013
Image Time	7:49:06 AM
Emissivity	0.69

Approximately 10 minutes after burn start time

	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

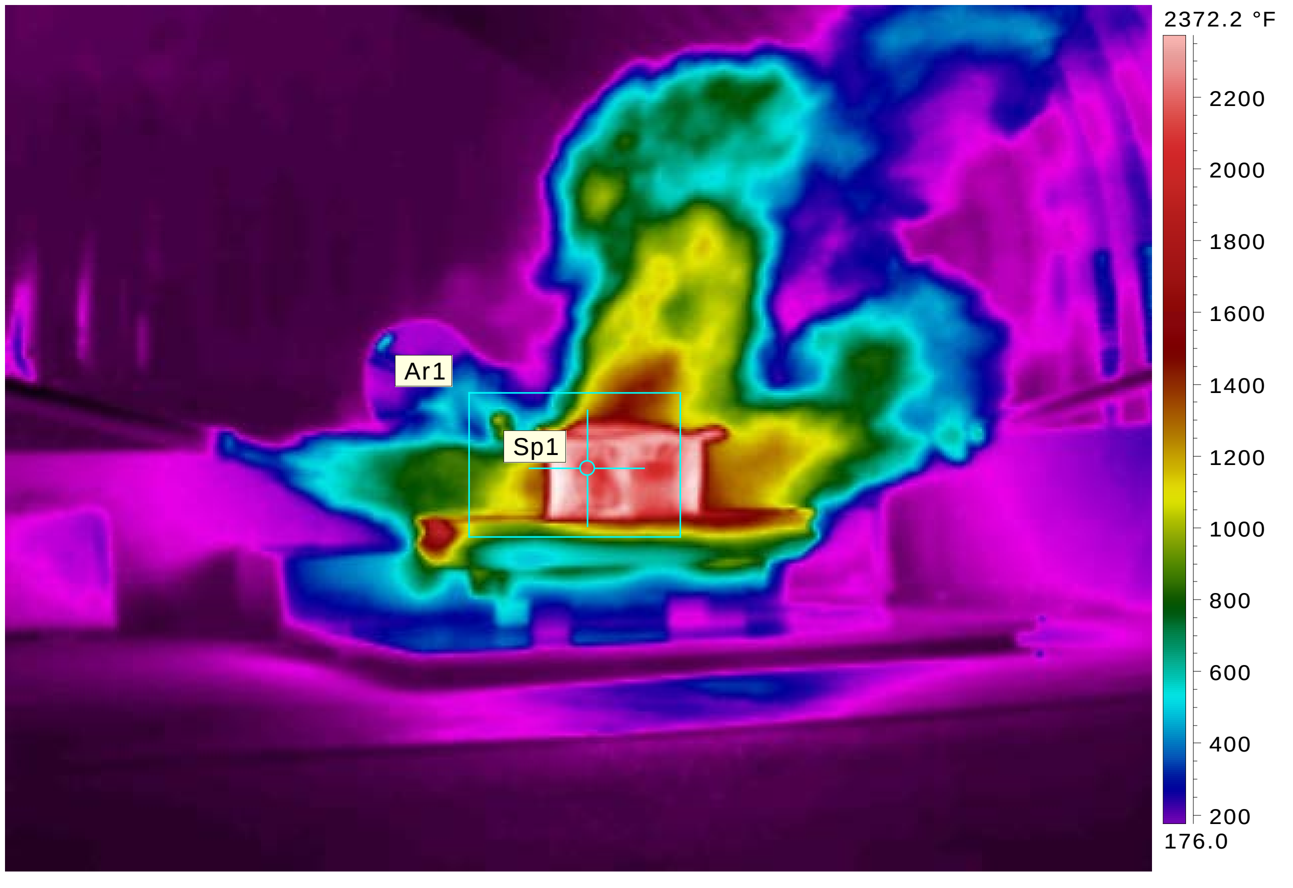


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	*2319.1 °F
Date	4/18/2013
Image Time	7:52:07 AM
Emissivity	0.69

Approximately 13 minutes after burn start time

	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

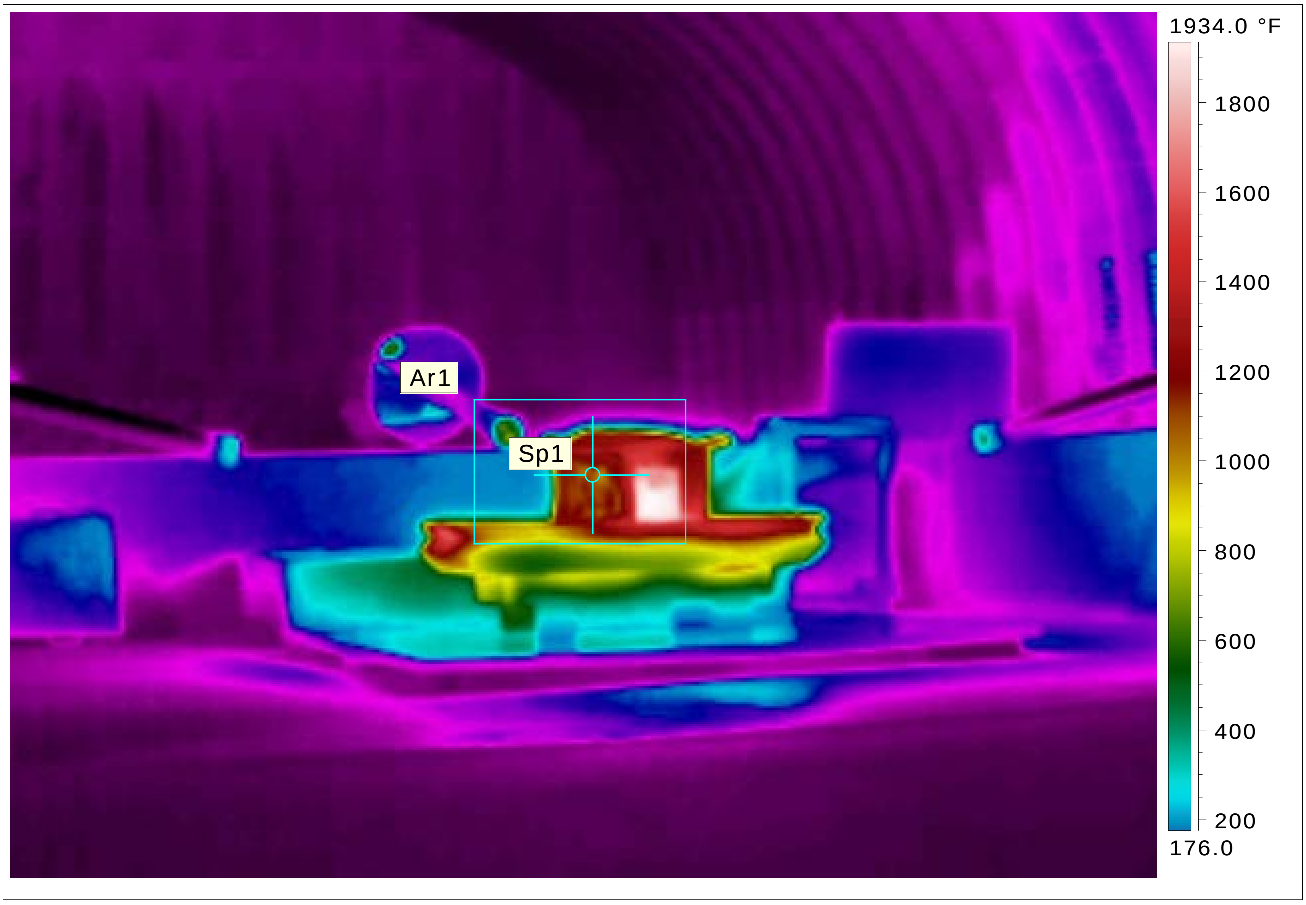


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	2166.0 °F
Date	4/18/2013
Image Time	7:56:09 AM
Emissivity	0.69

Approximately 17 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

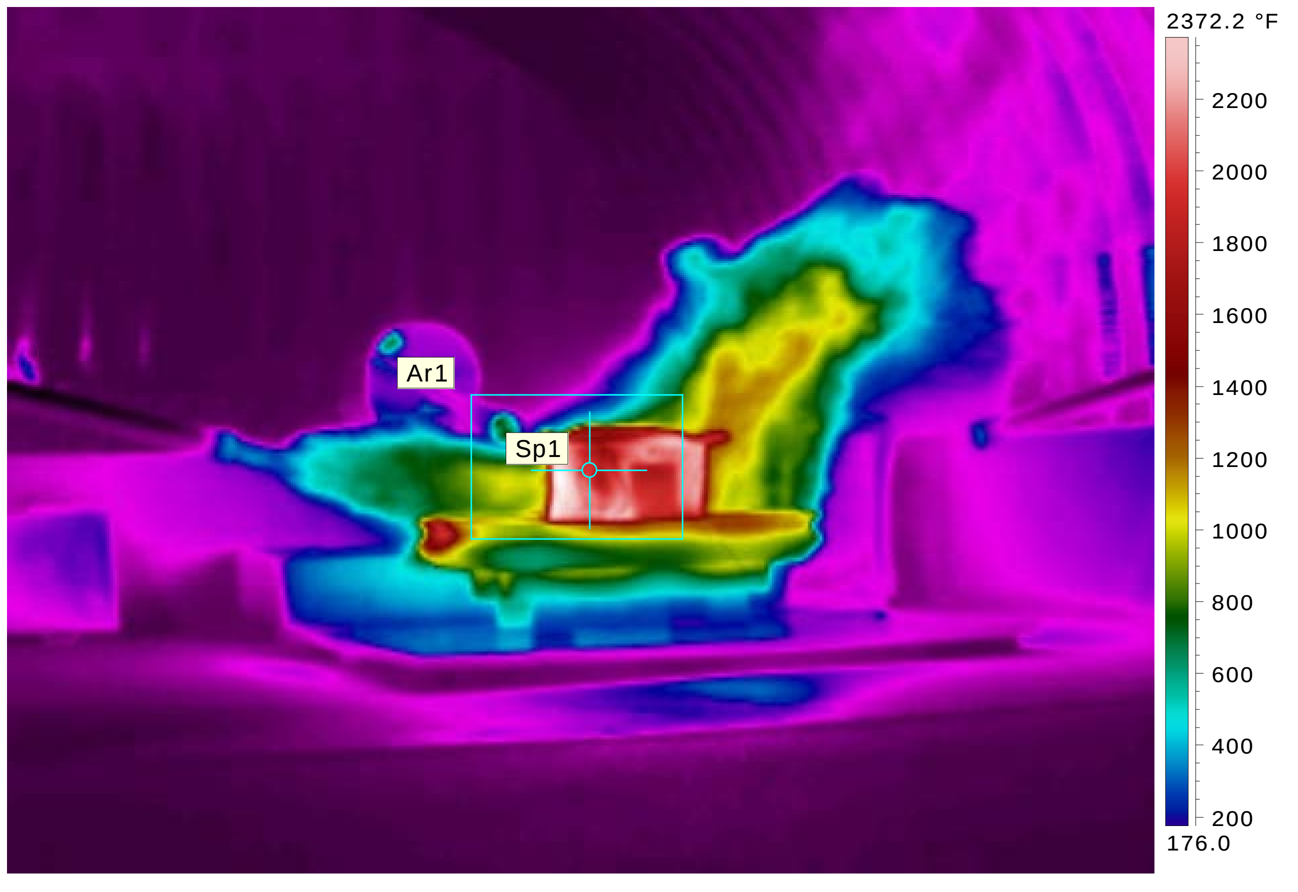


Ar1 Max. Temperature	1930.6 °F
Sp1 Temperature	1056.3 °F
Date	4/18/2013
Image Time	7:59:00 AM
Emissivity	0.69

Approximately 20 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

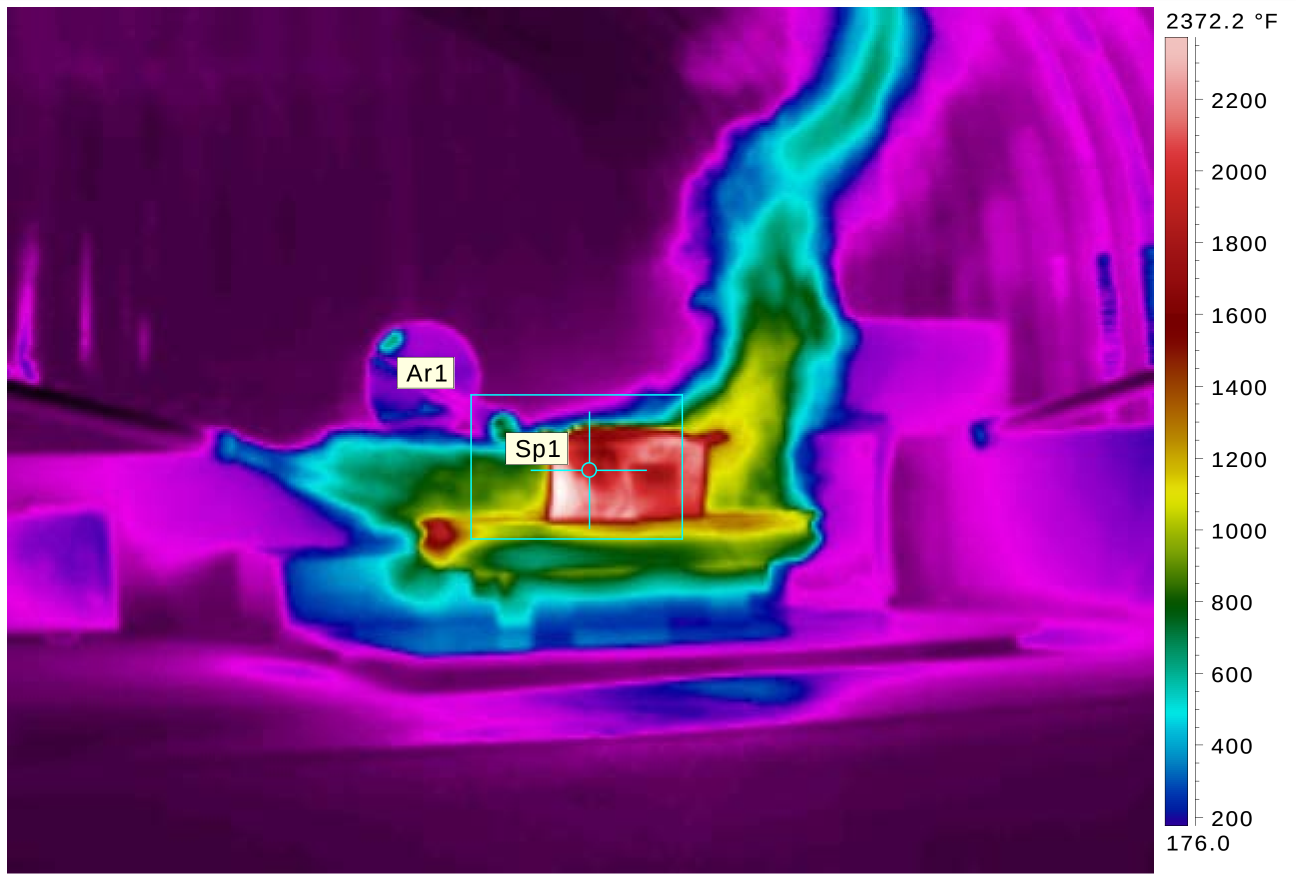


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1939.9 °F
Date	4/18/2013
Image Time	8:01:52 AM
Emissivity	0.69

Approximately 23 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

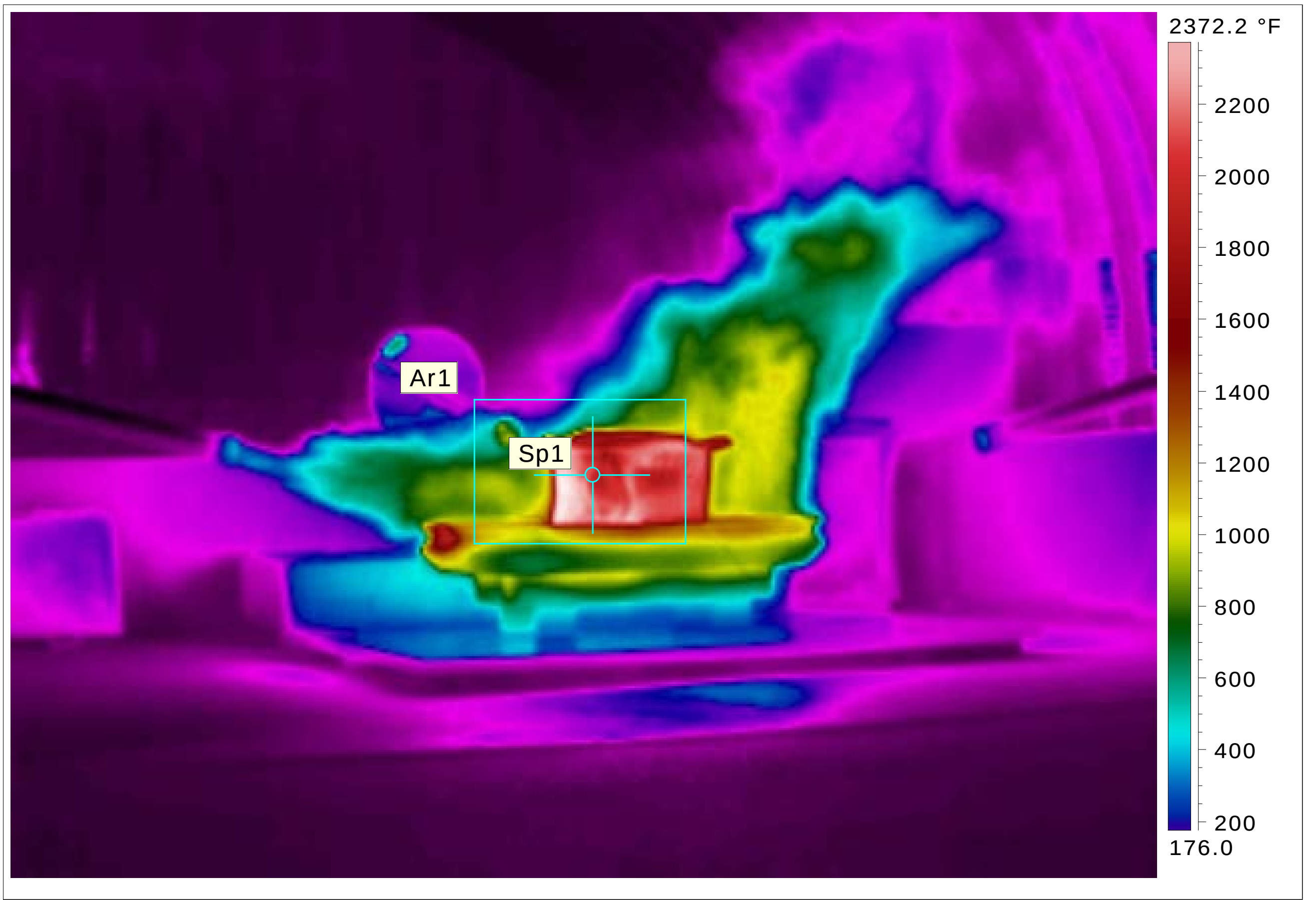


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1914.3 °F
Date	4/18/2013
Image Time	8:03:02 AM
Emissivity	0.69

Approximately 24 minutes after burn start time

	Thermography Inspection at **TA-16 388 Open Burn Site**	**Report Date:** **June 5, 2013**

Thermogram Image.Date 4/18/2013

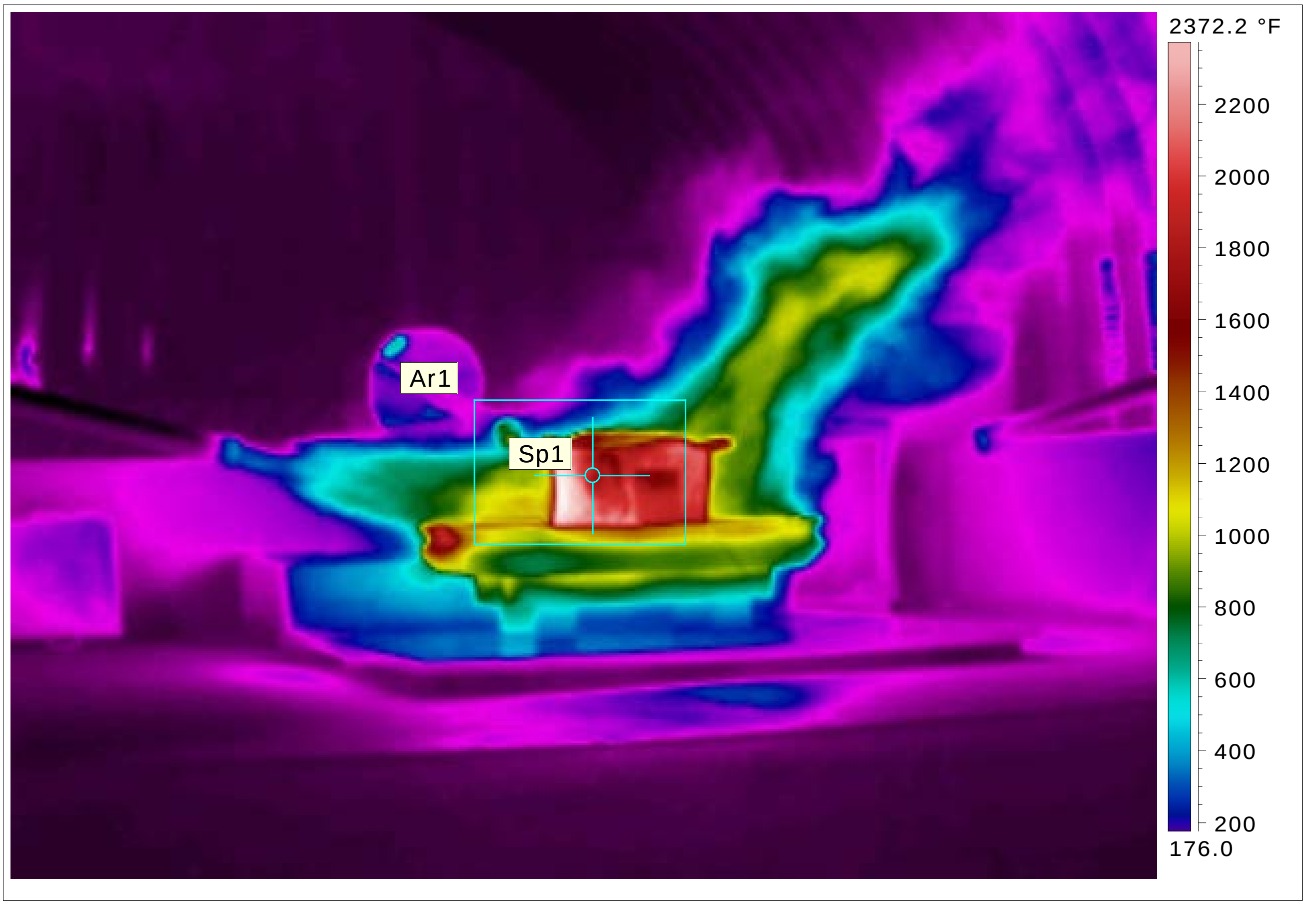


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1967.0 °F
Date	4/18/2013
Image Time	8:07:09 AM
Emissivity	0.69

Approximately 28 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST.1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

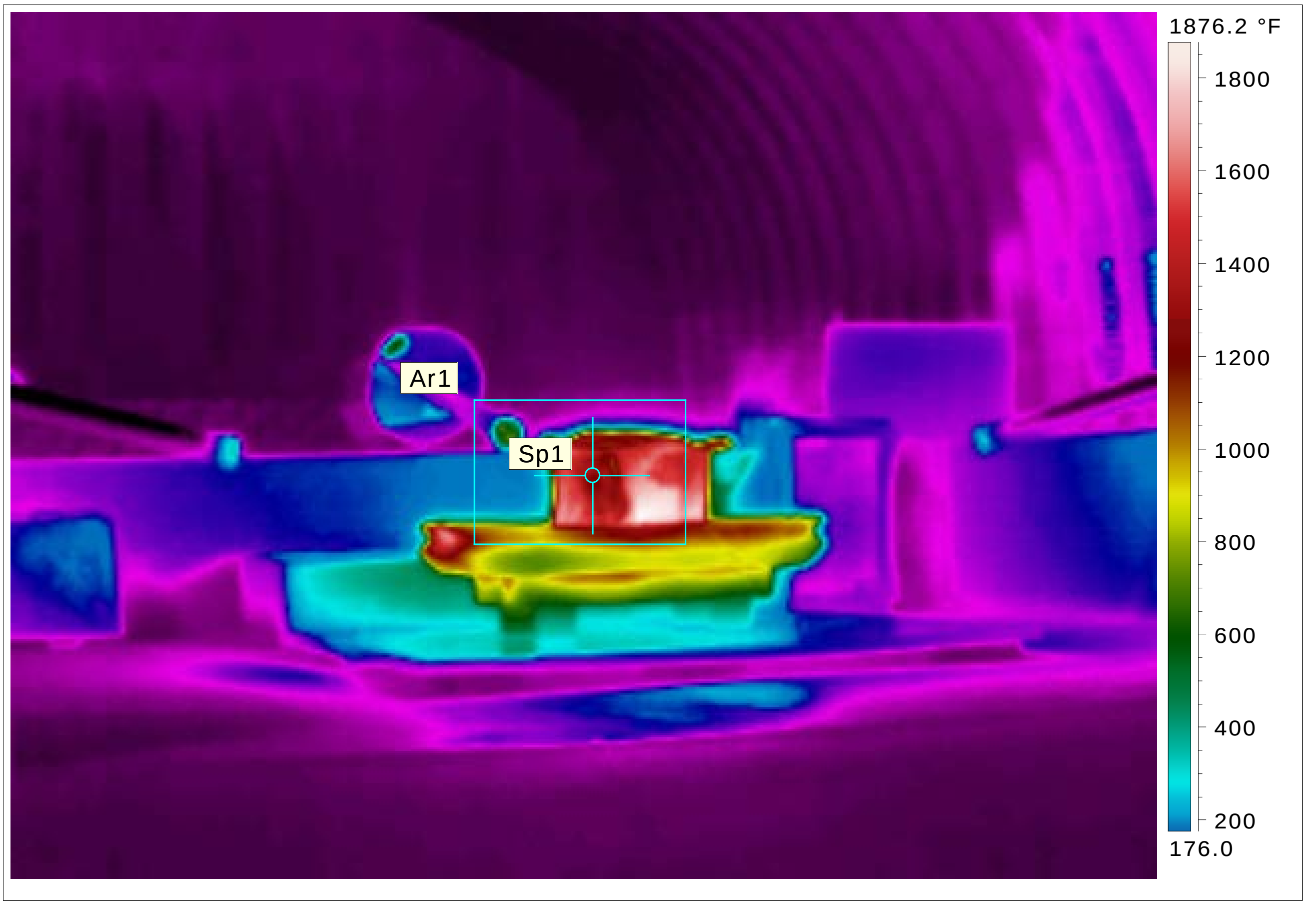
Thermogram Image.Date 4/18/2013



Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1756.0 °F
Date	4/18/2013
Image Time	8:10:01 AM
Emissivity	0.69

Approximately 31 minutes after burn start time

Thermogram Image.Date 4/18/2013

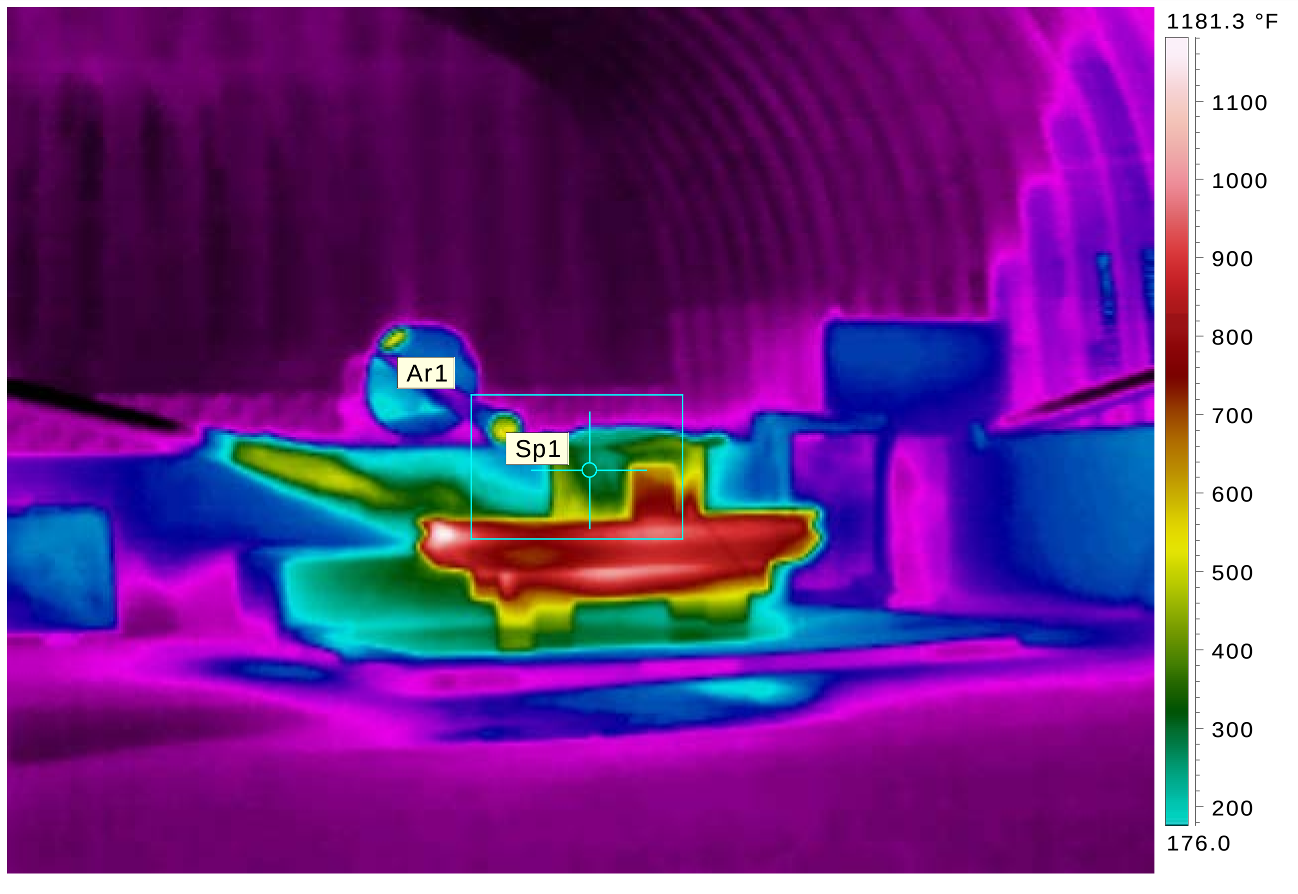


Ar1 Max. Temperature	1870.1 °F
Sp1 Temperature	1194.2 °F
Date	4/18/2013
Image Time	8:11:41 AM
Emissivity	0.69

Approximately 33 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

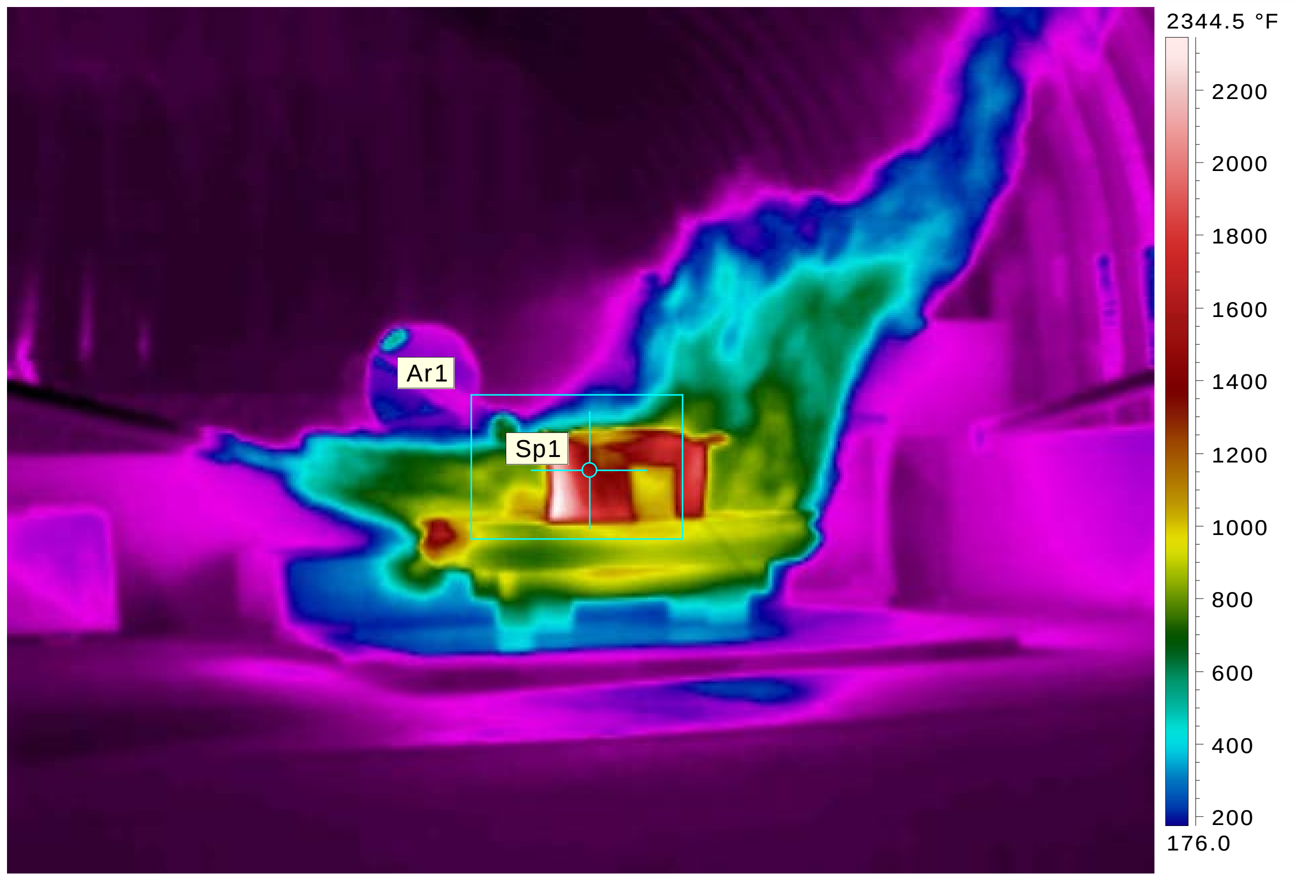


Ar1 Max. Temperature	968.4 °F
Sp1 Temperature	*293.3 °F
Date	4/18/2013
Image Time	8:17:49 AM
Emissivity	0.69

Approximately 39 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST.1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013

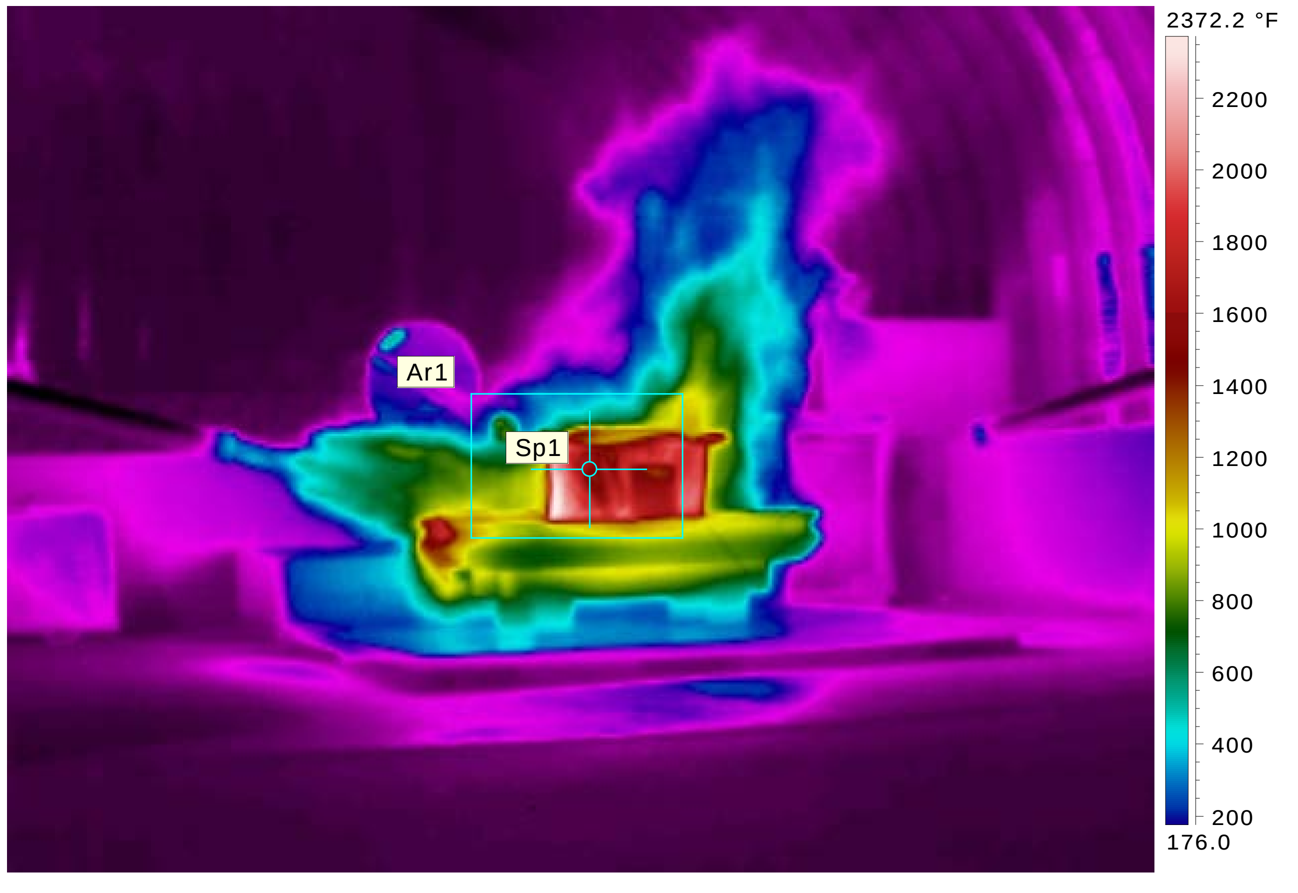


Ar1 Max. Temperature	*2368.1 °F
Sp1 Temperature	1527.4 °F
Date	4/18/2013
Image Time	8:18:06 AM
Emissivity	0.69

Approximately 39 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

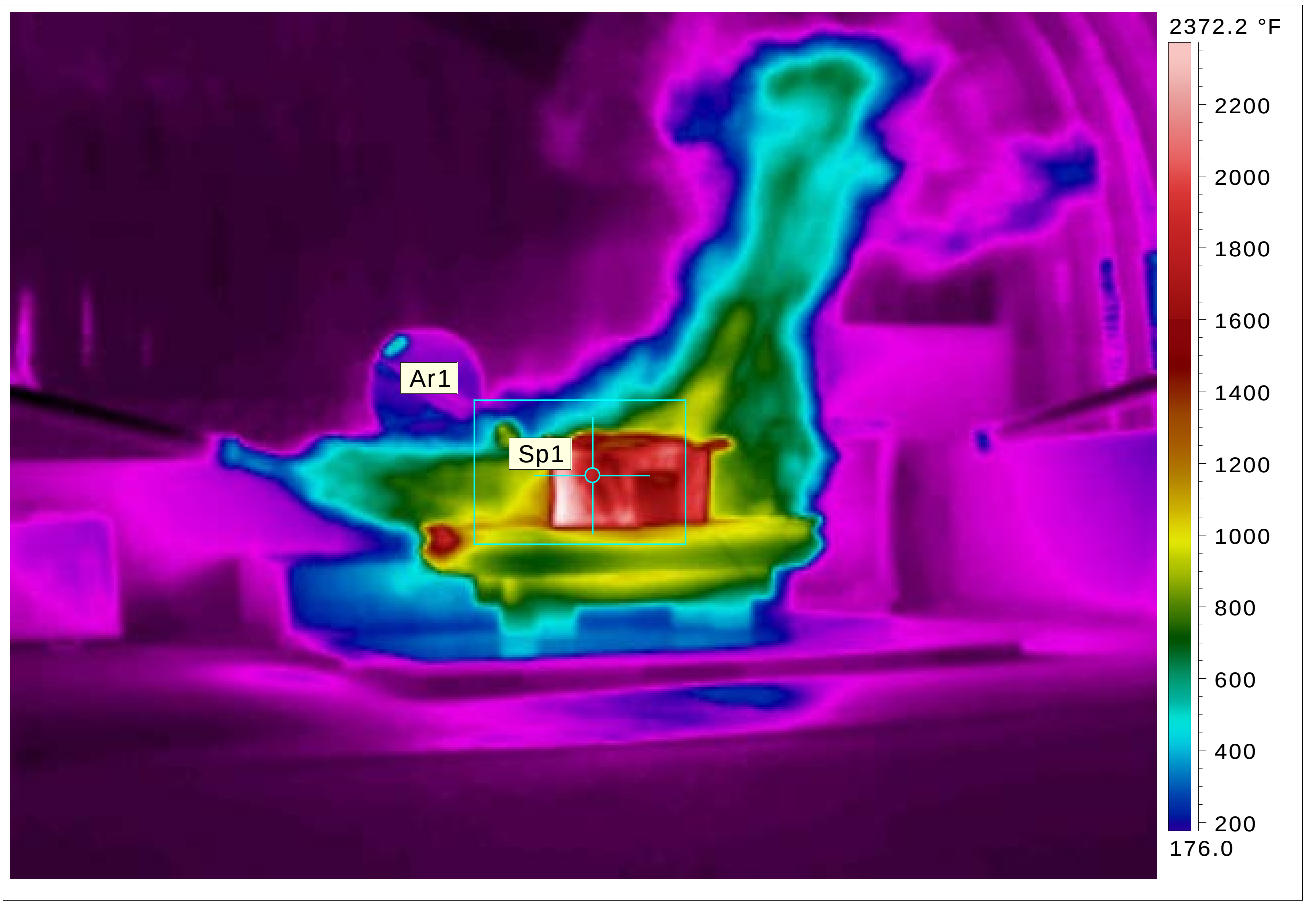
Thermogram Image.Date 4/18/2013



Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1470.5 °F
Date	4/18/2013
Image Time	8:21:07 AM
Emissivity	0.69

Approximately 42 minutes after burn start time

Thermogram Image.Date 4/18/2013

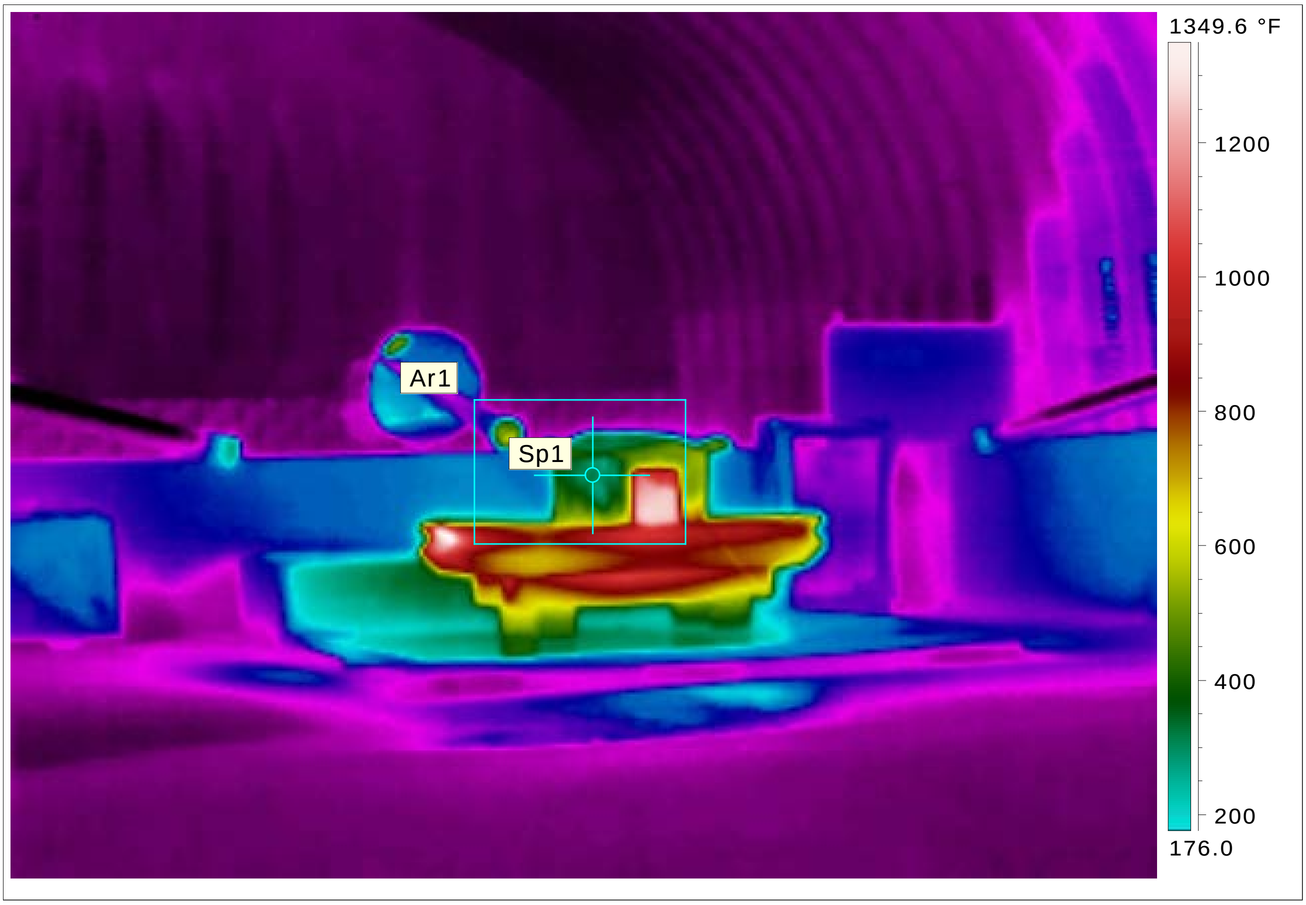


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1757.1 °F
Date	4/18/2013
Image Time	8:22:08 AM
Emissivity	0.69

Approximately 43 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

Thermogram Image.Date 4/18/2013



Ar1 Max. Temperature	1274.8 °F
Sp1 Temperature	*316.9 °F
Date	4/18/2013
Image Time	8:23:38 AM
Emissivity	0.69

Approximately 44 minutes after burn start time

Supplement 4-15

2018 Soil Sampling Results Summary Report for the Open Burning Unit at Technical Area (TA) 16-388 Flash Pad

LA-UR-20-24479

TA-16-388 Flash Pad

This summary report includes discussion of the analytical results for soil sampling conducted at the Technical Area 16 (TA-16) Burn Ground at the TA-16-388 Flash Pad open burning hazardous waste management unit. The soil sampling was conducted on September 25, 2018 a total of 12 soil samples were collected from 12 locations (Figure 1). Sampling locations were pre-selected based on a defined area where deposition of particulates from air to soil and areas of potential storm water runoff is most likely to occur. Additional discrete grab sample locations northeast of the Flash Pad were also sampled, where a dioxin/furan contaminated hotspot was identified during previous soil monitoring events. The 12 soil samples were analyzed for explosives, perchlorates, volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), dioxins/furans, and total metals. Each sample was collected from a depth of 0-2 inches below ground surface.

Various units have been in use for open burning operations from 1951 to the present and historically have been used for the open burning treatment of explosives hazardous waste. Other high explosives processing activities and waste treatment activities have also occurred at the TA-16 Burn Ground area, but the TA-16-388 Flash Pad unit has only been used for hazardous waste treatment activities. Other areas where past explosives processing activities occurred and the locations of past waste management units are known as solid waste management units (SWMUs).

Previous Sample Collection Events

Prior to the 2018 soil sampling event, three soil sampling events were conducted in 2009, 2012, and 2013 as part of the monitoring effort for the TA-16-388 hazardous waste management unit. The soil sampling is part of monitoring to assess the potential for release of contaminants from the treatment operations at the open burning treatment unit and to determine if constituents from historic operations are present within the soil around the unit that may adversely affect human health or the environment. Although analytically quantifying the specific contamination from operations at the open burning treatment unit is not possible due to the varied history of operations at the TA-16 Burn Ground, the data gathered from past, current, and future monitoring will be incorporated into risk analyses to make decisions concerning additional preventative or protective measures that could be introduced at the site. Data collected through monitoring also provide long term information about the TA-16 Burn Ground that will be useful to determine closure requirements.

Results from the 2009 sampling event indicate that no metals or dioxins/furans exceed either the New Mexico Environment Department (NMED) Residential Soil Screening Levels (RSSLs) (NMED, 2012) or the U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSL) (EPA, 2012). Dioxin/furan congeners were detected in each sample; the number of congeners detected ranged from 3 to 17 (Los Alamos National Laboratory [LANL], 2010).

For the 2012 sampling event, 12 soils sample were collected from 12 locations and analyzed for RCRA metals, dioxins/furans, VOCs, SVOCs, explosives compounds, and perchlorates. No metal concentrations were found to exceed either the SSLs or the RSLs. Dioxins/furans were detected above the SSLs and RSLs at two sample locations. A single soil sample location was measured to contain dioxin/furan levels that were an order of magnitude higher than all of the other locations. However, the sample was located very close to three samples collected previously (2009) that did not have dioxin/furans present above the screening levels. One SVOC, Nitrosodimethylamine[N-], was above the soil screening level at all of the soil sample locations. All Nitrosodimethylamine[N-] results were non-detects; however, the reported value of the laboratory quantitation limit (0.345 mg/kg) was above the soil screening level at the time (0.023 mg/kg).

For the 2013 sampling event, 7 soil samples were collected from 0-6 inch depths, from locations approximately 5 feet away from 2012 hot spot soil sample location. Soil samples for this sampling event were analyzed for dioxins/furans, SVOCs, metals, perchlorate and explosives. These locations were chosen primarily for the purposes of determining if the soil in and around the hot spot location had similar levels for dioxins and furans and to determine if there were additional exceedances for other constituents of concern. Two samples collected immediately surrounding the hot spot location were found to exceed their respective SSLs and the RSLs for dioxins and furans. There were no exceedances for SVOCs, metals, perchlorate, or explosives. Details regarding these sampling events are found in Attachment F of *Class 3 Permit Modification Request for Addition of an Open Burning Unit at Technical Area (TA) 16 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM0890010515* (LANL, 2013).

The 2018 soil sampling event was conducted to further characterize the potential for contaminant releases from the unit and provide additional information for the documentation of soil constituent data.

Laboratory Analysis and Reporting

Soil samples were analyzed at a qualified offsite laboratory. The LANL Sample Management Office qualifies contract laboratories and ensures that these laboratories adhere to Environmental Protection Agency (EPA) quality assurance and quality control (QA/QC) requirements. All sampling and analysis were conducted in accordance with QA/QC procedures defined by the latest revision of SW-846 (EPA, 1986) or other NMED-approved procedures. Field sampling procedures and laboratory analyses are evaluated through the use of QA/QC samples to assess the overall quality of the data produced. The field QC samples included trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Field QC samples were given a unique sample identification number and submitted to the analytical laboratory as blind samples. Laboratory QC samples included calibrations, blanks, duplicates, and spike samples. QC sample results are included in the analytical results received from the laboratory, so the results can be applied to the associated samples.

Samples were analyzed for the following constituents using the EPA methods indicated in the parentheses:

- High explosives (SW-846-8330B)
- Metals (SW-846-6010C, SW-846-6020, and SW-846-7471A)
- Dioxins/Furans (SW-846-8290A)
- SVOCs (SW-846-8270D)
- VOCs (SW-846-8260B)
- Perchlorates (SW-846-6850)

Complete analytical results are included in Table 1, *TA-16-388 Flash Pad Analytical Data Summary*. Data are reported with qualifiers that denote the following analytical situations:

- For Dioxins/Furans
    - U – Compound analyzed for, but not detected, reported quantity equals the contract required quantitation limit (CRQL)
    - J - Estimated value; the analyte is present, but at a concentration below the CRQL
        - J+ – percent recovery is over the qualification standard

        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
    - K – Estimated Maximum Possible Concentration
    - NQ – No qualification
- <u>For Metals</u>
    - U – reading was less than the method detection limit (MDL); reported value equals the CRQL
    - J – The reported value was obtained from a reading less than the CRQL but greater than or equal to the MDL
        - J+ – percent recovery is over the qualification standard
        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
    - NQ – No qualification
- <u>For VOCs and SVOCs</u>
    - U – Compound analyzed for, but not detected; reported value equals the CRQL
    - J – Estimated value; the analyte is present, but at a concentration below the CRQL
        - J+ – percent recovery is over the qualification standard
        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
- <u>For Explosives</u>
    - U – Compound analyzed for, but not detected; reported value equals the CRQL
    - J – Estimated value; the analyte is present, but at a concentration below the CRQL
        - J+ – percent recovery is over the qualification standard
        - J- – percent recovery is below the qualification standard
    - B – Analyte detected in associated blank
    - Blank qualifier field – No qualification

Summary of Results

The 12 soil samples were analyzed for explosives, perchlorates, VOCs, SVOCs, dioxins/furans, and total metals. All 12 soil samples did not exceed any of the identified in the most current NMED RSSLs (NMED, 2019) for explosives, perchlorates, VOCs, dioxins/furans and total metals. One SVOC, n-nitrosodimethylamine, appears to be detected above the current NMED RSSL at all sample locations. The paragraphs below provide a discussion of the compounds detected within the soil, as well as other information about the analytical data that provide a more in depth discussion regarding some of the results.

Organic constituents detected within the soils around the TA-16-388 Flash Pad include:

- 2 of the 62 VOCs analyzed;
- 1 of the 69 SVOCs analyzed;
- 5 of the 20 explosives compounds analyzed; and
- 25 of the 25 dioxin or furan compounds analyzed.

Both of the VOCs and the single SVOC detected were measured below applicable NMED RSSLs. However, when a constituent is reported as a CRQL which is greater than the screening level, it appears that the constituent is detected at a concentration that is greater than the NMED RSSL. This is the case for n-nitrosodimethylamine within this dataset. It is not detected in any of the samples analyzed and is included within the ‘U’ qualifier, as referenced above. Because the reported results are the same as the CRQL, and the CRQL is above the NMED RSSL, n-nitrosodimethylamine appears to be detected at a concentration greater than the NMED RSSLs. Although, the method utilized by the analytical laboratory for SVOC analysis can detect the presence of nitrosamines, it is not the most sensitive; however, since the presence of n-nitrosodimethylamine due to operations at the TA-16-388 Flash Pad is not likely, a more focused analytical validation was deemed not necessary. Further discussion regarding the likelihood of the presence of n-nitrosodimethylamine at the site is below.

N-nitrosodimethylamine is produced by industry only in small amounts for research. It was used to make rocket fuel, but this use was stopped after unusually high levels of the chemical were found in air, water, and soil samples collected near a rocket fuel manufacturing plant. It is currently used in some cosmetic and toiletry products and in cleansers. N-nitrosodimethylamine is unintentionally formed during various manufacturing processes and in air, water, and soil from reactions involving other chemicals called alkylamines. It is also found in some foods and may be formed in the body. When released to the air, it is broken down by sunlight in a matter of minutes. When released to soil, it may evaporate into air or could sink down into deeper soil. It is unlikely that n-nitrosodimethylamine was deposited by past or current activities at the TA-36-8 open detonation unit, given that rocket fuel was never manufactured at LANL

Perchlorate was detected at 2 of the 12 soil sample locations. All detections were below current NMED RSSLs.

Twenty-three (23) of the 23 metals analyzed for were detected in soil around the TA-16-388 Flash Pad. Most of the detected metal concentrations are below the established background levels at Los Alamos National Laboratory. Eight of the metals detected are present at concentrations above background values.

- Antimony (1 location)
- Barium (7 locations)
- Cobalt (1 location)
- Copper (1 location)
- Lead (1 location)
- Nickel (1 location)
- Silver (2 locations)
- Zinc (2 locations)

Human health and ecological risks associated with these detections are included in Permit Application Supplement 4-16, *Technical Area 16 - Open Burn/Open Detonation (OB/OD) Area - TA-16-388 Flash Pad Human Health and Ecological Risk-Screening Assessments*.

Conclusion

Soil sampling and analysis results indicate that the average soil constituent concentrations around the TA-16-388 Flash Pad are less than the NMED RSSLs. The analytical results for high explosives, perchlorates, VOCs, SVOCs and dioxins/furans did not indicate the presence of any constituents greater than the selected screening levels. Detected metals at 8 soil sample locations were measured above established background values; however there were no detections above current NMED RSSLs.

References

EPA, 1986 (and all approved updates.) *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response, U.S. government Printing Office, Washington D.C.

LANL, 2013. *Class 3 Permit Modification Request for Addition of an Open Burning Unit at Technical Area (TA) 16 to the Los Alamos Nation Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM0890010515*. LA-UR-13-27579. September 2013, Los Alamos National Laboratory, Los Alamos, NM. (http://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ERID-250074)

NMED, 2012. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation*. February 2012, New Mexico Environment Department, Santa Fe, New Mexico.

NMED, 2019. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation*, February 2019 (Revision 2, 6/19/19).

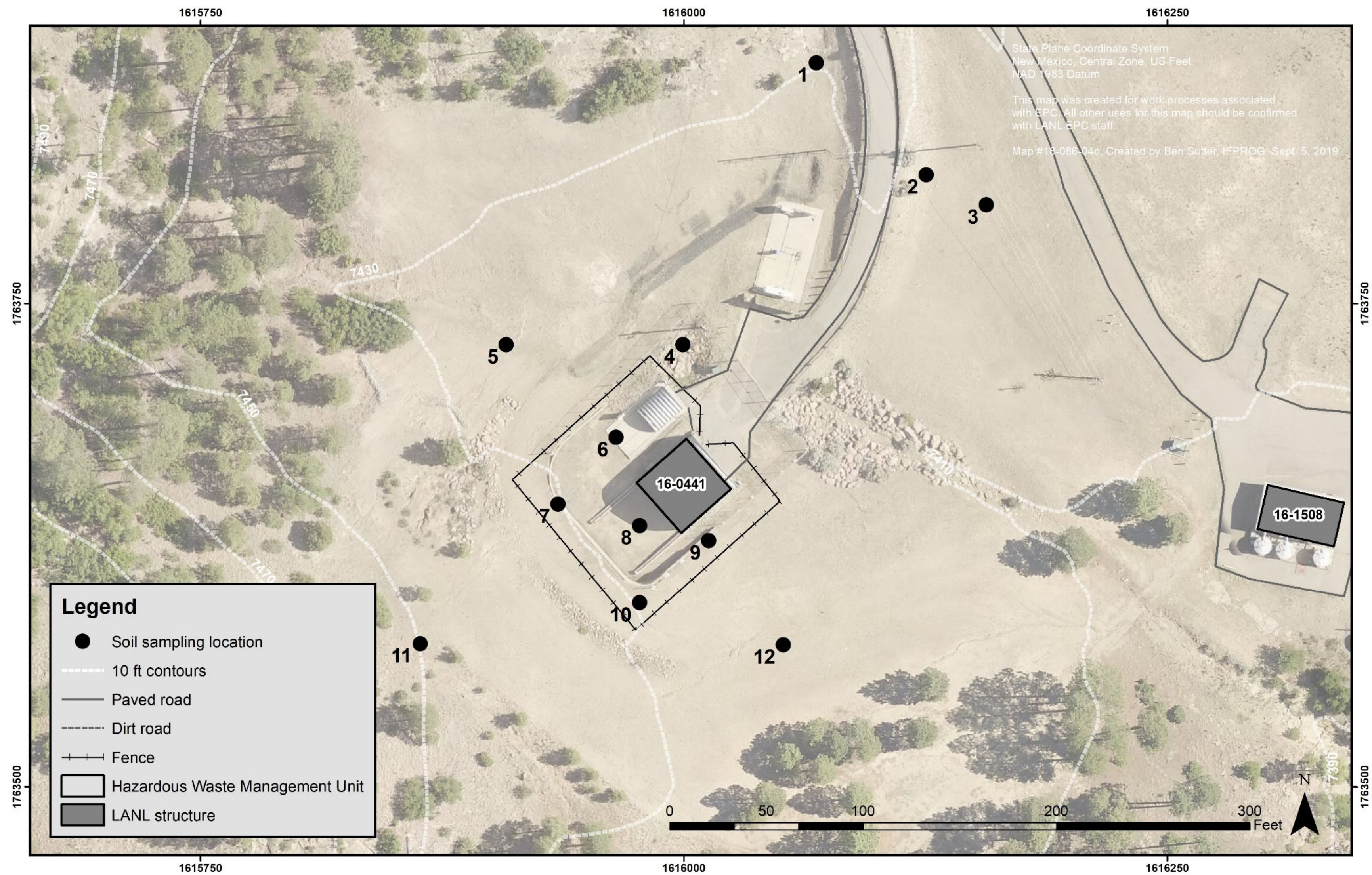


Figure 1. Soil Sample Locations at TA-16-388 Flash Pad

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Acenaphthene	5.19E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
1	Acenaphthylene	5.19E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Acetone	1.71E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
1	Aluminum	5.46E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
1	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Aniline	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Anthracene	5.19E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
1	Antimony	3.32E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
1	Arsenic	1.58E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
1	Azobenzene	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Barium	3.30E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
1	Benzene	3.42E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
1	Benzo(a)anthracene	5.19E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(a)pyrene	5.19E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
1	Benzo(b)fluoranthene	5.19E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(g,h,i)perylene	5.19E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzo(k)fluoranthene	5.19E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Benzoic Acid	8.66E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Benzyl Alcohol	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Beryllium	4.07E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
1	Bis(2-chloroethoxy)methane	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bis(2-chloroethyl)ether	5.19E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Bis(2-ethylhexyl)phthalate	5.19E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Bromobenzene	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bromochloromethane	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Bromodichloromethane	3.42E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Bromoform	3.42E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Bromomethane	3.42E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
1	Bromophenyl-phenylether[4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butanone[2-]	1.71E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
1	Butylbenzene[n-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzene[sec-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzene[tert-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Butylbenzylphthalate	5.19E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Cadmium	1.01E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
1	Calcium	1.48E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
1	Carbon Disulfide	1.71E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
1	Carbon Tetrachloride	3.42E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
1	Chloro-3-methylphenol[4-]	6.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chloroaniline[4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chlorobenzene	3.42E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
1	Chlorodibromomethane	3.42E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Chloroethane	3.42E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
1	Chloroform	3.42E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
1	Chloromethane	3.42E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
1	Chloronaphthalene[2-]	5.19E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
1	Chlorophenol[2-]	5.19E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
1	Chlorophenyl-phenyl[4-] Ether	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chlorotoluene[2-]	3.42E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Chlorotoluene[4-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Chromium	5.08E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
1	Chrysene	5.19E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
1	Cobalt	2.99E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
1	Copper	5.22E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
1	Dibenz(a,h)anthracene	5.19E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
1	Dibenzofuran	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dibromo-3-Chloropropane[1,2-]	5.14E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
1	Dibromoethane[1,2-]	3.42E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
1	Dibromomethane	3.42E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
1	Dichlorobenzene[1,2-]	3.42E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,2-]	5.19E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,3-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,3-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorobenzene[1,4-]	3.42E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1	Dichlorobenzene[1,4-]	5.19E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
1	Dichlorobenzidine[3,3'-]	5.19E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Dichlorodifluoromethane	3.42E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
1	Dichloroethane[1,1-]	3.42E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
1	Dichloroethane[1,2-]	3.42E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
1	Dichloroethene[1,1-]	3.42E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
1	Dichloroethene[cis-1,2-]	3.42E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1	Dichloroethene[trans-1,2-]	3.42E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
1	Dichlorophenol[2,4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
1	Dichloropropane[1,2-]	3.42E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
1	Dichloropropane[1,3-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropane[2,2-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Dichloropropene[1,1-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[cis-1,3-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dichloropropene[trans-1,3-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Diethylphthalate	5.19E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
1	Dimethyl Phthalate	5.19E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
1	Dimethylphenol[2,4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Di-n-butylphthalate	5.19E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1	Dinitro-2-methylphenol[4,6-]	5.19E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
1	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dinitrophenol[2,4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
1	Dinitrotoluene[2,6-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Di-n-octylphthalate	5.19E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Diphenylamine	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Ethylbenzene	3.42E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
1	Fluoranthene	5.19E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1	Fluorene	5.19E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
1	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	4.68E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzodioxins (Total)	1.14E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	2.08E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	6.78E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Heptachlorodibenzofurans (Total)	3.42E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorobenzene	5.19E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
1	Hexachlorobutadiene	5.19E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
1	Hexachlorocyclopentadiene	5.19E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	1.11E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	1.95E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	2.74E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzodioxins (Total)	2.69E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,4,7,8-]	7.82E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.01E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.27E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachlorodibenzofurans (Total)	2.02E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Hexachloroethane	5.19E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
1	Hexanone[2-]	1.71E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
1	Indeno(1,2,3-cd)pyrene	5.19E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
1	Iodomethane	1.71E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Iron	1.01E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
1	Isophorone	5.19E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
1	Isopropylbenzene	3.42E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
1	Isopropyltoluene[4-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Lead	1.07E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
1	Magnesium	1.04E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
1	Manganese	2.06E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
1	Mercury	6.81E-03	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
1	Methyl-2-pentanone[4-]	1.71E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
1	Methylene Chloride	1.71E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
1	Methylnaphthalene[2-]	5.19E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
1	Methylphenol[2-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Methylphenol[3-,4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Naphthalene	5.19E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
1	Nickel	3.78E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
1	Nitroaniline[2-]	5.71E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitroaniline[3-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitroaniline[4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrobenzene	5.19E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
1	Nitrophenol[2-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrophenol[4-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrosodimethylamine[N-]	5.19E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	TRUE	N/A	FALSE
1	Nitroso-di-n-propylamine[N-]	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
1	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
1	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
1	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.62E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	2.29E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Oxybis(1-chloropropane)[2,2'-]	5.19E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzodioxins (Total)	1.65E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofuran[1,2,3,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofuran[2,3,4,7,8-]	4.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorodibenzofurans (Totals)	4.45E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pentachlorophenol	5.19E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
1	Perchlorate	5.13E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
1	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Phenanthrene	5.19E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1	Phenol	5.19E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Potassium	1.10E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
1	Propylbenzene[1-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Pyrene	5.19E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
1	Pyridine	5.19E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
1	Selenium	6.81E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
1	Silver	1.01E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
1	Sodium	9.00E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
1	Styrene	3.42E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
1	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachlorodibenzodioxin[2,3,7,8-]	1.21E-07	mg/kg	Y	J	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
1	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachlorodibenzofuran[2,3,7,8-]	1.79E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachlorodibenzofurans (Totals)	8.87E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Tetrachloroethane[1,1,1,2-]	3.42E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
1	Tetrachloroethane[1,1,2,2-]	3.42E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
1	Tetrachloroethene	3.42E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
1	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
1	Thallium	1.48E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
1	Toluene	3.42E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.71E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
1	Trichlorobenzene[1,2,4-]	5.19E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
1	Trichloroethane[1,1,1-]	3.42E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
1	Trichloroethane[1,1,2-]	3.42E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
1	Trichloroethene	3.42E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
1	Trichlorofluoromethane	3.42E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
1	Trichlorophenol[2,4,5-]	5.19E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
1	Trichlorophenol[2,4,6-]	5.19E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
1	Trichloropropane[1,2,3-]	3.42E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
1	Trimethylbenzene[1,2,4-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trimethylbenzene[1,3,5-]	3.42E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
1	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
1	Vanadium	1.37E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
1	Vinyl Chloride	3.42E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
1	Xylene[1,2-]	3.42E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
1	Xylene[1,3-]+Xylene[1,4-]	6.86E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
1	Zinc	3.98E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
2	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Acenaphthene	1.04E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
2	Acenaphthylene	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Acetone	1.70E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
2	Aluminum	1.11E+04	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
2	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Aniline	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Anthracene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
2	Antimony	3.27E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
2	Arsenic	2.58E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Azobenzene	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Barium	3.25E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
2	Benzene	3.40E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
2	Benzo(a)anthracene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(a)pyrene	1.04E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
2	Benzo(b)fluoranthene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(g,h,i)perylene	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Benzo(k)fluoranthene	1.04E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Benzoic Acid	1.73E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Benzyl Alcohol	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Beryllium	9.01E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
2	Bis(2-chloroethoxy)methane	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-chloroethyl)ether	1.04E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Bis(2-ethylhexyl)phthalate	1.04E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Bromobenzene	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bromochloromethane	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Bromodichloromethane	3.40E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Bromoform	3.40E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Bromomethane	3.40E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
2	Bromophenyl-phenylether[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butanone[2-]	1.70E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
2	Butylbenzene[n-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzene[sec-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzene[tert-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Butylbenzylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Cadmium	9.92E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
2	Calcium	1.91E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Carbon Disulfide	1.70E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
2	Carbon Tetrachloride	3.40E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
2	Chloro-3-methylphenol[4-]	1.39E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chloroaniline[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chlorobenzene	3.40E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
2	Chlorodibromomethane	3.40E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Chloroethane	3.40E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
2	Chloroform	3.40E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
2	Chloromethane	3.40E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
2	Chloronaphthalene[2-]	1.04E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
2	Chlorophenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
2	Chlorophenyl-phenyl[4-] Ether	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chlorotoluene[2-]	3.40E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Chlorotoluene[4-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Chromium	8.35E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
2	Chrysene	1.04E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
2	Cobalt	6.01E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
2	Copper	5.53E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
2	Dibenz(a,h)anthracene	1.04E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
2	Dibenzofuran	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dibromo-3-Chloropropane[1,2-]	5.10E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
2	Dibromoethane[1,2-]	3.40E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
2	Dibromomethane	3.40E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
2	Dichlorobenzene[1,2-]	3.40E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,3-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorobenzene[1,3-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Dichlorobenzene[1,4-]	3.40E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
2	Dichlorobenzene[1,4-]	1.04E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
2	Dichlorobenzidine[3,3'-]	1.04E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Dichlorodifluoromethane	3.40E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
2	Dichloroethane[1,1-]	3.40E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
2	Dichloroethane[1,2-]	3.40E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
2	Dichloroethene[1,1-]	3.40E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
2	Dichloroethene[cis-1,2-]	3.40E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
2	Dichloroethene[trans-1,2-]	3.40E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
2	Dichlorophenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
2	Dichloropropane[1,2-]	3.40E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
2	Dichloropropane[1,3-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropane[2,2-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[1,1-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[cis-1,3-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dichloropropene[trans-1,3-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Diethylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
2	Dimethyl Phthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
2	Dimethylphenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Di-n-butylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
2	Dinitro-2-methylphenol[4,6-]	1.04E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
2	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dinitrophenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,4-]	1.04E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
2	Dinitrotoluene[2,6-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Di-n-octylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Diphenylamine	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Ethylbenzene	3.40E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
2	Fluoranthene	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
2	Fluorene	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
2	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	6.83E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Heptachlorodibenzodioxins (Total)	1.29E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	2.15E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Heptachlorodibenzofurans (Total)	2.07E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorobenzene	1.04E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
2	Hexachlorobutadiene	1.04E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
2	Hexachlorocyclopentadiene	1.04E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzodioxins (Total)	1.73E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachlorodibenzofurans (Total)	1.04E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Hexachloroethane	1.04E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
2	Hexanone[2-]	1.70E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
2	Indeno(1,2,3-cd)pyrene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
2	Iodomethane	1.70E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Iron	1.19E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
2	Isophorone	1.04E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
2	Isopropylbenzene	3.40E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
2	Isopropyltoluene[4-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Lead	1.17E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
2	Magnesium	1.74E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
2	Manganese	2.95E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
2	Mercury	1.17E-02	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
2	Methyl-2-pentanone[4-]	1.70E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
2	Methylene Chloride	1.70E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
2	Methylnaphthalene[2-]	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
2	Methylphenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Methylphenol[3-,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Naphthalene	1.04E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
2	Nickel	7.59E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
2	Nitroaniline[2-]	1.14E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitroaniline[3-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitroaniline[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrobenzene	1.04E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
2	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
2	Nitrophenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrophenol[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrosodimethylamine[N-]	1.04E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
2	Nitroso-di-n-propylamine[N-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
2	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
2	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.92E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	4.29E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Oxybis(1-chloropropane)[2,2'-]	1.04E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pentachlorophenol	1.04E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
2	Perchlorate	5.22E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
2	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Phenanthrene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
2	Phenol	1.04E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
2	Potassium	1.87E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
2	Propylbenzene[1-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Pyrene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
2	Pyridine	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
2	Selenium	6.56E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
2	Silver	1.34E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
2	Sodium	8.22E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
2	Styrene	3.40E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
2	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachlorodibenzodioxin[2,3,7,8-]	9.99E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
2	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
2	Tetrachlorodibenzofuran[2,3,7,8-]	1.21E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Tetrachloroethane[1,1,1,2-]	3.40E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
2	Tetrachloroethane[1,1,2,2-]	3.40E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
2	Tetrachloroethene	3.40E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
2	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
2	Thallium	2.42E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
2	Toluene	3.40E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
2	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.70E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
2	Trichlorobenzene[1,2,4-]	1.04E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
2	Trichloroethane[1,1,1-]	3.40E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
2	Trichloroethane[1,1,2-]	3.40E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
2	Trichloroethene	3.40E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
2	Trichlorofluoromethane	3.40E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
2	Trichlorophenol[2,4,5-]	1.04E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
2	Trichlorophenol[2,4,6-]	1.04E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
2	Trichloropropane[1,2,3-]	3.40E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
2	Trimethylbenzene[1,2,4-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trimethylbenzene[1,3,5-]	3.40E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
2	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
2	Vanadium	2.34E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
2	Vinyl Chloride	3.40E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
2	Xylene[1,2-]	3.40E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
2	Xylene[1,3-]+Xylene[1,4-]	6.81E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
2	Zinc	2.30E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Acenaphthene	1.02E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
3	Acenaphthylene	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Acetone	1.69E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
3	Aluminum	6.57E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
3	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Aniline	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Anthracene	1.02E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
3	Antimony	3.39E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
3	Arsenic	1.60E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
3	Azobenzene	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Barium	2.24E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
3	Benzene	3.37E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
3	Benzo(a)anthracene	1.02E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(a)pyrene	1.02E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
3	Benzo(b)fluoranthene	1.02E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(g,h,i)perylene	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Benzo(k)fluoranthene	1.02E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Benzoic Acid	1.71E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Benzyl Alcohol	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Beryllium	4.89E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
3	Bis(2-chloroethoxy)methane	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-chloroethyl)ether	1.02E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Bis(2-ethylhexyl)phthalate	1.02E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Bromobenzene	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bromochloromethane	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Bromodichloromethane	3.37E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Bromoform	3.37E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Bromomethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
3	Bromophenyl-phenylether[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butanone[2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
3	Butylbenzene[n-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzene[sec-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzene[tert-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Butylbenzylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Cadmium	1.03E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
3	Calcium	1.55E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
3	Carbon Disulfide	1.69E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
3	Carbon Tetrachloride	3.37E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
3	Chloro-3-methylphenol[4-]	1.36E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chloroaniline[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chlorobenzene	3.37E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
3	Chlorodibromomethane	3.37E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Chloroethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
3	Chloroform	3.37E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
3	Chloromethane	3.37E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
3	Chloronaphthalene[2-]	1.02E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
3	Chlorophenol[2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
3	Chlorophenyl-phenyl[4-] Ether	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Chlorotoluene[2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Chlorotoluene[4-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Chromium	5.96E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
3	Chrysene	1.02E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
3	Cobalt	3.62E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
3	Copper	5.67E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
3	Dibenz(a,h)anthracene	1.02E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
3	Dibenzofuran	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dibromo-3-Chloropropane[1,2-]	5.06E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
3	Dibromoethane[1,2-]	3.37E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
3	Dibromomethane	3.37E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
3	Dichlorobenzene[1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,3-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorobenzene[1,4-]	3.37E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3	Dichlorobenzene[1,4-]	1.02E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3	Dichlorobenzidine[3,3'-]	1.02E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Dichlorodifluoromethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
3	Dichloroethane[1,1-]	3.37E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
3	Dichloroethane[1,2-]	3.37E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
3	Dichloroethene[1,1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
3	Dichloroethene[cis-1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3	Dichloroethene[trans-1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
3	Dichlorophenol[2,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
3	Dichloropropane[1,2-]	3.37E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
3	Dichloropropane[1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropane[2,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[1,1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Dichloropropene[cis-1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dichloropropene[trans-1,3-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Diethylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
3	Dimethyl Phthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
3	Dimethylphenol[2,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3	Di-n-butylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3	Dinitro-2-methylphenol[4,6-]	1.02E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
3	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dinitrophenol[2,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,4-]	1.02E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3	Dinitrotoluene[2,6-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Di-n-octylphthalate	1.02E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Diphenylamine	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Ethylbenzene	3.37E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
3	Fluoranthene	1.02E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3	Fluorene	1.02E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	9.39E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzodioxins (Total)	1.61E-03	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	3.16E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.43E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Heptachlorodibenzofurans (Total)	6.74E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorobenzene	1.02E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
3	Hexachlorobutadiene	1.02E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
3	Hexachlorocyclopentadiene	1.02E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	1.74E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	3.50E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.54E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzodioxins (Total)	3.22E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,4,7,8-]	9.84E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.32E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.16E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.77E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachlorodibenzofurans (Total)	3.50E-04	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Hexachloroethane	1.02E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
3	Hexanone[2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
3	Indeno(1,2,3-cd)pyrene	1.02E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3	Iodomethane	1.69E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Iron	9.56E+03	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
3	Isophorone	1.02E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
3	Isopropylbenzene	3.37E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
3	Isopropyltoluene[4-]	6.68E-04	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Lead	9.29E+00	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
3	Magnesium	1.20E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
3	Manganese	2.49E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
3	Mercury	6.08E-03	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
3	Methyl-2-pentanone[4-]	1.69E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
3	Methylene Chloride	1.69E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
3	Methylnaphthalene[2-]	1.02E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
3	Methylphenol[2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Methylphenol[3-,4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Naphthalene	1.02E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Nickel	4.03E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
3	Nitroaniline[2-]	1.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitroaniline[3-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitroaniline[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrobenzene	1.02E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3	Nitrophenol[2-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrophenol[4-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrosodimethylamine[N-]	1.02E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
3	Nitroso-di-n-propylamine[N-]	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
3	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
3	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
3	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	5.04E-03	mg/kg	Y	R	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	5.46E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Oxybis(1-chloropropane)[2,2'-]	1.02E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzodioxin[1,2,3,7,8-]	7.23E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzodioxins (Total)	3.87E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofuran[1,2,3,7,8-]	9.29E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofuran[2,3,4,7,8-]	1.23E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorodibenzofurans (Totals)	6.84E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pentachlorophenol	1.02E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
3	Perchlorate	5.05E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
3	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Phenanthrene	1.02E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3	Phenol	1.02E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
3	Potassium	1.39E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Propylbenzene[1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Pyrene	1.02E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3	Pyridine	1.02E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
3	Selenium	6.13E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
3	Silver	2.81E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
3	Sodium	7.20E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
3	Styrene	3.37E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
3	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachlorodibenzodioxin[2,3,7,8-]	3.50E-07	mg/kg	Y	J	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
3	Tetrachlorodibenzodioxins (Total)	5.13E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachlorodibenzofuran[2,3,7,8-]	2.78E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachlorodibenzofurans (Totals)	7.57E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Tetrachloroethane[1,1,1,2-]	3.37E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
3	Tetrachloroethane[1,1,2,2-]	3.37E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
3	Tetrachloroethene	3.37E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
3	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3	Thallium	1.79E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
3	Toluene	6.99E-04	mg/kg	Y	J	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
3	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
3	Trichlorobenzene[1,2,4-]	1.02E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
3	Trichloroethane[1,1,1-]	3.37E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
3	Trichloroethane[1,1,2-]	3.37E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
3	Trichloroethene	3.37E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
3	Trichlorofluoromethane	3.37E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3	Trichlorophenol[2,4,5-]	1.02E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3	Trichlorophenol[2,4,6-]	1.02E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
3	Trichloropropane[1,2,3-]	3.37E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
3	Trimethylbenzene[1,2,4-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trimethylbenzene[1,3,5-]	3.37E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
3	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3	Vanadium	1.37E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
3	Vinyl Chloride	3.37E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
3	Xylene[1,2-]	3.37E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
3	Xylene[1,3-]+Xylene[1,4-]	6.76E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
3	Zinc	2.84E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
3 dup	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Acenaphthene	5.13E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
3 dup	Acenaphthylene	5.13E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Acetone	1.69E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
3 dup	Aluminum	6.65E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
3 dup	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Aniline	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Anthracene	5.13E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
3 dup	Antimony	3.35E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
3 dup	Arsenic	1.62E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
3 dup	Azobenzene	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Barium	2.38E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
3 dup	Benzene	3.39E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
3 dup	Benzo(a)anthracene	5.13E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Benzo(a)pyrene	5.13E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
3 dup	Benzo(b)fluoranthene	5.13E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Benzo(g,h,i)perylene	5.13E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Benzo(k)fluoranthene	5.13E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Benzoic Acid	8.54E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Benzyl Alcohol	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Beryllium	6.23E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
3 dup	Bis(2-chloroethoxy)methane	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Bis(2-chloroethyl)ether	5.13E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Bis(2-ethylhexyl)phthalate	5.13E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3 dup	Bromobenzene	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Bromochloromethane	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Bromodichloromethane	3.39E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
3 dup	Bromoform	3.39E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
3 dup	Bromomethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
3 dup	Bromophenyl-phenylether[4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Butanone[2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
3 dup	Butylbenzene[n-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Butylbenzene[sec-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Butylbenzene[tert-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Butylbenzylphthalate	5.13E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Cadmium	1.01E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
3 dup	Calcium	1.77E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
3 dup	Carbon Disulfide	1.69E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Carbon Tetrachloride	3.39E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
3 dup	Chloro-3-methylphenol[4-]	6.84E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Chloroaniline[4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Chlorobenzene	3.39E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
3 dup	Chlorodibromomethane	3.39E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
3 dup	Chloroethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
3 dup	Chloroform	3.39E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
3 dup	Chloromethane	3.39E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
3 dup	Chloronaphthalene[2-]	5.13E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
3 dup	Chlorophenol[2-]	5.13E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
3 dup	Chlorophenyl-phenyl[4-] Ether	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Chlorotoluene[2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
3 dup	Chlorotoluene[4-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Chromium	6.83E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
3 dup	Chrysene	5.13E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Cobalt	4.02E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
3 dup	Copper	6.39E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
3 dup	Dibenz(a,h)anthracene	5.13E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dibenzofuran	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dibromo-3-Chloropropane[1,2-]	5.08E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
3 dup	Dibromoethane[1,2-]	3.39E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
3 dup	Dibromomethane	3.39E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
3 dup	Dichlorobenzene[1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3 dup	Dichlorobenzene[1,2-]	5.13E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
3 dup	Dichlorobenzene[1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichlorobenzene[1,3-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichlorobenzene[1,4-]	3.39E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Dichlorobenzene[1,4-]	5.13E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
3 dup	Dichlorobenzidine[3,3'-]	5.13E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichlorodifluoromethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
3 dup	Dichloroethane[1,1-]	3.39E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
3 dup	Dichloroethane[1,2-]	3.39E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
3 dup	Dichloroethene[1,1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
3 dup	Dichloroethene[cis-1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3 dup	Dichloroethene[trans-1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
3 dup	Dichlorophenol[2,4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
3 dup	Dichloropropane[1,2-]	3.39E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
3 dup	Dichloropropane[1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichloropropane[2,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichloropropene[1,1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichloropropene[cis-1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dichloropropene[trans-1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Diethylphthalate	5.13E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
3 dup	Dimethyl Phthalate	5.13E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
3 dup	Dimethylphenol[2,4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3 dup	Di-n-butylphthalate	5.13E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3 dup	Dinitro-2-methylphenol[4,6-]	5.13E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
3 dup	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dinitrophenol[2,4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
3 dup	Dinitrotoluene[2,4-]	5.13E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3 dup	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
3 dup	Dinitrotoluene[2,6-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Di-n-octylphthalate	5.13E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Diphenylamine	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Ethylbenzene	3.39E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
3 dup	Fluoranthene	5.13E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3 dup	Fluorene	5.13E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
3 dup	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.05E-03	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Heptachlorodibenzodioxins (Total)	1.80E-03	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	3.50E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.61E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Heptachlorodibenzofurans (Total)	7.45E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorobenzene	5.13E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
3 dup	Hexachlorobutadiene	5.13E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
3 dup	Hexachlorocyclopentadiene	5.13E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	1.90E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	3.93E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.96E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzodioxins (Total)	3.56E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.08E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.47E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.30E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.95E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachlorodibenzofurans (Total)	3.79E-04	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Hexachloroethane	5.13E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
3 dup	Hexanone[2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
3 dup	Indeno(1,2,3-cd)pyrene	5.13E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Iodomethane	1.69E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Iron	9.70E+03	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Isophorone	5.13E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
3 dup	Isopropylbenzene	3.39E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
3 dup	Isopropyltoluene[4-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Lead	9.22E+00	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
3 dup	Magnesium	1.29E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
3 dup	Manganese	2.40E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
3 dup	Mercury	5.97E-03	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
3 dup	Methyl-2-pentanone[4-]	1.69E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
3 dup	Methylene Chloride	1.69E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
3 dup	Methylnaphthalene[2-]	5.13E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
3 dup	Methylphenol[2-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Methylphenol[3-,4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Naphthalene	5.13E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
3 dup	Nickel	4.74E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
3 dup	Nitroaniline[2-]	5.64E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Nitroaniline[3-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Nitroaniline[4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Nitrobenzene	5.13E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3 dup	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
3 dup	Nitrophenol[2-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Nitrophenol[4-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Nitrosodimethylamine[N-]	5.13E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	TRUE	N/A	FALSE
3 dup	Nitroso-di-n-propylamine[N-]	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
3 dup	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
3 dup	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
3 dup	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	5.53E-03	mg/kg	Y	R	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	5.88E-04	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Oxybis(1-chloropropane)[2,2'-]	5.13E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pentachlorodibenzodioxin[1,2,3,7,8-]	7.95E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pentachlorodibenzodioxins (Total)	4.38E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pentachlorodibenzofuran[1,2,3,7,8-]	1.05E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pentachlorodibenzofuran[2,3,4,7,8-]	1.32E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pentachlorodibenzofurans (Totals)	7.08E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pentachlorophenol	5.13E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
3 dup	Perchlorate	5.11E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
3 dup	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Phenanthrene	5.13E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3 dup	Phenol	5.13E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
3 dup	Potassium	1.56E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
3 dup	Propylbenzene[1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Pyrene	5.13E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
3 dup	Pyridine	5.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
3 dup	Selenium	8.01E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
3 dup	Silver	1.71E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
3 dup	Sodium	9.37E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
3 dup	Styrene	3.39E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
3 dup	TATB	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Tetrachlorodibenzodioxin[2,3,7,8-]	4.15E-07	mg/kg	Y	J	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
3 dup	Tetrachlorodibenzodioxins (Total)	2.34E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Tetrachlorodibenzofuran[2,3,7,8-]	3.28E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
3 dup	Tetrachlorodibenzofurans (Totals)	1.12E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Tetrachloroethane[1,1,1,2-]	3.39E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
3 dup	Tetrachloroethane[1,1,2,2-]	3.39E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
3 dup	Tetrachloroethene	3.39E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
3 dup	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
3 dup	Thallium	2.16E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
3 dup	Toluene	3.39E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
3 dup	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.69E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
3 dup	Trichlorobenzene[1,2,4-]	5.13E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
3 dup	Trichloroethane[1,1,1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
3 dup	Trichloroethane[1,1,2-]	3.39E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
3 dup	Trichloroethene	3.46E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
3 dup	Trichlorofluoromethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
3 dup	Trichlorophenol[2,4,5-]	5.13E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
3 dup	Trichlorophenol[2,4,6-]	5.13E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
3 dup	Trichloropropane[1,2,3-]	3.39E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
3 dup	Trimethylbenzene[1,2,4-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Trimethylbenzene[1,3,5-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
3 dup	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
3 dup	Vanadium	1.53E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
3 dup	Vinyl Chloride	3.39E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
3 dup	Xylene[1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
3 dup	Xylene[1,3-]+Xylene[1,4-]	6.78E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
3 dup	Zinc	3.16E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
4	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Acenaphthene	5.15E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
4	Acenaphthylene	5.15E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Acetone	1.68E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
4	Aluminum	8.56E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
4	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Aniline	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Anthracene	5.15E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
4	Antimony	3.42E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
4	Arsenic	1.85E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
4	Azobenzene	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Barium	2.20E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
4	Benzene	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
4	Benzo(a)anthracene	5.15E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(a)pyrene	5.15E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
4	Benzo(b)fluoranthene	5.15E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(g,h,i)perylene	5.15E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzo(k)fluoranthene	5.15E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Benzoic Acid	8.59E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Benzyl Alcohol	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Beryllium	7.24E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
4	Bis(2-chloroethoxy)methane	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-chloroethyl)ether	5.15E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Bis(2-ethylhexyl)phthalate	5.15E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Bromobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Bromochloromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Bromodichloromethane	3.35E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Bromoform	3.35E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Bromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
4	Bromophenyl-phenylether[4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
4	Butylbenzene[n-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzene[sec-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzene[tert-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Butylbenzylphthalate	5.15E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Cadmium	1.03E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
4	Calcium	2.49E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
4	Carbon Disulfide	1.68E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
4	Carbon Tetrachloride	3.35E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
4	Chloro-3-methylphenol[4-]	6.87E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chloroaniline[4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chlorobenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
4	Chlorodibromomethane	3.35E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Chloroethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
4	Chloroform	3.35E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
4	Chloromethane	3.35E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
4	Chloronaphthalene[2-]	5.15E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
4	Chlorophenol[2-]	5.15E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
4	Chlorophenyl-phenyl[4-] Ether	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chlorotoluene[2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Chlorotoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Chromium	8.03E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Chrysene	5.15E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
4	Cobalt	4.71E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
4	Copper	7.27E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
4	Dibenz(a,h)anthracene	5.15E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
4	Dibenzofuran	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dibromo-3-Chloropropane[1,2-]	5.03E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
4	Dibromoethane[1,2-]	3.35E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
4	Dibromomethane	3.35E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
4	Dichlorobenzene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,2-]	5.15E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,3-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorobenzene[1,4-]	3.35E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
4	Dichlorobenzene[1,4-]	5.15E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
4	Dichlorobenzidine[3,3'-]	5.15E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Dichlorodifluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
4	Dichloroethane[1,1-]	3.35E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
4	Dichloroethane[1,2-]	3.35E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
4	Dichloroethene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
4	Dichloroethene[cis-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
4	Dichloroethene[trans-1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
4	Dichlorophenol[2,4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
4	Dichloropropane[1,2-]	3.35E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
4	Dichloropropane[1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropane[2,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dichloropropene[cis-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Dichloropropene[trans-1,3-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Diethylphthalate	5.15E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
4	Dimethyl Phthalate	5.15E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
4	Dimethylphenol[2,4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Di-n-butylphthalate	5.15E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
4	Dinitro-2-methylphenol[4,6-]	5.15E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
4	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dinitrophenol[2,4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,4-]	5.15E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
4	Dinitrotoluene[2,6-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Di-n-octylphthalate	5.15E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Diphenylamine	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Ethylbenzene	3.35E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
4	Fluoranthene	5.15E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
4	Fluorene	5.15E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
4	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	5.11E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzodioxins (Total)	1.42E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	2.39E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	7.67E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Heptachlorodibenzofurans (Total)	4.07E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorobenzene	5.15E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
4	Hexachlorobutadiene	5.15E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
4	Hexachlorocyclopentadiene	5.15E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachlorodibenzofurans (Total)	1.26E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Hexachloroethane	5.15E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
4	Hexanone[2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
4	Indeno(1,2,3-cd)pyrene	5.15E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
4	Iodomethane	1.68E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Iron	1.22E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
4	Isophorone	5.15E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
4	Isopropylbenzene	3.35E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
4	Isopropyltoluene[4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Lead	1.19E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
4	Magnesium	1.97E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
4	Manganese	2.95E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
4	Mercury	7.00E-03	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
4	Methyl-2-pentanone[4-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
4	Methylene Chloride	1.68E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
4	Methylnaphthalene[2-]	5.15E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
4	Methylphenol[2-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Methylphenol[3-,4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Naphthalene	5.15E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
4	Nickel	5.72E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Nitroaniline[2-]	5.67E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitroaniline[3-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitroaniline[4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrobenzene	5.15E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
4	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
4	Nitrophenol[2-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrophenol[4-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrosodimethylamine[N-]	5.15E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	TRUE	N/A	FALSE
4	Nitroso-di-n-propylamine[N-]	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
4	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
4	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
4	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.34E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	3.68E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Oxybis(1-chloropropane)[2,2'-]	5.15E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Pentachlorophenol	5.15E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
4	Perchlorate	6.20E-04	mg/kg	Y	J	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
4	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Phenanthrene	5.15E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
4	Phenol	5.15E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
4	Potassium	1.75E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
4	Propylbenzene[1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Pyrene	5.15E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
4	Pyridine	5.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
4	Selenium	9.13E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
4	Silver	2.17E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
4	Sodium	1.03E+02	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
4	Styrene	3.35E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
4	TATB	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Temperature	4.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzodioxin[2,3,7,8-]	1.20E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
4	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzofuran[2,3,7,8-]	2.15E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachlorodibenzofurans (Totals)	3.49E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Tetrachloroethane[1,1,1,2-]	3.35E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
4	Tetrachloroethane[1,1,2,2-]	3.35E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
4	Tetrachloroethene	3.35E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
4	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
4	Thallium	1.68E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
4	Toluene	4.83E-04	mg/kg	Y	J	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
4	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.68E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
4	Trichlorobenzene[1,2,4-]	5.15E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
4	Trichloroethane[1,1,1-]	3.35E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
4	Trichloroethane[1,1,2-]	3.35E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
4	Trichloroethene	3.35E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
4	Trichlorofluoromethane	3.35E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
4	Trichlorophenol[2,4,5-]	5.15E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
4	Trichlorophenol[2,4,6-]	5.15E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
4	Trichloropropane[1,2,3-]	3.35E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
4	Trimethylbenzene[1,2,4-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trimethylbenzene[1,3,5-]	3.35E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
4	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
4	Vanadium	1.82E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
4	Vinyl Chloride	3.35E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
4	Xylene[1,2-]	3.35E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
4	Xylene[1,3-]+Xylene[1,4-]	6.71E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
4	Zinc	3.88E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
5	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Acenaphthene	1.03E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
5	Acenaphthylene	1.03E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Acetone	1.70E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
5	Aluminum	7.52E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
5	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Aniline	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Anthracene	1.03E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
5	Antimony	3.40E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
5	Arsenic	2.69E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
5	Azobenzene	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Barium	1.94E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Benzene	3.39E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
5	Benzo(a)anthracene	1.03E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(a)pyrene	1.03E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
5	Benzo(b)fluoranthene	1.03E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(g,h,i)perylene	1.03E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzo(k)fluoranthene	1.03E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Benzoic Acid	1.71E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Benzyl Alcohol	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Beryllium	6.59E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
5	Bis(2-chloroethoxy)methane	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-chloroethyl)ether	1.03E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Bis(2-ethylhexyl)phthalate	1.03E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Bromobenzene	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bromochloromethane	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Bromodichloromethane	3.39E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Bromoform	3.39E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Bromomethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
5	Bromophenyl-phenylether[4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butanone[2-]	1.70E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
5	Butylbenzene[n-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzene[sec-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzene[tert-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Butylbenzylphthalate	1.03E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Cadmium	1.03E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
5	Calcium	1.61E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
5	Carbon Disulfide	1.70E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
5	Carbon Tetrachloride	3.39E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Chloro-3-methylphenol[4-]	1.37E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chloroaniline[4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chlorobenzene	3.39E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
5	Chlorodibromomethane	3.39E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Chloroethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
5	Chloroform	3.39E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
5	Chloromethane	3.39E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
5	Chloronaphthalene[2-]	1.03E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
5	Chlorophenol[2-]	1.03E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
5	Chlorophenyl-phenyl[4-] Ether	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chlorotoluene[2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Chlorotoluene[4-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Chromium	7.49E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
5	Chrysene	1.03E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
5	Cobalt	5.45E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
5	Copper	5.87E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
5	Dibenz(a,h)anthracene	1.03E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
5	Dibenzofuran	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dibromo-3-Chloropropane[1,2-]	5.09E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
5	Dibromoethane[1,2-]	3.39E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
5	Dibromomethane	3.39E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
5	Dichlorobenzene[1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,2-]	1.03E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,3-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorobenzene[1,4-]	3.39E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
5	Dichlorobenzene[1,4-]	1.03E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Dichlorobenzidine[3,3'-]	1.03E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Dichlorodifluoromethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
5	Dichloroethane[1,1-]	3.39E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
5	Dichloroethane[1,2-]	3.39E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
5	Dichloroethene[1,1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
5	Dichloroethene[cis-1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
5	Dichloroethene[trans-1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
5	Dichlorophenol[2,4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
5	Dichloropropane[1,2-]	3.39E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
5	Dichloropropane[1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropane[2,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[1,1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[cis-1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dichloropropene[trans-1,3-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Diethylphthalate	1.03E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
5	Dimethyl Phthalate	1.03E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
5	Dimethylphenol[2,4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Di-n-butylphthalate	1.03E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
5	Dinitro-2-methylphenol[4,6-]	1.03E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
5	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dinitrophenol[2,4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,4-]	1.03E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
5	Dinitrotoluene[2,6-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Di-n-octylphthalate	1.03E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Diphenylamine	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Ethylbenzene	3.39E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
5	Fluoranthene	1.03E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
5	Fluorene	1.03E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
5	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	5.24E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorobenzene	1.03E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
5	Hexachlorobutadiene	1.03E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
5	Hexachlorocyclopentadiene	1.03E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Hexachloroethane	1.03E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
5	Hexanone[2-]	1.70E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
5	Indeno(1,2,3-cd)pyrene	1.03E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
5	Iodomethane	1.70E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Iron	1.09E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
5	Isophorone	1.03E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Isopropylbenzene	3.39E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
5	Isopropyltoluene[4-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Lead	1.01E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
5	Magnesium	1.59E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
5	Manganese	2.90E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
5	Mercury	7.17E-03	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
5	Methyl-2-pentanone[4-]	1.70E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
5	Methylene Chloride	1.70E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
5	Methylnaphthalene[2-]	1.03E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
5	Methylphenol[2-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Methylphenol[3-,4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Naphthalene	1.03E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
5	Nickel	7.07E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
5	Nitroaniline[2-]	1.13E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitroaniline[3-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitroaniline[4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrobenzene	1.03E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
5	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
5	Nitrophenol[2-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrophenol[4-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrosodimethylamine[N-]	1.03E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
5	Nitroso-di-n-propylamine[N-]	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
5	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
5	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
5	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.78E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.00E-06	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Oxybis(1-chloropropane)[2,2'-]	1.03E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofuran[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofuran[2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pentachlorophenol	1.03E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
5	Perchlorate	5.09E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
5	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Phenanthrene	1.03E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
5	Phenol	1.03E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
5	Potassium	1.47E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
5	Propylbenzene[1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Pyrene	1.03E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
5	Pyridine	1.03E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
5	Selenium	6.61E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
5	Silver	1.20E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
5	Sodium	5.54E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
5	Styrene	3.39E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
5	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachlorodibenzodioxin[2,3,7,8-]	1.52E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
5	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachlorodibenzofuran[2,3,7,8-]	2.12E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
5	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
5	Tetrachloroethane[1,1,1,2-]	3.39E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
5	Tetrachloroethane[1,1,2,2-]	3.39E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
5	Tetrachloroethene	3.39E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
5	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
5	Thallium	1.90E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
5	Toluene	3.97E-04	mg/kg	Y	J	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
5	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.70E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
5	Trichlorobenzene[1,2,4-]	1.03E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
5	Trichloroethane[1,1,1-]	3.39E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
5	Trichloroethane[1,1,2-]	3.39E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
5	Trichloroethene	3.39E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
5	Trichlorofluoromethane	3.39E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
5	Trichlorophenol[2,4,5-]	1.03E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
5	Trichlorophenol[2,4,6-]	1.03E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
5	Trichloropropane[1,2,3-]	3.39E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
5	Trimethylbenzene[1,2,4-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trimethylbenzene[1,3,5-]	3.39E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
5	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
5	Vanadium	2.16E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
5	Vinyl Chloride	3.39E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
5	Xylene[1,2-]	3.39E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
5	Xylene[1,3-]+Xylene[1,4-]	6.79E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
5	Zinc	1.98E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
6	2,4-Diamino-6-nitrotoluene	5.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	2,6-Diamino-4-nitrotoluene	6.60E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	3,5-Dinitroaniline	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Acenaphthene	1.06E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
6	Acenaphthylene	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Acetone	1.74E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
6	Aluminum	1.29E+04	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
6	Amino-2,6-dinitrotoluene[4-]	6.55E-01	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Amino-4,6-dinitrotoluene[2-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Aniline	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Anthracene	1.06E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
6	Antimony	3.51E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
6	Arsenic	3.16E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
6	Azobenzene	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Barium	1.01E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
6	Benzene	3.47E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
6	Benzo(a)anthracene	1.06E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(a)pyrene	1.06E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
6	Benzo(b)fluoranthene	1.06E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(g,h,i)perylene	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzo(k)fluoranthene	1.06E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Benzoic Acid	1.77E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Benzyl Alcohol	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Beryllium	1.09E+00	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
6	Bis(2-chloroethoxy)methane	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-chloroethyl)ether	1.06E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Bis(2-ethylhexyl)phthalate	1.06E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Bromobenzene	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Bromochloromethane	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Bromodichloromethane	3.47E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Bromoform	3.47E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Bromomethane	3.47E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
6	Bromophenyl-phenylether[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butanone[2-]	1.74E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
6	Butylbenzene[n-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzene[sec-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzene[tert-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Butylbenzylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Cadmium	1.06E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
6	Calcium	2.86E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
6	Carbon Disulfide	1.74E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
6	Carbon Tetrachloride	3.47E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
6	Chloro-3-methylphenol[4-]	1.42E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chloroaniline[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chlorobenzene	3.47E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
6	Chlorodibromomethane	3.47E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Chloroethane	3.47E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
6	Chloroform	3.47E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
6	Chloromethane	3.47E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
6	Chloronaphthalene[2-]	1.06E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
6	Chlorophenol[2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
6	Chlorophenyl-phenyl[4-] Ether	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chlorotoluene[2-]	3.47E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Chlorotoluene[4-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Chromium	1.07E+01	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
6	Chrysene	1.06E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Cobalt	6.41E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
6	Copper	1.03E+01	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
6	Dibenz(a,h)anthracene	1.06E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
6	Dibenzofuran	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dibromo-3-Chloropropane[1,2-]	5.22E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
6	Dibromoethane[1,2-]	3.47E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
6	Dibromomethane	3.47E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
6	Dichlorobenzene[1,2-]	3.47E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
6	Dichlorobenzene[1,2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
6	Dichlorobenzene[1,3-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,3-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorobenzene[1,4-]	3.47E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
6	Dichlorobenzene[1,4-]	1.06E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
6	Dichlorobenzidine[3,3'-]	1.06E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Dichlorodifluoromethane	3.47E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
6	Dichloroethane[1,1-]	3.47E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
6	Dichloroethane[1,2-]	3.47E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
6	Dichloroethene[1,1-]	3.47E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
6	Dichloroethene[cis-1,2-]	3.47E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
6	Dichloroethene[trans-1,2-]	3.47E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
6	Dichlorophenol[2,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
6	Dichloropropane[1,2-]	3.47E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
6	Dichloropropane[1,3-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropane[2,2-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[1,1-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[cis-1,3-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dichloropropene[trans-1,3-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Diethylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
6	Dimethyl Phthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
6	Dimethylphenol[2,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Di-n-butylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
6	Dinitro-2-methylphenol[4,6-]	1.06E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
6	Dinitrobenzene[1,3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dinitrophenol[2,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,4-]	1.06E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,4-]	1.50E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
6	Dinitrotoluene[2,6-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Dinitrotoluene[2,6-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Di-n-octylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Diphenylamine	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Ethylbenzene	3.47E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
6	Fluoranthene	1.06E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
6	Fluorene	1.06E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
6	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	2.05E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzodioxins (Total)	7.23E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorobenzene	1.06E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
6	Hexachlorobutadiene	1.06E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
6	Hexachlorocyclopentadiene	1.06E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Hexachloroethane	1.06E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
6	Hexanone[2-]	1.74E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	HMX	3.00E-01	mg/kg	Y	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
6	Indeno(1,2,3-cd)pyrene	1.06E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
6	Iodomethane	1.74E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Iron	1.50E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
6	Isophorone	1.06E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
6	Isopropylbenzene	3.47E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
6	Isopropyltoluene[4-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Lead	1.28E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
6	Magnesium	2.62E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
6	Manganese	2.95E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
6	Mercury	3.15E-02	mg/kg	Y	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
6	Methyl-2-pentanone[4-]	1.74E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
6	Methylene Chloride	1.74E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
6	Methylnaphthalene[2-]	1.06E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
6	Methylphenol[2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Methylphenol[3-,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Naphthalene	1.06E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
6	Nickel	1.36E+01	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
6	Nitroaniline[2-]	1.17E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Nitroaniline[3-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitroaniline[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrobenzene	1.06E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
6	Nitrobenzene	1.50E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
6	Nitrophenol[2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrophenol[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrosodimethylamine[N-]	1.06E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
6	Nitroso-di-n-propylamine[N-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Nitrotoluene[2-]	1.50E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
6	Nitrotoluene[3-]	1.50E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
6	Nitrotoluene[4-]	1.50E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
6	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	6.77E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.97E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Oxybis(1-chloropropane)[2,2'-]	1.06E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pentachlorophenol	1.06E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
6	Perchlorate	5.24E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
6	PETN	2.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Phenanthrene	1.06E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
6	Phenol	1.06E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
6	Potassium	2.38E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
6	Propylbenzene[1-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Pyrene	1.06E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Pyridine	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	RDX	1.50E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
6	Selenium	1.09E+00	mg/kg	Y	NQ	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
6	Silver	7.50E-01	mg/kg	Y	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
6	Sodium	1.23E+02	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
6	Styrene	3.47E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
6	TATB	1.97E+00	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachlorodibenzodioxin[2,3,7,8-]	9.97E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
6	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachlorodibenzofuran[2,3,7,8-]	2.77E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachlorodibenzofurans (Totals)	1.56E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Tetrachloroethane[1,1,1,2-]	3.47E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
6	Tetrachloroethane[1,1,2,2-]	3.47E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
6	Tetrachloroethene	3.47E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
6	Tetryl	1.50E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
6	Thallium	4.06E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
6	Toluene	3.47E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
6	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.74E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
6	Trichlorobenzene[1,2,4-]	1.06E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
6	Trichloroethane[1,1,1-]	3.47E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
6	Trichloroethane[1,1,2-]	3.47E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
6	Trichloroethene	3.47E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
6	Trichlorofluoromethane	3.47E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
6	Trichlorophenol[2,4,5-]	1.06E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
6	Trichlorophenol[2,4,6-]	1.06E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
6	Trichloropropane[1,2,3-]	3.47E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
6	Trimethylbenzene[1,2,4-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trimethylbenzene[1,3,5-]	3.47E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trinitrobenzene[1,3,5-]	1.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Trinitrotoluene[2,4,6-]	2.52E+00	mg/kg	Y	NQ	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
6	Tris (o-cresyl) phosphate	3.00E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
6	Vanadium	2.44E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
6	Vinyl Chloride	3.47E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
6	Xylene[1,2-]	3.47E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
6	Xylene[1,3-]+Xylene[1,4-]	6.96E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
6	Zinc	4.04E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
7	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Acenaphthene	1.06E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
7	Acenaphthylene	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Acetone	1.76E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
7	Aluminum	1.26E+04	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
7	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Aniline	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Anthracene	1.06E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
7	Antimony	3.25E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
7	Arsenic	5.25E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
7	Azobenzene	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Barium	2.35E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
7	Benzene	3.51E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Benzo(a)anthracene	1.06E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(a)pyrene	1.06E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
7	Benzo(b)fluoranthene	1.06E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(g,h,i)perylene	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzo(k)fluoranthene	1.06E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
7	Benzoic Acid	1.77E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Benzyl Alcohol	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Beryllium	1.17E+00	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
7	Bis(2-chloroethoxy)methane	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-chloroethyl)ether	1.06E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Bis(2-ethylhexyl)phthalate	1.06E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Bromobenzene	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bromochloromethane	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Bromodichloromethane	3.51E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Bromoform	3.51E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Bromomethane	3.51E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
7	Bromophenyl-phenylether[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butanone[2-]	1.76E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
7	Butylbenzene[n-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzene[sec-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzene[tert-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Butylbenzylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Cadmium	9.84E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
7	Calcium	3.29E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
7	Carbon Disulfide	1.76E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
7	Carbon Tetrachloride	3.51E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
7	Chloro-3-methylphenol[4-]	1.42E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Chloroaniline[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chlorobenzene	3.51E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
7	Chlorodibromomethane	3.51E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Chloroethane	3.51E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
7	Chloroform	3.51E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
7	Chloromethane	3.51E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
7	Chloronaphthalene[2-]	1.06E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
7	Chlorophenol[2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
7	Chlorophenyl-phenyl[4-] Ether	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chlorotoluene[2-]	3.51E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Chlorotoluene[4-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Chromium	1.02E+01	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
7	Chrysene	1.06E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
7	Cobalt	5.68E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
7	Copper	8.63E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
7	Dibenz(a,h)anthracene	1.06E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
7	Dibenzofuran	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dibromo-3-Chloropropane[1,2-]	5.27E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
7	Dibromoethane[1,2-]	3.51E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
7	Dibromomethane	3.51E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
7	Dichlorobenzene[1,2-]	3.51E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,3-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,3-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichlorobenzene[1,4-]	3.51E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
7	Dichlorobenzene[1,4-]	1.06E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
7	Dichlorobenzidine[3,3'-]	1.06E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Dichlorodifluoromethane	3.51E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
7	Dichloroethane[1,1-]	3.51E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
7	Dichloroethane[1,2-]	3.51E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
7	Dichloroethene[1,1-]	3.51E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
7	Dichloroethene[cis-1,2-]	3.51E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
7	Dichloroethene[trans-1,2-]	3.51E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
7	Dichlorophenol[2,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
7	Dichloropropane[1,2-]	3.51E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
7	Dichloropropane[1,3-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropane[2,2-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[1,1-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[cis-1,3-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dichloropropene[trans-1,3-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Diethylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
7	Dimethyl Phthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
7	Dimethylphenol[2,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Di-n-butylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
7	Dinitro-2-methylphenol[4,6-]	1.06E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
7	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dinitrophenol[2,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,4-]	1.06E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
7	Dinitrotoluene[2,6-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Di-n-octylphthalate	1.06E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Diphenylamine	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Ethylbenzene	3.51E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Fluoranthene	1.06E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
7	Fluorene	1.06E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
7	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	7.45E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzodioxins (Total)	1.98E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorobenzene	1.06E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
7	Hexachlorobutadiene	1.06E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
7	Hexachlorocyclopentadiene	1.06E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Hexachloroethane	1.06E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
7	Hexanone[2-]	1.76E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	HMX	7.72E-01	mg/kg	Y	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
7	Indeno(1,2,3-cd)pyrene	1.06E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
7	Iodomethane	1.76E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Iron	1.75E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
7	Isophorone	1.06E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
7	Isopropylbenzene	3.51E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Isopropyltoluene[4-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Lead	1.12E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
7	Magnesium	2.93E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
7	Manganese	3.10E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
7	Mercury	1.18E-02	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
7	Methyl-2-pentanone[4-]	1.76E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
7	Methylene Chloride	1.76E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
7	Methylnaphthalene[2-]	1.06E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
7	Methylphenol[2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Methylphenol[3-,4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Naphthalene	1.06E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
7	Nickel	1.11E+01	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
7	Nitroaniline[2-]	1.17E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitroaniline[3-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitroaniline[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrobenzene	1.06E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
7	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
7	Nitrophenol[2-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrophenol[4-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrosodimethylamine[N-]	1.06E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
7	Nitroso-di-n-propylamine[N-]	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
7	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
7	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
7	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.29E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.00E-06	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Oxybis(1-chloropropane)[2,2'-]	1.06E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofuran[1,2,3,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofuran[2,3,4,7,8-]	5.00E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pentachlorophenol	1.06E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
7	Perchlorate	5.24E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
7	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Phenanthrene	1.06E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
7	Phenol	1.06E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
7	Potassium	2.66E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
7	Propylbenzene[1-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Pyrene	1.06E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
7	Pyridine	1.06E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
7	Selenium	1.03E+00	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
7	Silver	2.64E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
7	Sodium	1.87E+02	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
7	Styrene	3.51E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
7	TATB	2.33E+00	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Temperature	4.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
7	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzofuran[2,3,7,8-]	1.33E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Tetrachloroethane[1,1,1,2-]	3.51E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
7	Tetrachloroethane[1,1,2,2-]	3.51E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
7	Tetrachloroethene	3.51E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
7	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
7	Thallium	4.03E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
7	Toluene	3.51E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
7	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.76E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
7	Trichlorobenzene[1,2,4-]	1.06E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
7	Trichloroethane[1,1,1-]	3.51E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
7	Trichloroethane[1,1,2-]	3.51E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
7	Trichloroethene	3.51E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
7	Trichlorofluoromethane	3.51E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
7	Trichlorophenol[2,4,5-]	1.06E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
7	Trichlorophenol[2,4,6-]	1.06E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
7	Trichloropropane[1,2,3-]	3.51E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
7	Trimethylbenzene[1,2,4-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trimethylbenzene[1,3,5-]	3.51E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
7	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
7	Vanadium	2.60E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
7	Vinyl Chloride	3.51E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
7	Xylene[1,2-]	3.51E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
7	Xylene[1,3-]+Xylene[1,4-]	7.04E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
7	Zinc	3.34E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
8	2,4-Diamino-6-nitrotoluene	4.98E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	2,6-Diamino-4-nitrotoluene	6.57E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	3,5-Dinitroaniline	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Acenaphthene	1.05E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
8	Acenaphthylene	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Acetone	1.73E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
8	Aluminum	1.19E+04	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
8	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Aniline	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Anthracene	2.26E-02	mg/kg	Y	J	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
8	Antimony	3.41E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
8	Arsenic	2.56E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
8	Azobenzene	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Barium	1.04E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
8	Benzene	3.45E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
8	Benzo(a)anthracene	1.05E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(a)pyrene	1.05E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
8	Benzo(b)fluoranthene	1.05E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(g,h,i)perylene	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzo(k)fluoranthene	1.05E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Benzoic Acid	1.74E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Benzyl Alcohol	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Beryllium	8.31E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
8	Bis(2-chloroethoxy)methane	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-chloroethyl)ether	1.05E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Bis(2-ethylhexyl)phthalate	1.05E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Bromobenzene	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bromochloromethane	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Bromodichloromethane	3.45E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Bromoform	3.45E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Bromomethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
8	Bromophenyl-phenylether[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butanone[2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
8	Butylbenzene[n-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzene[sec-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzene[tert-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Butylbenzylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Cadmium	1.03E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
8	Calcium	2.65E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
8	Carbon Disulfide	1.73E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
8	Carbon Tetrachloride	3.45E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
8	Chloro-3-methylphenol[4-]	1.39E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chloroaniline[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chlorobenzene	3.45E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
8	Chlorodibromomethane	3.45E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Chloroethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
8	Chloroform	3.45E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
8	Chloromethane	3.45E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
8	Chloronaphthalene[2-]	1.05E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
8	Chlorophenol[2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
8	Chlorophenyl-phenyl[4-] Ether	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chlorotoluene[2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
8	Chlorotoluene[4-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Chromium	1.20E+01	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
8	Chrysene	1.05E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
8	Cobalt	7.25E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Copper	1.12E+01	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
8	Dibenz(a,h)anthracene	1.05E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
8	Dibenzofuran	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dibromo-3-Chloropropane[1,2-]	5.17E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
8	Dibromoethane[1,2-]	3.45E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
8	Dibromomethane	3.45E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
8	Dichlorobenzene[1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,3-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorobenzene[1,4-]	3.45E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
8	Dichlorobenzene[1,4-]	1.05E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
8	Dichlorobenzidine[3,3'-]	1.05E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Dichlorodifluoromethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
8	Dichloroethane[1,1-]	3.45E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
8	Dichloroethane[1,2-]	3.45E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
8	Dichloroethene[1,1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
8	Dichloroethene[cis-1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
8	Dichloroethene[trans-1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
8	Dichlorophenol[2,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
8	Dichloropropane[1,2-]	3.45E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
8	Dichloropropane[1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropane[2,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[1,1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[cis-1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dichloropropene[trans-1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Diethylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Dimethyl Phthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
8	Dimethylphenol[2,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Di-n-butylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
8	Dinitro-2-methylphenol[4,6-]	1.05E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
8	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dinitrophenol[2,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,4-]	1.05E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
8	Dinitrotoluene[2,6-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Di-n-octylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Diphenylamine	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Ethylbenzene	3.45E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
8	Fluoranthene	1.05E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
8	Fluorene	1.05E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
8	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	4.90E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzodioxins (Total)	1.53E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	7.08E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Heptachlorodibenzofurans (Total)	7.90E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorobenzene	1.05E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
8	Hexachlorobutadiene	1.05E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
8	Hexachlorocyclopentadiene	1.05E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzodioxins (Total)	3.74E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachlorodibenzofurans (Total)	5.03E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Hexachloroethane	1.05E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
8	Hexanone[2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	HMX	1.84E+00	mg/kg	Y	NQ	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
8	Indeno(1,2,3-cd)pyrene	1.05E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
8	Iodomethane	1.73E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Iron	1.48E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
8	Isophorone	1.05E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
8	Isopropylbenzene	3.45E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
8	Isopropyltoluene[4-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Lead	1.18E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
8	Magnesium	2.75E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
8	Manganese	2.43E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
8	Mercury	1.50E-02	mg/kg	Y	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
8	Methyl-2-pentanone[4-]	1.73E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
8	Methylene Chloride	1.73E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
8	Methylnaphthalene[2-]	1.05E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
8	Methylphenol[2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Methylphenol[3-,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Naphthalene	1.05E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
8	Nickel	1.29E+01	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
8	Nitroaniline[2-]	1.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitroaniline[3-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Nitroaniline[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrobenzene	1.05E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
8	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
8	Nitrophenol[2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrophenol[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrosodimethylamine[N-]	1.05E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
8	Nitroso-di-n-propylamine[N-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
8	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
8	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
8	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.43E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.07E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Oxybis(1-chloropropane)[2,2'-]	1.05E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pentachlorophenol	1.05E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
8	Perchlorate	5.15E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
8	PETN	2.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Phenanthrene	1.05E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
8	Phenol	1.05E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
8	Potassium	2.57E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
8	Propylbenzene[1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Pyrene	1.05E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
8	Pyridine	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
8	Selenium	6.60E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
8	Silver	5.95E-01	mg/kg	Y	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
8	Sodium	7.91E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
8	Styrene	3.45E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
8	TATB	5.79E+00	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Temperature	4.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachlorodibenzodioxin[2,3,7,8-]	9.98E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
8	Tetrachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachlorodibenzofuran[2,3,7,8-]	1.62E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachlorodibenzofurans (Totals)	1.74E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Tetrachloroethane[1,1,1,2-]	3.45E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
8	Tetrachloroethane[1,1,2,2-]	3.45E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
8	Tetrachloroethene	3.45E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
8	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
8	Thallium	2.46E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
8	Toluene	3.45E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
8	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
8	Trichlorobenzene[1,2,4-]	1.05E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
8	Trichloroethane[1,1,1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
8	Trichloroethane[1,1,2-]	3.45E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
8	Trichloroethene	3.45E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
8	Trichlorofluoromethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
8	Trichlorophenol[2,4,5-]	1.05E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
8	Trichlorophenol[2,4,6-]	1.05E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
8	Trichloropropane[1,2,3-]	3.45E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
8	Trimethylbenzene[1,2,4-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trimethylbenzene[1,3,5-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Trinitrotoluene[2,4,6-]	3.80E-01	mg/kg	Y	J	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
8	Tris (o-cresyl) phosphate	2.99E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
8	Vanadium	2.70E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
8	Vinyl Chloride	3.45E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
8	Xylene[1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
8	Xylene[1,3-]+Xylene[1,4-]	6.90E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
8	Zinc	4.22E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
9	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Acenaphthene	1.04E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
9	Acenaphthylene	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Acetone	1.72E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
9	Aluminum	7.62E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
9	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Aniline	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Anthracene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
9	Antimony	6.61E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+01	FALSE	8.30E-01	TRUE
9	Arsenic	2.25E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
9	Azobenzene	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Barium	4.06E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
9	Benzene	3.43E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
9	Benzo(a)anthracene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Benzo(a)pyrene	1.04E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
9	Benzo(b)fluoranthene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Benzo(g,h,i)perylene	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Benzo(k)fluoranthene	1.04E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Benzoic Acid	1.74E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Benzyl Alcohol	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Beryllium	6.34E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
9	Bis(2-chloroethoxy)methane	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-chloroethyl)ether	1.04E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Bis(2-ethylhexyl)phthalate	1.04E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Bromobenzene	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bromochloromethane	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Bromodichloromethane	3.43E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Bromoform	3.43E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Bromomethane	3.43E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
9	Bromophenyl-phenylether[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butanone[2-]	1.72E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
9	Butylbenzene[n-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzene[sec-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzene[tert-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Butylbenzylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Cadmium	1.15E-01	mg/kg	Y	J	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
9	Calcium	1.87E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
9	Carbon Disulfide	1.72E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
9	Carbon Tetrachloride	3.43E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
9	Chloro-3-methylphenol[4-]	1.39E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chloroaniline[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Chlorobenzene	3.43E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
9	Chlorodibromomethane	3.43E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Chloroethane	3.43E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
9	Chloroform	3.43E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
9	Chloromethane	3.43E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
9	Chloronaphthalene[2-]	1.04E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
9	Chlorophenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
9	Chlorophenyl-phenyl[4-] Ether	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chlorotoluene[2-]	3.43E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
9	Chlorotoluene[4-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Chromium	1.23E+01	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
9	Chrysene	1.04E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
9	Cobalt	6.60E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
9	Copper	2.44E+01	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	TRUE
9	Dibenz(a,h)anthracene	1.04E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
9	Dibenzofuran	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dibromo-3-Chloropropane[1,2-]	5.15E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
9	Dibromoethane[1,2-]	3.43E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
9	Dibromomethane	3.43E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
9	Dichlorobenzene[1,2-]	3.43E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,3-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,3-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorobenzene[1,4-]	3.43E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
9	Dichlorobenzene[1,4-]	1.04E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
9	Dichlorobenzidine[3,3'-]	1.04E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Dichlorodifluoromethane	3.43E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Dichloroethane[1,1-]	3.43E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
9	Dichloroethane[1,2-]	3.43E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
9	Dichloroethene[1,1-]	3.43E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
9	Dichloroethene[cis-1,2-]	3.43E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
9	Dichloroethene[trans-1,2-]	3.43E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
9	Dichlorophenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
9	Dichloropropane[1,2-]	3.43E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
9	Dichloropropane[1,3-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropane[2,2-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[1,1-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[cis-1,3-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dichloropropene[trans-1,3-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Diethylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
9	Dimethyl Phthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
9	Dimethylphenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Di-n-butylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
9	Dinitro-2-methylphenol[4,6-]	1.04E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
9	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dinitrophenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,4-]	1.04E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
9	Dinitrotoluene[2,6-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Di-n-octylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Diphenylamine	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Ethylbenzene	3.43E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
9	Fluoranthene	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Fluorene	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	9.34E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzodioxins (Total)	3.04E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.05E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	9.02E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Heptachlorodibenzofurans (Total)	7.85E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorobenzene	1.04E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
9	Hexachlorobutadiene	1.04E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
9	Hexachlorocyclopentadiene	1.04E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	7.32E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	6.71E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzodioxins (Total)	9.83E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.97E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	7.09E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofuran[2,3,4,6,7,8-]	6.27E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachlorodibenzofurans (Total)	4.79E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Hexachloroethane	1.04E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
9	Hexanone[2-]	1.72E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	HMX	4.50E-01	mg/kg	Y	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
9	Indeno(1,2,3-cd)pyrene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
9	Iodomethane	1.72E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Iron	1.15E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
9	Isophorone	1.04E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
9	Isopropylbenzene	3.43E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
9	Isopropyltoluene[4-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Lead	2.67E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	TRUE
9	Magnesium	1.49E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
9	Manganese	2.57E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
9	Mercury	2.54E-02	mg/kg	Y	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
9	Methyl-2-pentanone[4-]	1.72E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
9	Methylene Chloride	1.72E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
9	Methylnaphthalene[2-]	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
9	Methylphenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Methylphenol[3-,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Naphthalene	1.04E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
9	Nickel	5.53E+01	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	TRUE
9	Nitroaniline[2-]	1.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitroaniline[3-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitroaniline[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrobenzene	1.04E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
9	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
9	Nitrophenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrophenol[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrosodimethylamine[N-]	1.04E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
9	Nitroso-di-n-propylamine[N-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
9	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
9	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.78E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	8.99E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Oxybis(1-chloropropane)[2,2'-]	1.04E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Pentachlorodibenzodioxins (Total)	8.14E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorodibenzofurans (Totals)	1.84E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pentachlorophenol	1.04E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
9	Perchlorate	5.20E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
9	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Phenanthrene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
9	Phenol	1.04E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
9	Potassium	1.46E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
9	Propylbenzene[1-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Pyrene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
9	Pyridine	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	RDX	2.01E-01	mg/kg	Y	J	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
9	Selenium	6.46E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
9	Silver	8.57E+01	mg/kg	Y	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	TRUE
9	Sodium	1.06E+02	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
9	Styrene	3.43E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
9	TATB	5.22E+00	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Temperature	4.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzodioxin[2,3,7,8-]	1.38E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
9	Tetrachlorodibenzodioxins (Total)	1.70E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzofuran[2,3,7,8-]	4.07E-07	mg/kg	Y	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachlorodibenzofurans (Totals)	3.96E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Tetrachloroethane[1,1,1,2-]	3.43E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
9	Tetrachloroethane[1,1,2,2-]	3.43E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
9	Tetrachloroethene	3.43E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
9	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
9	Thallium	1.88E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
9	Toluene	3.43E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
9	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.72E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
9	Trichlorobenzene[1,2,4-]	1.04E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
9	Trichloroethane[1,1,1-]	3.43E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
9	Trichloroethane[1,1,2-]	3.43E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
9	Trichloroethene	3.43E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
9	Trichlorofluoromethane	3.43E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
9	Trichlorophenol[2,4,5-]	1.04E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
9	Trichlorophenol[2,4,6-]	1.04E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
9	Trichloropropane[1,2,3-]	3.43E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
9	Trimethylbenzene[1,2,4-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trimethylbenzene[1,3,5-]	3.43E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
9	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
9	Vanadium	2.16E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
9	Vinyl Chloride	3.43E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
9	Xylene[1,2-]	3.43E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
9	Xylene[1,3-]+Xylene[1,4-]	6.88E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
9	Zinc	3.34E+02	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	TRUE
10	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Acenaphthene	1.29E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Acenaphthylene	1.29E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Acetone	2.11E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
10	Aluminum	1.00E+04	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
10	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Aniline	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Anthracene	1.29E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
10	Antimony	4.25E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
10	Arsenic	1.80E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
10	Azobenzene	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Barium	1.55E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
10	Benzene	4.21E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
10	Benzo(a)anthracene	1.29E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(a)pyrene	1.29E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
10	Benzo(b)fluoranthene	1.29E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(g,h,i)perylene	1.29E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzo(k)fluoranthene	1.29E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Benzoic Acid	2.15E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Benzyl Alcohol	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Beryllium	7.19E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
10	Bis(2-chloroethoxy)methane	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-chloroethyl)ether	1.29E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Bis(2-ethylhexyl)phthalate	1.29E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Bromobenzene	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromochloromethane	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Bromodichloromethane	4.21E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Bromoform	4.21E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Bromomethane	4.21E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
10	Bromophenyl-phenylether[4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butanone[2-]	2.11E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
10	Butylbenzene[n-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzene[sec-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzene[tert-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Butylbenzylphthalate	1.29E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Cadmium	1.29E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
10	Calcium	2.27E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
10	Carbon Disulfide	2.11E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
10	Carbon Tetrachloride	4.21E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
10	Chloro-3-methylphenol[4-]	1.72E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chloroaniline[4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chlorobenzene	4.21E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
10	Chlorodibromomethane	4.21E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Chloroethane	4.21E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
10	Chloroform	4.21E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
10	Chloromethane	4.21E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
10	Chloronaphthalene[2-]	1.29E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
10	Chlorophenol[2-]	1.29E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
10	Chlorophenyl-phenyl[4-] Ether	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chlorotoluene[2-]	4.21E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Chlorotoluene[4-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Chromium	8.67E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
10	Chrysene	1.29E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
10	Cobalt	5.43E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
10	Copper	1.14E+01	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Dibenz(a,h)anthracene	1.29E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
10	Dibenzofuran	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dibromo-3-Chloropropane[1,2-]	6.32E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
10	Dibromoethane[1,2-]	4.21E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
10	Dibromomethane	4.21E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	4.21E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,2-]	1.29E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,3-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	4.21E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorobenzene[1,4-]	1.29E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
10	Dichlorobenzidine[3,3'-]	1.29E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Dichlorodifluoromethane	4.21E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
10	Dichloroethane[1,1-]	4.21E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
10	Dichloroethane[1,2-]	4.21E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
10	Dichloroethene[1,1-]	4.21E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
10	Dichloroethene[cis-1,2-]	4.21E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
10	Dichloroethene[trans-1,2-]	4.21E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
10	Dichlorophenol[2,4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
10	Dichloropropane[1,2-]	4.21E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
10	Dichloropropane[1,3-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropane[2,2-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[1,1-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[cis-1,3-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dichloropropene[trans-1,3-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Diethylphthalate	1.29E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
10	Dimethyl Phthalate	1.29E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Dimethylphenol[2,4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Di-n-butylphthalate	1.29E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Dinitro-2-methylphenol[4,6-]	1.29E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
10	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dinitrophenol[2,4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.29E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Di-n-octylphthalate	1.29E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Diphenylamine	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Ethylbenzene	4.21E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
10	Fluoranthene	1.29E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Fluorene	1.29E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
10	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	3.24E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzodioxins (Total)	8.67E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.95E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Heptachlorodibenzofurans (Total)	3.35E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorobenzene	1.29E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
10	Hexachlorobutadiene	1.29E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Hexachlorocyclopentadiene	1.29E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzodioxins (Total)	1.84E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Hexachloroethane	1.29E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
10	Hexanone[2-]	2.11E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	HMX	1.66E-01	mg/kg	Y	J	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
10	Indeno(1,2,3-cd)pyrene	1.29E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
10	Iodomethane	2.11E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Iron	1.15E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
10	Isophorone	1.29E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
10	Isopropylbenzene	4.21E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
10	Isopropyltoluene[4-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Lead	1.29E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
10	Magnesium	1.81E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
10	Manganese	2.52E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
10	Mercury	1.57E-02	mg/kg	Y	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
10	Methyl-2-pentanone[4-]	2.11E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
10	Methylene Chloride	2.11E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
10	Methylnaphthalene[2-]	1.29E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
10	Methylphenol[2-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Methylphenol[3-,4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Naphthalene	1.29E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
10	Nickel	6.48E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
10	Nitroaniline[2-]	1.42E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[3-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitroaniline[4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Nitrobenzene	1.29E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
10	Nitrophenol[2-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrophenol[4-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrosodimethylamine[N-]	1.29E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
10	Nitroso-di-n-propylamine[N-]	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
10	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
10	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
10	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.36E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	3.81E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Oxybis(1-chloropropane)[2,2'-]	1.29E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofuran[1,2,3,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofuran[2,3,4,7,8-]	5.02E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorodibenzofurans (Totals)	1.38E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pentachlorophenol	1.29E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
10	Perchlorate	6.37E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
10	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Phenanthrene	1.29E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	Phenol	1.29E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
10	Potassium	1.85E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
10	Propylbenzene[1-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Pyrene	1.29E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
10	Pyridine	1.29E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Selenium	5.74E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
10	Silver	6.90E+00	mg/kg	Y	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	TRUE
10	Sodium	1.64E+02	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
10	Styrene	4.21E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
10	TATB	7.22E+00	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Temperature	4.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzodioxin[2,3,7,8-]	1.00E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
10	Tetrachlorodibenzodioxins (Total)	2.47E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzofuran[2,3,7,8-]	2.13E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachlorodibenzofurans (Totals)	1.17E-06	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Tetrachloroethane[1,1,1,2-]	4.21E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
10	Tetrachloroethane[1,1,2,2-]	4.21E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
10	Tetrachloroethene	4.21E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
10	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
10	Thallium	1.78E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
10	Toluene	4.21E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
10	Trichloro-1,2,2-trifluoroethane[1,1,2-]	2.11E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
10	Trichlorobenzene[1,2,4-]	1.29E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
10	Trichloroethane[1,1,1-]	4.21E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
10	Trichloroethane[1,1,2-]	4.21E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
10	Trichloroethene	4.21E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
10	Trichlorofluoromethane	4.21E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,5-]	1.29E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
10	Trichlorophenol[2,4,6-]	1.29E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
10	Trichloropropane[1,2,3-]	4.21E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
10	Trimethylbenzene[1,2,4-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
10	Trimethylbenzene[1,3,5-]	4.21E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
10	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
10	Vanadium	2.25E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
10	Vinyl Chloride	4.21E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
10	Xylene[1,2-]	4.21E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
10	Xylene[1,3-]+Xylene[1,4-]	8.44E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
10	Zinc	7.33E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	TRUE
11	2,4-Diamino-6-nitrotoluene	4.93E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	2,6-Diamino-4-nitrotoluene	6.50E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	3,5-Dinitroaniline	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Acenaphthene	1.04E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
11	Acenaphthylene	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Acetone	1.73E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
11	Aluminum	6.52E+03	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
11	Amino-2,6-dinitrotoluene[4-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Amino-4,6-dinitrotoluene[2-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Aniline	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Anthracene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
11	Antimony	3.20E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
11	Arsenic	4.46E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
11	Azobenzene	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Barium	1.43E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	FALSE
11	Benzene	3.46E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
11	Benzo(a)anthracene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(a)pyrene	1.04E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Benzo(b)fluoranthene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(g,h,i)perylene	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Benzo(k)fluoranthene	1.04E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Benzoic Acid	1.73E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Benzyl Alcohol	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Beryllium	6.64E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
11	Bis(2-chloroethoxy)methane	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-chloroethyl)ether	1.04E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Bis(2-ethylhexyl)phthalate	1.04E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Bromobenzene	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bromochloromethane	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Bromodichloromethane	3.46E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Bromoform	3.46E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Bromomethane	3.46E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
11	Bromophenyl-phenylether[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butanone[2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
11	Butylbenzene[n-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzene[sec-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzene[tert-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Butylbenzylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Cadmium	9.69E-02	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
11	Calcium	1.93E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
11	Carbon Disulfide	1.73E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
11	Carbon Tetrachloride	3.46E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
11	Chloro-3-methylphenol[4-]	1.38E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chloroaniline[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chlorobenzene	3.46E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Chlorodibromomethane	3.46E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Chloroethane	3.46E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
11	Chloroform	3.46E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
11	Chloromethane	3.46E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
11	Chloronaphthalene[2-]	1.04E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
11	Chlorophenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
11	Chlorophenyl-phenyl[4-] Ether	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chlorotoluene[2-]	3.46E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Chlorotoluene[4-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Chromium	6.81E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
11	Chrysene	1.04E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
11	Cobalt	1.31E+01	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	TRUE
11	Copper	5.51E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
11	Dibenz(a,h)anthracene	1.04E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE
11	Dibenzofuran	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dibromo-3-Chloropropane[1,2-]	5.20E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
11	Dibromoethane[1,2-]	3.46E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
11	Dibromomethane	3.46E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
11	Dichlorobenzene[1,2-]	3.46E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,3-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,3-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorobenzene[1,4-]	3.46E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
11	Dichlorobenzene[1,4-]	1.04E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
11	Dichlorobenzidine[3,3'-]	1.04E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Dichlorodifluoromethane	3.46E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
11	Dichloroethane[1,1-]	3.46E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Dichloroethane[1,2-]	3.46E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
11	Dichloroethene[1,1-]	3.46E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
11	Dichloroethene[cis-1,2-]	3.46E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
11	Dichloroethene[trans-1,2-]	3.46E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
11	Dichlorophenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
11	Dichloropropane[1,2-]	3.46E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
11	Dichloropropane[1,3-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropane[2,2-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[1,1-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[cis-1,3-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dichloropropene[trans-1,3-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Diethylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
11	Dimethyl Phthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
11	Dimethylphenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Di-n-butylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
11	Dinitro-2-methylphenol[4,6-]	1.04E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
11	Dinitrobenzene[1,3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dinitrophenol[2,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,4-]	1.04E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,4-]	1.48E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
11	Dinitrotoluene[2,6-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Dinitrotoluene[2,6-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Di-n-octylphthalate	1.04E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Diphenylamine	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Ethylbenzene	3.46E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
11	Fluoranthene	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
11	Fluorene	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	5.15E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Heptachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Heptachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorobenzene	1.04E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
11	Hexachlorobutadiene	1.04E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
11	Hexachlorocyclopentadiene	1.04E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Hexachloroethane	1.04E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
11	Hexanone[2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	HMX	1.48E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
11	Indeno(1,2,3-cd)pyrene	1.04E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
11	Iodomethane	1.73E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Iron	9.12E+03	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
11	Isophorone	1.04E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
11	Isopropylbenzene	3.46E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
11	Isopropyltoluene[4-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Lead	1.05E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Magnesium	1.48E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
11	Manganese	2.48E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
11	Mercury	9.77E-03	mg/kg	Y	J	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
11	Methyl-2-pentanone[4-]	1.73E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
11	Methylene Chloride	1.73E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
11	Methylnaphthalene[2-]	1.04E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
11	Methylphenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Methylphenol[3-,4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Naphthalene	1.04E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
11	Nickel	7.10E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
11	Nitroaniline[2-]	1.14E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitroaniline[3-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitroaniline[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrobenzene	1.04E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
11	Nitrobenzene	1.48E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
11	Nitrophenol[2-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrophenol[4-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrosodimethylamine[N-]	1.04E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
11	Nitroso-di-n-propylamine[N-]	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Nitrotoluene[2-]	1.48E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
11	Nitrotoluene[3-]	1.48E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
11	Nitrotoluene[4-]	1.48E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
11	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.11E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	9.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Oxybis(1-chloropropane)[2,2'-]	1.04E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Pentachlorodibenzofuran[1,2,3,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzofuran[2,3,4,7,8-]	4.99E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pentachlorophenol	1.04E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
11	Perchlorate	5.17E-04	mg/kg	N	U	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
11	PETN	2.46E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Phenanthrene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
11	Phenol	1.04E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
11	Potassium	1.52E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
11	Propylbenzene[1-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Pyrene	1.04E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
11	Pyridine	1.04E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	RDX	1.48E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
11	Selenium	7.42E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE
11	Silver	1.29E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
11	Sodium	5.40E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
11	Styrene	3.46E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
11	TATB	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Temperature	4.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzodioxin[2,3,7,8-]	9.99E-08	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
11	Tetrachlorodibenzodioxins (Total)	1.42E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzofuran[2,3,7,8-]	1.34E-07	mg/kg	N	U	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Tetrachloroethane[1,1,1,2-]	3.46E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
11	Tetrachloroethane[1,1,2,2-]	3.46E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
11	Tetrachloroethene	3.46E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
11	Tetryl	1.48E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
11	Thallium	2.75E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
11	Toluene	3.46E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
11	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
11	Trichlorobenzene[1,2,4-]	1.04E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
11	Trichloroethane[1,1,1-]	3.46E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
11	Trichloroethane[1,1,2-]	3.46E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
11	Trichloroethene	3.46E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
11	Trichlorofluoromethane	3.46E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
11	Trichlorophenol[2,4,5-]	1.04E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
11	Trichlorophenol[2,4,6-]	1.04E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
11	Trichloropropane[1,2,3-]	3.46E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
11	Trimethylbenzene[1,2,4-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trimethylbenzene[1,3,5-]	3.46E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trinitrobenzene[1,3,5-]	1.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Trinitrotoluene[2,4,6-]	1.48E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
11	Tris (o-cresyl) phosphate	2.96E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
11	Vanadium	1.75E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
11	Vinyl Chloride	3.46E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
11	Xylene[1,2-]	3.46E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
11	Xylene[1,3-]+Xylene[1,4-]	6.93E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
11	Zinc	1.91E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
12	2,4-Diamino-6-nitrotoluene	4.95E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	2,6-Diamino-4-nitrotoluene	6.53E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	3,5-Dinitroaniline	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Acenaphthene	1.05E-02	mg/kg	N	U	N/A	FALSE	3.48E+03	FALSE	N/A	FALSE
12	Acenaphthylene	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Acetone	1.73E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
12	Aluminum	1.04E+04	mg/kg	Y	NQ	N/A	FALSE	7.80E+04	FALSE	2.92E+04	FALSE
12	Amino-2,6-dinitrotoluene[4-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Amino-4,6-dinitrotoluene[2-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Aniline	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Anthracene	1.05E-02	mg/kg	N	U	N/A	FALSE	1.74E+04	FALSE	N/A	FALSE
12	Antimony	3.34E-01	mg/kg	N	U	N/A	FALSE	3.13E+01	FALSE	8.30E-01	FALSE
12	Arsenic	1.91E+00	mg/kg	Y	NQ	7.07E+00	FALSE	1.30E+01	FALSE	8.17E+00	FALSE
12	Azobenzene	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Barium	5.69E+02	mg/kg	Y	NQ	N/A	FALSE	1.56E+04	FALSE	2.95E+02	TRUE
12	Benzene	3.45E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
12	Benzo(a)anthracene	1.05E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(a)pyrene	1.05E-02	mg/kg	N	U	1.12E+02	FALSE	1.74E+01	FALSE	N/A	FALSE
12	Benzo(b)fluoranthene	1.05E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(g,h,i)perylene	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzo(k)fluoranthene	1.05E-02	mg/kg	N	U	1.53E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Benzoic Acid	1.75E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Benzyl Alcohol	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Beryllium	6.89E-01	mg/kg	Y	NQ	6.44E+04	FALSE	1.56E+02	FALSE	1.83E+00	FALSE
12	Bis(2-chloroethoxy)methane	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-chloroethyl)ether	1.05E-01	mg/kg	N	U	3.11E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Bis(2-ethylhexyl)phthalate	1.05E-02	mg/kg	N	U	3.80E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Bromobenzene	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bromochloromethane	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Bromodichloromethane	3.45E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Bromoform	3.45E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Bromomethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Bromophenyl-phenylether[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butanone[2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
12	Butylbenzene[n-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzene[sec-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzene[tert-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Butylbenzylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Cadmium	1.01E-01	mg/kg	N	U	8.59E+04	FALSE	7.05E+01	FALSE	4.00E-01	FALSE
12	Calcium	2.04E+03	mg/kg	Y	NQ	N/A	FALSE	1.30E+07	FALSE	6.12E+03	FALSE
12	Carbon Disulfide	1.73E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
12	Carbon Tetrachloride	3.45E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
12	Chloro-3-methylphenol[4-]	1.40E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chloroaniline[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chlorobenzene	3.45E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
12	Chlorodibromomethane	3.45E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Chloroethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
12	Chloroform	3.45E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
12	Chloromethane	3.45E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
12	Chloronaphthalene[2-]	1.05E-02	mg/kg	N	U	N/A	FALSE	6.26E+03	FALSE	N/A	FALSE
12	Chlorophenol[2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	3.91E+02	FALSE	N/A	FALSE
12	Chlorophenyl-phenyl[4-] Ether	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chlorotoluene[2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Chlorotoluene[4-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Chromium	8.03E+00	mg/kg	Y	NQ	9.66E+01	FALSE	4.52E+04	FALSE	1.93E+01	FALSE
12	Chrysene	1.05E-02	mg/kg	N	U	1.53E+02	FALSE	N/A	FALSE	N/A	FALSE
12	Cobalt	5.37E+00	mg/kg	Y	NQ	1.72E+04	FALSE	2.34E+01	FALSE	8.64E+00	FALSE
12	Copper	7.30E+00	mg/kg	Y	NQ	N/A	FALSE	3.13E+03	FALSE	1.47E+01	FALSE
12	Dibenz(a,h)anthracene	1.05E-02	mg/kg	N	U	1.53E-01	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Dibenzofuran	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dibromo-3-Chloropropane[1,2-]	5.18E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
12	Dibromoethane[1,2-]	3.45E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
12	Dibromomethane	3.45E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
12	Dichlorobenzene[1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,3-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorobenzene[1,4-]	3.45E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
12	Dichlorobenzene[1,4-]	1.05E-01	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
12	Dichlorobenzidine[3,3'-]	1.05E-01	mg/kg	N	U	1.18E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Dichlorodifluoromethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
12	Dichloroethane[1,1-]	3.45E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
12	Dichloroethane[1,2-]	3.45E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
12	Dichloroethene[1,1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
12	Dichloroethene[cis-1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
12	Dichloroethene[trans-1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
12	Dichlorophenol[2,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	1.85E+02	FALSE	N/A	FALSE
12	Dichloropropane[1,2-]	3.45E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
12	Dichloropropane[1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropane[2,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[1,1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[cis-1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dichloropropene[trans-1,3-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Diethylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	4.93E+04	FALSE	N/A	FALSE
12	Dimethyl Phthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	6.16E+04	FALSE	N/A	FALSE
12	Dimethylphenol[2,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Di-n-butylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
12	Dinitro-2-methylphenol[4,6-]	1.05E-01	mg/kg	N	U	N/A	FALSE	4.93E+00	FALSE	N/A	FALSE
12	Dinitrobenzene[1,3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dinitrophenol[2,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,4-]	1.05E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,4-]	1.49E-01	mg/kg	N	U	1.71E+01	FALSE	1.23E+02	FALSE	N/A	FALSE
12	Dinitrotoluene[2,6-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Dinitrotoluene[2,6-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Di-n-octylphthalate	1.05E-02	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Diphenylamine	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Ethylbenzene	3.45E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
12	Fluoranthene	1.05E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
12	Fluorene	1.05E-02	mg/kg	N	U	N/A	FALSE	2.32E+03	FALSE	N/A	FALSE
12	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	4.12E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzodioxins (Total)	1.33E-05	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	7.71E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Heptachlorodibenzofurans (Total)	7.73E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorobenzene	1.05E-01	mg/kg	N	U	3.33E+00	FALSE	4.93E+01	FALSE	N/A	FALSE
12	Hexachlorobutadiene	1.05E-01	mg/kg	N	U	6.83E+01	FALSE	6.16E+01	FALSE	N/A	FALSE
12	Hexachlorocyclopentadiene	1.05E-01	mg/kg	N	U	N/A	FALSE	2.30E+00	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzodioxins (Total)	2.61E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachlorodibenzofurans (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Hexachloroethane	1.05E-01	mg/kg	N	U	1.33E+02	FALSE	4.31E+01	FALSE	N/A	FALSE
12	Hexanone[2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	HMX	1.49E-01	mg/kg	N	U	N/A	FALSE	3.85E+03	FALSE	N/A	FALSE
12	Indeno(1,2,3-cd)pyrene	1.05E-02	mg/kg	N	U	1.53E+00	FALSE	N/A	FALSE	N/A	FALSE
12	Iodomethane	1.73E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Iron	1.03E+04	mg/kg	Y	NQ	N/A	FALSE	5.48E+04	FALSE	2.15E+04	FALSE
12	Isophorone	1.05E-01	mg/kg	N	U	5.61E+03	FALSE	1.23E+04	FALSE	N/A	FALSE
12	Isopropylbenzene	3.45E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
12	Isopropyltoluene[4-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Lead	1.09E+01	mg/kg	Y	NQ	N/A	FALSE	4.00E+02	FALSE	2.23E+01	FALSE
12	Magnesium	1.59E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	4.61E+03	FALSE
12	Manganese	2.29E+02	mg/kg	Y	NQ	N/A	FALSE	1.05E+04	FALSE	6.71E+02	FALSE
12	Mercury	1.96E-02	mg/kg	Y	NQ	N/A	FALSE	2.38E+01	FALSE	1.00E-01	FALSE
12	Methyl-2-pentanone[4-]	1.73E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
12	Methylene Chloride	1.73E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
12	Methylnaphthalene[2-]	1.05E-02	mg/kg	N	U	N/A	FALSE	2.32E+02	FALSE	N/A	FALSE
12	Methylphenol[2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Methylphenol[3-,4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Naphthalene	1.05E-02	mg/kg	N	U	4.97E+01	FALSE	1.62E+02	FALSE	N/A	FALSE
12	Nickel	6.54E+00	mg/kg	Y	NQ	5.95E+05	FALSE	1.56E+03	FALSE	1.54E+01	FALSE
12	Nitroaniline[2-]	1.16E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitroaniline[3-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitroaniline[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrobenzene	1.05E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Nitrobenzene	1.49E-01	mg/kg	N	U	6.04E+01	FALSE	1.31E+02	FALSE	N/A	FALSE
12	Nitrophenol[2-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrophenol[4-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrosodimethylamine[N-]	1.05E-01	mg/kg	N	U	2.34E-02	TRUE	4.93E-01	FALSE	N/A	FALSE
12	Nitroso-di-n-propylamine[N-]	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Nitrotoluene[2-]	1.49E-01	mg/kg	N	U	3.16E+01	FALSE	7.04E+01	FALSE	N/A	FALSE
12	Nitrotoluene[3-]	1.49E-01	mg/kg	N	U	N/A	FALSE	6.16E+00	FALSE	N/A	FALSE
12	Nitrotoluene[4-]	1.49E-01	mg/kg	N	U	3.33E+02	FALSE	2.47E+02	FALSE	N/A	FALSE
12	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.70E-05	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.08E-06	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Oxybis(1-chloropropane)[2,2'-]	1.05E-01	mg/kg	N	U	9.93E+01	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzodioxins (Total)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofuran[1,2,3,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofuran[2,3,4,7,8-]	5.03E-07	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pentachlorophenol	1.05E-01	mg/kg	N	U	9.85E+00	FALSE	2.34E+02	FALSE	N/A	FALSE
12	Perchlorate	6.05E-04	mg/kg	Y	J	N/A	FALSE	5.48E+01	FALSE	N/A	FALSE
12	PETN	2.48E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Phenanthrene	1.05E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
12	Phenol	1.05E-01	mg/kg	N	U	N/A	FALSE	1.85E+04	FALSE	N/A	FALSE
12	Potassium	1.76E+03	mg/kg	Y	NQ	N/A	FALSE	1.56E+07	FALSE	3.46E+03	FALSE
12	Propylbenzene[1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Pyrene	1.05E-02	mg/kg	N	U	N/A	FALSE	1.74E+03	FALSE	N/A	FALSE
12	Pyridine	1.05E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	RDX	1.49E-01	mg/kg	N	U	8.31E+01	FALSE	3.01E+02	FALSE	N/A	FALSE
12	Selenium	5.14E-01	mg/kg	Y	J	N/A	FALSE	3.91E+02	FALSE	1.52E+00	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Silver	8.98E-01	mg/kg	Y	NQ	N/A	FALSE	3.91E+02	FALSE	1.00E+00	FALSE
12	Sodium	7.44E+01	mg/kg	Y	NQ	N/A	FALSE	7.82E+06	FALSE	9.15E+02	FALSE
12	Styrene	3.45E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
12	TATB	1.79E+00	mg/kg	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Temperature	5.7	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachlorodibenzodioxin[2,3,7,8-]	1.01E-07	mg/kg	N	U	4.90E-05	FALSE	5.06E-05	FALSE	N/A	FALSE
12	Tetrachlorodibenzodioxins (Total)	1.67E-07	mg/kg	Y	J	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachlorodibenzofuran[2,3,7,8-]	1.49E-07	mg/kg	Y	J	4.90E-04	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachlorodibenzofurans (Totals)	0.00E+00	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Tetrachloroethane[1,1,1,2-]	3.45E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
12	Tetrachloroethane[1,1,2,2-]	3.45E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
12	Tetrachloroethene	3.45E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
12	Tetryl	1.49E-01	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
12	Thallium	2.02E-01	mg/kg	Y	J	N/A	FALSE	7.82E-01	FALSE	7.30E-01	FALSE
12	Toluene	3.45E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
12	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.73E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
12	Trichlorobenzene[1,2,4-]	1.05E-01	mg/kg	N	U	2.40E+02	FALSE	8.29E+01	FALSE	N/A	FALSE
12	Trichloroethane[1,1,1-]	3.45E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
12	Trichloroethane[1,1,2-]	3.45E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
12	Trichloroethene	3.45E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
12	Trichlorofluoromethane	3.45E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
12	Trichlorophenol[2,4,5-]	1.05E-01	mg/kg	N	U	N/A	FALSE	6.16E+03	FALSE	N/A	FALSE
12	Trichlorophenol[2,4,6-]	1.05E-01	mg/kg	N	U	4.84E+02	FALSE	6.16E+01	FALSE	N/A	FALSE
12	Trichloropropane[1,2,3-]	3.45E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
12	Trimethylbenzene[1,2,4-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trimethylbenzene[1,3,5-]	3.45E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
12	Trinitrobenzene[1,3,5-]	1.49E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Trinitrotoluene[2,4,6-]	1.49E-01	mg/kg	N	U	2.11E+02	FALSE	3.60E+01	FALSE	N/A	FALSE
12	Tris (o-cresyl) phosphate	2.97E-01	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
12	Vanadium	1.99E+01	mg/kg	Y	NQ	N/A	FALSE	3.94E+02	FALSE	3.96E+01	FALSE
12	Vinyl Chloride	3.45E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
12	Xylene[1,2-]	3.45E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
12	Xylene[1,3-]+Xylene[1,4-]	6.91E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE
12	Zinc	2.58E+01	mg/kg	Y	NQ	N/A	FALSE	2.35E+04	FALSE	4.88E+01	FALSE
Trip Blank	Acetone	1.65E-03	mg/kg	N	U	N/A	FALSE	6.63E+04	FALSE	N/A	FALSE
Trip Blank	Benzene	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	1.14E+02	FALSE	N/A	FALSE
Trip Blank	Bromobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Bromochloromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Bromodichloromethane	3.29E-04	mg/kg	N	U	6.19E+02	FALSE	1.56E+03	FALSE	N/A	FALSE
Trip Blank	Bromoform	3.29E-04	mg/kg	N	U	6.74E+02	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Bromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.77E+01	FALSE	N/A	FALSE
Trip Blank	Butanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	3.74E+04	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[n-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[sec-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Butylbenzene[tert-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Carbon Disulfide	1.65E-03	mg/kg	N	U	N/A	FALSE	1.55E+03	FALSE	N/A	FALSE
Trip Blank	Carbon Tetrachloride	3.29E-04	mg/kg	N	U	1.07E+01	FALSE	1.44E+02	FALSE	N/A	FALSE
Trip Blank	Chlorobenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	3.78E+02	FALSE	N/A	FALSE
Trip Blank	Chlorodibromomethane	3.29E-04	mg/kg	N	U	1.39E+01	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Chloroethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.90E+04	FALSE	N/A	FALSE
Trip Blank	Chloroform	3.29E-04	mg/kg	N	U	5.90E+00	FALSE	3.06E+02	FALSE	N/A	FALSE
Trip Blank	Chloromethane	3.29E-04	mg/kg	N	U	4.11E+01	FALSE	2.68E+02	FALSE	N/A	FALSE
Trip Blank	Chlorotoluene[2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+03	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Chlorotoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dibromo-3-Chloropropane[1,2-]	4.94E-04	mg/kg	N	U	8.58E-02	FALSE	5.88E+00	FALSE	N/A	FALSE
Trip Blank	Dibromoethane[1,2-]	3.29E-04	mg/kg	N	U	6.72E-01	FALSE	1.35E+02	FALSE	N/A	FALSE
Trip Blank	Dibromomethane	3.29E-04	mg/kg	N	U	N/A	FALSE	5.79E+01	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.15E+03	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichlorobenzene[1,4-]	3.29E-04	mg/kg	N	U	1.29E+03	FALSE	5.48E+03	FALSE	N/A	FALSE
Trip Blank	Dichlorodifluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.82E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethane[1,1-]	3.29E-04	mg/kg	N	U	7.86E+01	FALSE	1.56E+04	FALSE	N/A	FALSE
Trip Blank	Dichloroethane[1,2-]	3.29E-04	mg/kg	N	U	8.32E+00	FALSE	5.56E+01	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	4.40E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[cis-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.56E+02	FALSE	N/A	FALSE
Trip Blank	Dichloroethene[trans-1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	2.95E+02	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[1,2-]	3.29E-04	mg/kg	N	U	1.78E+01	FALSE	2.90E+01	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropane[2,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[cis-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Dichloropropene[trans-1,3-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Ethylbenzene	3.29E-04	mg/kg	N	U	7.51E+01	FALSE	3.93E+03	FALSE	N/A	FALSE
Trip Blank	Hexanone[2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Iodomethane	1.65E-03	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Isopropylbenzene	3.29E-04	mg/kg	N	U	N/A	FALSE	2.36E+03	FALSE	N/A	FALSE
Trip Blank	Isopropyltoluene[4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Methyl-2-pentanone[4-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.81E+03	FALSE	N/A	FALSE
Trip Blank	Methylene Chloride	1.65E-03	mg/kg	N	U	7.66E+02	FALSE	4.09E+02	FALSE	N/A	FALSE
Trip Blank	Propylbenzene[1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE

Table 1. TA-16-388 Flash Pad 2018 Analytical Data Summary (continued)

Sample Location	Parameter Name	Report Result	Report Units	Detected	Validation Qualifier	Residential Soil, Cancer (mg/kg)	Residential Soil, Cancer Comparison	Residential Soil, Noncancer (mg/kg)	Residential Soil, Noncancer Comparison	Background Concentration	Background Comparison
Trip Blank	Styrene	3.29E-04	mg/kg	N	U	N/A	FALSE	7.26E+03	FALSE	N/A	FALSE
Trip Blank	Temperature	3	deg C	Y	NQ	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethane[1,1,1,2-]	3.29E-04	mg/kg	N	U	2.81E+01	FALSE	2.35E+03	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethane[1,1,2,2-]	3.29E-04	mg/kg	N	U	7.98E+00	FALSE	1.56E+03	FALSE	N/A	FALSE
Trip Blank	Tetrachloroethene	3.29E-04	mg/kg	N	U	3.37E+02	FALSE	1.11E+02	FALSE	N/A	FALSE
Trip Blank	Toluene	3.29E-04	mg/kg	N	U	N/A	FALSE	5.23E+03	FALSE	N/A	FALSE
Trip Blank	Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.65E-03	mg/kg	N	U	N/A	FALSE	5.08E+04	FALSE	N/A	FALSE
Trip Blank	Trichloroethane[1,1,1-]	3.29E-04	mg/kg	N	U	N/A	FALSE	1.44E+04	FALSE	N/A	FALSE
Trip Blank	Trichloroethane[1,1,2-]	3.29E-04	mg/kg	N	U	1.88E+01	FALSE	2.61E+00	FALSE	N/A	FALSE
Trip Blank	Trichloroethene	3.29E-04	mg/kg	N	U	1.55E+01	FALSE	6.77E+00	FALSE	N/A	FALSE
Trip Blank	Trichlorofluoromethane	3.29E-04	mg/kg	N	U	N/A	FALSE	1.23E+03	FALSE	N/A	FALSE
Trip Blank	Trichloropropane[1,2,3-]	3.29E-04	mg/kg	N	U	5.10E-02	FALSE	7.09E+00	FALSE	N/A	FALSE
Trip Blank	Trimethylbenzene[1,2,4-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Trimethylbenzene[1,3,5-]	3.29E-04	mg/kg	N	U	N/A	FALSE	N/A	FALSE	N/A	FALSE
Trip Blank	Vinyl Chloride	3.29E-04	mg/kg	N	U	7.42E-01	FALSE	1.13E+02	FALSE	N/A	FALSE
Trip Blank	Xylene[1,2-]	3.29E-04	mg/kg	N	U	N/A	FALSE	8.05E+02	FALSE	N/A	FALSE
Trip Blank	Xylene[1,3-]+Xylene[1,4-]	6.59E-04	mg/kg	N	U	N/A	FALSE	7.64E+02	FALSE	N/A	FALSE

Highlighted “TRUE” value – constituent detected above either the selected soil screening level or above the background value

Supplement 4-16

Technical Area 16 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 16-388 Flash Pad Human Health and Ecological Risk Screening Assessments

LA-UR-20-24479

TECHNICAL AREA 16 - OPEN BURN/OPEN DETONATION (OB/OD) AREA -

TA-16-388 FLASH PAD

HUMAN HEALTH AND ECOLOGICAL RISK-SCREENING ASSESSMENTS

June 15, 2020

EXECUTIVE SUMMARY

Open burn hazardous waste treatment operations requiring a permit under the Resource Conservation and Recovery Act (RCRA) are conducted at the Los Alamos National Laboratory (LANL or Lab) at Technical Area 16. As part of the application process for a permit to perform hazardous waste treatment operations, and in accordance with the requirements of Title 40 of the Code of Federal Regulations, Part 264.601(b) (40 CFR § 264.601(b)), LANL performed soil monitoring activities to assist with site characterization. The area around the open burn (OB) unit at Technical Area 16-388 (TA-16-388) Flash Pad within the LANL was investigated in Fall 2018. Currently the TA-16-388 Flash Pad is the only OB treatment unit that is currently operational. The TA-16-388 unit has been used exclusively for OB treatment of explosive waste streams. The goal of the site characterization and risk assessments is to determine whether hazardous contaminants from ongoing treatment operations are being released to soil at levels that pose an unacceptable risk to human health or the environment.

The study boundary is composed of the Flash Pad unit where past explosives processing activities have occurred, and/or the location of past waste management units. Surface soil samples were collected in September 2018 and analyzed for inorganic and organic chemicals. No radionuclide data were collected. Data from these samples were used to conduct human health and ecological risk-screening assessments for this report.

For the human health risk-screening assessment, residential and industrial exposure scenarios were evaluated by comparing the maximum exposure point concentration (EPC) for each analyte to the New Mexico Environment Department (NMED) soil screening levels (SSLs). The following conclusions are made:

- There were no hazard quotients (HQs) >0.1
- There were no cancer risks $>1x10^{-5}$
- Based on the Fall 2018 data set, there was no elevated risk to human health for exposure to soils identified as the result of this screening analysis using maximum detected concentrations.

Potential risk to ecological receptors was evaluated by analyzing different lines of evidence that were weighed to draw a conclusion regarding potential for adverse ecological effects. This included:

- Comparing maximum EPCs to minimum no effect (NE) and low effect (LE) ecological screening levels (ESLs) and to background values (BVs),
- Comparing upper 95th percentile confidence limit EPCs (UCL95 EPCs) to minimum NE and LE ESLs,
- Calculating hazard indices,
- Consideration of site-specific biological sampling, and long term avian and mammalian monitoring data,
- Application of site-specific area use factors.

The following conclusions are made:

Based on the Fall 2018 TA-16 388 data set, there is minimal potential risk to ecological receptors for exposure to soils identified as the result of this screening analysis. Barium concentrations in surface soils exceeded both background and the LE ESL to produce HQs greater than 1 for plants in five samples (grid points 6, 8, 9, 10, 12). Barium was 10 times higher than background in one of these samples (grid point 9). Dioxins/furans exceeded the LE ESL for mammals and the NE ESL for birds in one sample (grid point 3).

Other lines of evidence were evaluated in addition to the measured analytical data. Recent field studies found no adverse impacts to the small mammal population, and field observations made during the site visit revealed the plant community is healthy with no indications of chemical stress where plants are present. Avian surveys were conducted and avian abundance and diversity was comparable to or greater than reference areas. Nonviable eggs were tested for inorganic analytes. Barium concentrations were three to seven times higher than the Regional Statistical Reference Level (RSRL).

With the exception of barium, the contaminants of potential ecological concern (COPECs) identified in this risk assessment were all below the RSRL in eggs collected and analyzed from 2016 to 2019. Hatching success was similar to that previously reported for the area. Dioxin/furans were also identified as COPECs, and one congener was detected in nestling tissue approximately three times higher than the RSRL; however, when adjusted for toxicity relative to TCDD, the concentration was much lower than the TCDD lowest observed adverse effect level (LOAEL) for eggs. Together these results suggest inorganics or dioxin/furans will not adversely affect breeding bird populations.

Table of Contents

List of Tables

List of Figures

Acronyms and Abbreviations

BV	Background Value
COPC	Contaminant of Potential Concern
COPEC	Contaminant of Potential Ecological Concern
CSEM	Conceptual Site Exposure Model
EPC	Exposure Point Concentration
ESL	Ecological Screening Level
HI	Hazard Index
HQ	Hazard Quotient
LANL	Los Alamos National Laboratory
LD50	Lethal Dose for Half of the Population
LE	Low Effect
LOAEL	Lowest Observed Adverse Effect Level
MDL	Method Detection Limit
NE	No Effect
NMED	New Mexico Environment Department
NMSSL	New Mexico Soil Screening Levels
NOAEL	No Observed Adverse Effect Level
OB	Open Burn
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RSRL	Regional Statistical Reference Levels
SAP	Sampling and Analysis Plan
SF	Cancer Slope Factor
SL	Screening Level
SSLs	Soil Screening Levels
SVOC	Semi-Volatile Organic Chemical
SWMU	Solid Waste Management Unit
TA	Technical Area
TECi	Toxicity Equivalent Concentration for congener ***i***
TEF	Toxicity Equivalency Factor
TEQ	Toxicity Equivalent Quotient
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
UCL95	95% Upper Confidence Limit On The Mean
VOC	Volatile Organic Chemical
WHO	World Health Organization

1. INTRODUCTION

Technical Area (TA) -16 is located in the southwestern portion of Los Alamos National Laboratory (LANL) at the west end of the Pajarito Plateau near the foothills of the Jemez Mountains (Figure 1-1). TA-16 is composed of the Open Burn (OB) unit and the surrounding solid waste management units (SWMUs) where past explosives processing activities have occurred, and/or the location of past waste management units.

The hazardous waste management unit consists of the TA-16-388 Flash Pad and the TA-16-399 Burn Tray. The TA-16-388 Flash Pad is the only part of TA-16 addressed by this risk assessment. The TA-16-388 Flash Pad consists of a 22-foot (ft) by 22-ft concrete pad located in the northeast portion of TA-16. The concrete pad measures 12 inches thick at the base and sits atop a 45-milliliter Hypalon secondary containment liner that is situated 6 inches below the bottom of the pad. The pad is also equipped with a retractable steel roof that covers the unit when it is not in use. Dry and wet explosives, and waste that is contaminated with explosives, are treated at the TA-16-388 Flash Pad to destroy the characteristic of reactivity (D003).

An initial site characterization assessment at the TA-16-388 Flash Pad by soil sampling was performed in June 2009 and a follow-up was conducted in August 2009. Additional soil monitoring events occurred in 2012 and 2013. Only the most recent Fall 2018 data was used to provide a current site characterization, and aid in establishing whether hazardous contaminants from ongoing treatment operations are being released to soil at levels that pose an unacceptable risk to human health or the environment. The Fall 2018 data are considered to most accurately reflect current site conditions. Sampling events did not include rocks, debris, or vegetation.

Data were collected within the boundaries of the TA-16-388 OB unit and in the surrounding SWMUs where past explosives processing activities occurred. Only surface soil data were collected. Sampling locations were selected based on a defined area where deposition of particulates from air to soil and areas of potential storm water runoff is most likely to occur. Additional discrete grab sample locations northeast of the Flash Pad where a dioxin/furan contaminated hotspot was identified during previous soil monitoring events were also selected. This judgmental sampling design is considered to be conservative and likely to bias risk results high.

Human health and ecological risk-screening assessments were conducted using the most recent surface soil data. These data were collected in September 2018. Data from historical sampling events were not utilized since the most recent data reflect current conditions at the site. The results of the risk-screening assessments are presented in the following sections.

2. HUMAN HEALTH RISK ASSESSMENT

2.1. Human Health Conceptual Site Model

Only authorized laboratory workers currently have access to the area around the TA-16 Flash Pad, and therefore the primary land use is industrial. Laboratory workers are the primary human receptors, and the industrial scenario is the defined scenario for the human health risk-screening assessment (i.e., the scenario on which decisions are based). Because the site is located within the boundaries of an operational facility (TA-16), the reasonably foreseeable future land use will continue to be industrial. A Hypothetical Future Residential exposure was also assessed and provided for comparison purposes.

The release of contaminants from OB operations has occurred for more than 50 years. Releases are transported primarily by wind, which rapidly disperses the material in ambient air. Most material is likely deposited close to the source(s), and fugitive dust concentrations will decrease with distance from the source. Exposure to a site worker may occur through various surface soil contact pathways. Potential human health exposure pathways evaluated in this risk assessment include:

- Incidental ingestion of surface soil,
- Inhalation of fugitive dust or volatiles emanating from surface soil, and
- Dermal contact with surface soil.

2.2. Identification of Chemicals of Potential Concern

2.2.1. Sampling

Soil samples used in this analysis were collected in September 2018. Surface soil samples were collected as grab samples (independent, discrete samples) from a depth of 0 - 2 inches below ground surface. Each sample set was analyzed for the following:

- Volatile Organic Compounds (VOCs) –12 samples and one duplicate
- Semi-Volatile Organic Compounds (SVOCs) –12 samples
- Total Metals –12 samples and one duplicate
- Dioxins/Furans –12 samples and one duplicate
- High Explosives –12 samples and one duplicate

In addition, some organics were analyzed by more than one method, resulting in an apparently higher sample count (i.e., 2,4 and 2,6 dinitrotoluene, nitrobenzene, dinitrobenzenes). Figure 1-1 shows a map of the site including the current sampling locations from which data were obtained for use in the risk assessment.

2.2.2. Evaluation of Inorganic Analytes

Inorganic analytes are first compared to background values (BV) established for the site (LANL 1998). For analytes with maximum concentrations less than the BV, no further evaluation is necessary and the data are not compared to risk-based screening levels (SLs). For analytes where the maximums exceeded the benchmark termed the background value (BV), but did not exceed risk-based SLs known as the New Mexico Soil Screening Levels (NMSSLs) (NMED 2019), no further evaluation is necessary. For analytes where the maximum values exceeded the BV and also exceeded one or more risk-based SLs (as indicated by a ratio of the maximum to the SL being greater than 1), a 95% upper confidence level (UCL95) was calculated with the USEPA ProUCL 5.1.002 software (EPA 2015). This UCL95 was then compared to the SLs. The toxicity of the various constituents analyzed in this investigation is incorporated into the screening levels.

Where an NMSSL was not available, the USEPA Regional Screening Level (RSL) was used. If an RSL was also not available, a suitable surrogate is proposed if toxicity and physicochemical data are sufficient to allow identifying a suitable surrogate. The following inorganic analytes required surrogates:

- Calcium, sodium, potassium, magnesium – these are typically considered non-toxic macronutrients, so unless concentrations exceed background they are not evaluated in risk assessments, and SLs are lacking.

- Chromium (Cr) - the toxicity values based on NMED CrIII were used since NMED has no SLs for total Cr, and the site is unlikely to have significant amounts of the CrVI form.
- Mercury – the toxicity values for NMED mercuric salts was used as the screening level basis of the screening level as this should be the form would be most expected in arid soils.

2.2.3. Evaluation of Organic Analytes

For this risk assessment, the highest concentration found, regardless of the method used, or whether the sample was a primary sample or a duplicate, was used as the basis of the exposure point concentration (EPC) in the screening-level assessment. This is considered conservative for the evaluation of potential risks.

Organic analytes are not compared to any background values, although there are naturally occurring sources of organic constituents. Organics are compared to risk-based SLs. Where an SL was not available, a suitable surrogate is proposed. Surrogates were obtained for the following analytes:

<u>Human Health</u>

- Acenapthylene – There are no NMSSLs or RSLs for acenapthylene. Napthalene toxicity values are used as a surrogate.
- 2,4,6-triamino-1,3,5- trinitrobenzene (TATB) – There is no NMSSL or RSL for TATB. RSLs for 1,3,5-trinitrobenzene were used as a surrogate because of structural similarity.
- 1,2- and 1,4 -Xylene [o-, p-xylenes] - the toxicity values for 1,3-xylene (m-xylene) were used as the screening level as they are just slightly more conservative than using those for p-xylene (1,4-xylene).

2.3. Exposure Point Concentrations

A phased approach was used to establish the EPCs. First the maximum detected value for each analyte was compared to a SL. Analytes for which the maximum value was less than the lowest SL are not evaluated further. If the maximum EPC exceeded SL, evaluation was continued with the UCL95 used as the EPC for the comparison. All non-rejected data were used to calculate the 95% UCLs for the risk-screening assessments, if appropriate. If there were too few detected concentrations reported to allow calculation of a UCL95 (i.e., sample number (n) <6), the median of all the data for the analyte including the detected concentrations and the method detection limits (MDLs) was used.

Guidance from NMED was applied to evaluate the potential toxicity of the dioxins/furans. This guidance relies on the 2005 World Health Organization (WHO) toxicity equivalency factors (TEF) (Van den berg et al. 2006) approach. The TEFs are multiplied by the measured concentration to obtain a congener-specific product called the toxicity equivalent concentration (TECi). The TECi values are then summed for each sample location. This sum is referred to as the toxicity equivalent quotient (TEQ). The TEQ is divided by the NMED screening level for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) to obtain a risk ratio.

The following sections present the human health risk-screening assessments for TA-16-388.

2.4. Screening Evaluation

The EPC (Table 2-1) was divided by the carcinogenic and noncarcinogenic SL for residents and industrial workers to obtain a hazard quotient (HQ), and the hazard index (HI) was calculated by summing the HQs (NMED 2019). The SLs used in the evaluation were obtained from current NMED guidance (NMED

2019) or the most recent EPA regional screening levels (RSLs) (EPA 2018) if an NMED value was not available. The SLs for carcinogens are equivalent to a 1×10^{-5} cancer risk, and for noncarcinogens the SLs correlate to a hazard quotient (HQ) of 1. To be consistent with the NMSSLs, the EPA RSLs based on a cancer endpoint were multiplied by 10 to adjust them to a cancer risk level of $1x10^{-5}$.

Any detected organic analytes that exceeded the SLs were considered contaminants of potential concern (COPCs). Any detected inorganic analytes that exceeded both background and the SL were also considered COPCs.

2.4.1. Background Data

The background data used in this evaluation were obtained from LANL "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico, September 1998. The background data are used in the RCRA corrective action process to distinguish between contaminated and uncontaminated media and have been accepted by NMED. As stated in LANL (1998) on page 4, section 3.1.1,

> Twenty-one soil profiles distributed across the Pajarito Plateau were described in the field and were sampled for inorganic chemical analyses. These samples provide information about the varied soils and geomorphic settings that occur on the Pajarito Plateau, allowing for an evaluation of the variability in soil characteristics and chemistry within several of the soil series previously described by Nyhan et al. (1978, 05702). Most sampled soils were collected from mesa tops. Other geomorphic settings sampled include hillslopes and canyon bottoms.

The locations sampled as part of the background study were not impacted by deposition from the historical operation of the OD units or other firing sites. Benchmarks termed BVs were obtained from this document to use in comparison to site data.

2.4.2. Fall 2018 Data Analysis

Table 2-1 presents summary statistics for the 2018 soil data. There were 12 samples included in this data set collected in September 2018. However, including data from duplicate pair for grid point 3 and including analysis by different methods results in an increased apparent sample size above 12 for some analytes (Table 2-1). Maximum concentrations in the soil samples analyzed for inorganics were compared to the established soil BVs (LANL 1998) (Table 2-1).

Background values for the site were obtained from the 1998 background report (LANL, 1998), and SLs were obtained from New Mexico (NMSSLs) (Table 2-2). The maximum concentration for the following inorganics exceeded the BV, although none of the inorganics exceeded either the residential or worker NMSSLs as indicated in Table 2-2:

- Antimony
- Barium
- Cobalt
- Copper
- Lead
- Nickel
- Silver

- Zinc

There were few organics detected in any samples. The following organics were detected in one or more samples:

- 4-Amino-2,6-dinitrotoluene[4-]
- Anthracene
- Cyclotetramethylene-tetranitramine (HMX)
- Dioxin/furan congeners
- 4-Isopropyltoluene[4-]
- Cyclotrimethylene-trinitramine (RDX)
- 1,3,5-Triamino-2,4,6-trinitrobenzene (TATB)
- Toluene
- 2,4,6-Trinitrotoluene[2,4,6-] (TNT)

Four of these constituents are energetics or explosives (i.e., HMX, RDX, TNT, and TATB). 4-Amino-2,6-dinitrotoluene[4-] is a degradation product of TNT. None of these detected organics exceeded the human health SLs for residential or industrial use.

The evaluation of the dioxin/furans is summarized in Table 2-3. The measured concentration or the MDL for nondetected samples is shown for each congener in each sample. The detection status is indicated by a zero for nondetect, and a 1 for a detected value. The TEFs are shown for each congener, and multiplying the TEF by the concentration produces the TECi. Summing the TECi yields the TEQ. Dividing the TEQ by the residential or industrial SL for TCDD produces a ratio. If the ratio exceeds 1, then the dioxin/furan concentrations are higher than SLs and must be evaluated further. If less than 1, no further evaluation is required. Table 2-3 indicates the TEQ for all samples was below 1, and no further evaluation of dioxin/furans is needed.

The analysis was based on comparison of the maximum detected value as the EPC. Because there were no analytes in the Fall 2018 data set for which the maximum EPC exceeded SLs, UCL95 values were not calculated for the screening level human health risk assessment.

2.5. Uncertainty Analysis

The human health risk assessment has inherent uncertainties associated with data, the analysis process, exposure assessment, and the toxicity values on which the SLs are based. Each or all of these uncertainties may affect the assessment results, biasing the risk assessment results high or low. These uncertainties are discussed in more detail in the following sections.

2.5.1. Data and Data Analysis

Uncertainties in the data and/or its analysis may include errors in sampling, laboratory processing, analysis, and or data evaluation. Data evaluation uncertainties are expected to have little effect on the assessment results because the data have undergone validation to minimize errors, and any errors are not expected to bias the results high or low. The J-flagged (estimated) qualification of detected concentrations off some organic COPCs does not affect the assessment. The data represent deposition from more than 60 years of operation into 2019. Therefore, the data and subsequently the screening assessment results represent current baseline conditions.

The use of a judgemental sampling design biases the risk results high since samples were targeted to locations where contamination was most likely to occur or known to occur from past sampling events.

The use of the maximum or a UCL95 as the COPC EPC for each COPC is also expected to bias risk estimates high, erring towards being conservative. Use of the maximum as the EPC overestimates exposure, as by definition all other concentrations are below this value. Use of the UCL95 may also result in an overestimation of risk since by definition true mean values are nearly always going to be less than this value.

2.5.2. Exposure Assessment

The exposure assessment assumptions bias the risk results high (i.e., overestimate risk). Assumptions for the Industrial SLs assume that a potentially exposed individual is a LANL worker who is outside at the site for eight hours/day (h/d) for 225 days/year (d/yr) (NMED 2019), and who spends the entire time on-site within the contaminated area. Assumptions for the residential SLs are that the potentially exposed individual is a resident who is present 24 h/d for 350 d/yr (NMED 2019) and spends the entire time on-site within the contaminated area. Because it is unlikely the worker or resident would be within the TA-16 contaminated area for the entire time, the resultant screening assessments overestimate the exposure. As a result, risks may be overestimated or biased high.

Assumptions underlying the exposure parameters, routes of exposure, and intake rates for routes of exposure are consistent with NMED parameters and default values (NMED 2019). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that overestimate the reasonably expected risk levels.

2.5.3. Toxicity Values

The primary uncertainty associated with the screening values is related to the derivation of toxicity values used in their calculation. Toxicity values (i.e., slope factors [SFs] and reference doses [RfDs]) are used to derive the risk-based screening values used in the screening evaluation (NMED 2019). Uncertainties were identified in four areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) variability between individuals in the human population, (3) the derivation of RfDs and SFs, and (4) the chemical form of the COPC.

The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because of differences that exist between animals and humans in chemical absorption, metabolism, excretion, and toxic responses. Differences in body weight, surface area, and pharmacokinetic relationships between animals and humans are taken into account to address these uncertainties in the dose-response relationship. However, conservatism is usually incorporated in development of the SFs and RfDs from the underlying toxicological studies, potentially biasing the estimate high and resulting in the overestimation of potential risk.

For noncarcinogenic effects, the degree of variability in human physical characteristics is important both in determining the risks that can be expected at low exposures and in defining the no observed adverse effect level (NOAEL). An uncertainty factor of 10 is applied to RfDs by USEPA to reflect individual variability within the human population that can contribute to uncertainty in the risk assessment. This factor of 10 is generally considered to result in a conservative estimate of risk for noncarcinogenic COPCs.

The RfDs and SFs for various chemicals are derived from experiments conducted by different laboratories that may have varying accuracy and precision that could lead to an over- or under-estimation of risk. The uncertainty associated with an RfD is measured by the magnitude of the uncertainty factors, the modifying factor, and the confidence level. For carcinogens, the weight of evidence classification indicates the likelihood that a contaminant is a human carcinogen.

An additional assumption that introduces uncertainty into the risk assessment is that the RfD or SF derived from laboratory animal studies or human health occupational epidemiology studies adequately and accurately represents environmental exposure. Bioavailability from environmental media may not be the same for a given COPC as bioavailability in a laboratory study or occupational exposure. For example, COPCs may be bound to the environmental matrix and not be available for absorption into the human body following ingestion. However, for most COPCs the exposure scenarios typically default to the assumption that the COPCs are fully bioavailable. This assumption can lead to an overestimation of the total exposure and overestimate risk.

2.5.4. Additive Approach

For noncarcinogens, the effects of exposure to multiple chemicals are generally unknown and possible interactions could be synergistic or antagonistic, resulting in either an underestimation or overestimation of the potential risk by assuming additivity. Additionally, RfDs used in the risk calculations typically are not based on the same endpoints with respect to severity, effects, or target organs. Therefore, the potential for noncarcinogenic effects may be overestimated by the HI considering individual COPCs act by different mechanisms and on different target organs but are addressed additively. Cancer risks are typically assumed to be additive.

2.6. CONCLUSIONS

Inorganics were compared to BVs and risk-based SLs. Concentrations for eight inorganics exceeded background; however no inorganics exceeded risk-based NMSSLs.

The few organics that were detected were compared to risk-based SLs. For all of the detected analytes, maximum concentrations were below SLs. The cancer risk and noncancer HIs were below the target levels of 1×10^{-5} and 1, respectively. None of the TEQs for dioxin/furans exceeded the TCDD SL. The following interpretation can be made from the analysis:

- Based on an industrial scenario, inorganics above background, and maximum detected concentrations for each analyte, the noncancer (0.1) and cancer-based (0.005) HIs are less than the NMED target level of 1. This means that the sum of the ratios for maximum concentrations divided by SLs correlate to a cancer risk less than 1×10^{-5} and a noncancer hazard less than 1.
- For the residential scenario, inorganics above background, and maximum detected concentrations for each analyte, the noncancer and cancer HIs (1 and 0.02) are at or less than the NMED target level of 1.
- The concentration of each dioxin/furan congener was summed to obtain a TEQ which was compared to the NMED NMSSL for TCDD. The maximum ratio was 0.7 for residential use and 0.004 for industrial use.
- Summing the maximum dioxin/furan ratio with the other cancer risk HIs provides an HI for residential use of 0.8 and an HI for industrial use of 0.009.
- The maximum lead concentration of 26.7 mg/kg at TA-39-388 is just slightly above the background value of 22.3 mg/kg, and is much less than the residential SSL (400 mg/kg).

- There are no elevated human health risks for exposure to soils based on this evaluation.

3. ECOLOGICAL SCREENING ASSESSMENT

The ecological risk-screening assessments for TA-16 is presented in the following sections.

3.1. Introduction

The ecological risk-screening evaluation identifies chemicals of potential ecological concern (COPECs) and is based on the comparison of EPCs with Ecological Screening Levels (ESLs) in accordance with Laboratory (LANL 2012a) and NMED (NMED 2017) guidance.

Site information including ESLs, biological studies, and historical information were reviewed and a site visit was conducted. A preliminary conceptual site exposure model (CSEM) was prepared.

The ESLs obtained from the ECORISK Database, Version 4.1 (LANL 2017) are presented in Table 3-1. The ESLs are based on toxicity data for laboratory species similar to those expected to occur at the site, and are derived from experimentally determined NOAELs, lowest observed adverse effect levels (LOAELs), or doses determined to be lethal to 50% of the test population (LD50s). Information relevant to the calculation of ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values, are presented in the ECORISK Database, Versions 2.0, 3.1, and 4.1 (LANL 2003; LANL 2012b; LANL 2017).

The ecological risk analysis begins with a comparison of the minimum ESL to the maximum concentration as the EPC. The EPCs are divided by the ESLs to obtain a HQ calculated for each analyte. As a generalization, the higher the contaminant levels relative to the ESLs, the higher the potential risk to receptors. Conversely, the higher the ESLs relative to the contaminant levels, the lower the potential risk to receptors. HQs greater than 0.3 are used to identify COPECs requiring additional evaluation (LANL 2012a).

Individual HQs for a receptor are summed to derive a HI; an HI greater than one is an indication that further assessment may be needed to ensure exposure to multiple COPECs at a site will not lead to potential adverse impacts to a given receptor population. The HQ and HI analysis is a conservative indication of potential adverse effects and is designed to minimize the potential of overlooking possible COPECs at the site.

3.2. Problem Formulation

Due to the site history, there is the potential for energetic compounds or their breakdown products to be present in surface soils where terrestrial animals and plants may contact surface soils and be exposed.

3.2.1. Data Summary

Soil samples used in this analysis were collected in September 2018. Surface soil samples were collected as grab samples (independent, discrete samples) from a depth of 0 - 2 inches below ground surface. Each sample set was analyzed for the following:

- VOCs –12 samples and one duplicate
- SVOCs –12 samples
- Total Metals –12 samples and one duplicate

- Dioxins/Furans –12 samples and one duplicate
- High Explosives –12 samples and one duplicate

In addition, some organics were analyzed by more than one method, resulting in an apparently higher sample count (i.e., 2,4 and 2,6 dinitrotoluene, nitrobenzene, dinitrobenzenes). Figure 1-1 shows a map of the site including the current sampling locations from which data were obtained for use in the risk assessment, and habitat is shown in Figure 3-1.

3.2.2. Site Visit Summary

A site visit was conducted in March 2019. The area is disturbed by human activity with buildings, roads, and maintained cleared areas to minimize fire danger. The vicinity in and around the TA-16 Burning Ground is a terrestrial ecosystem. Although the area within the fence is disturbed, approximately 50 to 100 feet away from the concrete burn pad it is vegetated with grasses, shrubs, and trees. Elk tracks were observed nearby outside of the fenced area. There are likely terrestrial birds and small mammals including deer mice or ground squirrels using the area; however, there is not enough vegetation within the fenced area to support birds or mammals.

3.2.3. Receptors and Pathways

Exposure pathways are considered complete if all of the following components are present (US EPA, 1989; NMED, 2017):

- A source and mechanism for hazardous waste/constituent release into the environment;
- An environmental transport medium or mechanism;
- A point of contact directly between the receptor and site-related contaminated media, or indirectly via dietary ingestion of prey or forage items contaminated by contact with site related contaminants; and
- An exposure route leading to interaction of the contaminant with target organs within the receptor.

If any of the above components are missing from the exposure pathway, it is not a complete pathway for the site.

A CSEM was developed for the site (Figure 3-2). The primary contaminant source is the burning of munitions waste at the site. Any uncombusted material, if present, could remain in soil or be released to air as fugitive dust. Materials in surface soil could be carried by overland flow or percolate into the subsurface with rain, whereas material in air could be transported by wind. Receptors could contact contaminants within the immediate site area, up to the site boundary, or slightly beyond.

Ingestion of soil, plants, or animals are all potential exposure routes to ecological receptors. Although inhalation is recognized to occur, it is typically considered insignificant relative to ingestion and only quantified for burrowing animals where volatile organics are present in the subsurface. Respirable dust particles are likely ingested rather than inhaled by ecological receptors, and this pathway is considered negligible (EPA 1997; EPA 2003), while non-respirable dust is ingested and accounted for in incidental soil ingestion values for wildlife species (EPA 1993; EPA 2003). Therefore, the exposure pathways considered in the development of the ecological screening levels (ESLs) used in the risk-screening assessment capture the primary exposure for wildlife receptors.

Terrestrial flora (i.e., plants) and fauna (e.g., invertebrates, birds, and mammals) are the general categories of ecological receptors that could be exposed. The primary ecological exposure pathways are based on direct or indirect contact with surface soils. These include root uptake, incidental ingestion of soil, and biotic uptake leading to food-web transport. Exposure of plants and soil invertebrates is not related to dietary pathways but is the result of direct contact with, and uptake from, the surrounding medium. For terrestrial wildlife, most exposure is considered to be through the oral pathway from the diet and incidental soil ingestion (Sample et al. 1998). The dermal contact and inhalation pathways are not typically assessed quantitatively in ecological risk assessments, based on guidance indicating the ingestion route is most important to terrestrial animals (EPA 1997; EPA 2003). Dermal exposure to wildlife is mitigated by the fur or feathers covering the bodies of most vertebrates and the incidental soil consumption during grooming is included in the direct soil ingestion estimates.

3.2.4. Technical Decision Point and Recommendations

Because of the ecological habitat near the site boundaries, and because of the potential for exposure, the data were used to perform a quantitative screening level ecological evaluation.

3.3. ECOLOGICAL SCREENING EVALUATION

The summary statistics for the data were presented in Table 2-1. Maximum detected concentrations of each analyte are used as the initial EPC. The EPCs and the screening results for ecological receptors are presented in Table 3-1. Any analytes for which the measured maximum detected value exceeded the minimum ecological screening level (ESL) were considered COPECs and evaluated further by calculating UCL95s and comparing the UCL95s to the SLs. The initial ESLs were the minimum no effect (NE) and low effect (LE) SLs in the 2019 LANL database for each of the analytes.

3.3.1. Inorganics

There are eight inorganic analytes that exceed site background, most of which also result in an HQ >0.3 when the maximum EPC is divided by the minimum ESL. Some also exceed the LE ESL. The detected analytes that had maximum concentrations that exceeded background were compared to the ESLs and the results are as follows (Table 3-1):

- Antimony –HQ for NE ESL>0.3
- Barium – exceeds NE and LE ESLs resulting in HQs>0.3
- Cobalt– HQ for NE ESL>0.3
- Copper – exceeds NE ESLs and LE ESLs resulting in HQs>0.3
- Lead – exceeds NE ESLs and LE ESLs resulting in HQs>0.3
- Nickel – exceeds NE and LE ESLs resulting in HQs>0.3
- Silver– exceeds NE and LE ESLs resulting in HQs>0.3
- Zinc– exceeds NE and LE ESLs resulting in HQs>0.3

For the inorganic analytes for which the maximum exceeded the BV and also exceeded one or more risk-based SLs (as indicated by a ratio or HQ of the maximum to the SL being greater than 0.3), a UCL95 was calculated with the USEPA ProUCL 5.1.002 software (EPA 2015). This UCL95 was then compared to the SLs (Table 3-2) consistent with the NMED (2017) Tier II approach. Note that comparison to the UCL95s was made prior to incorporating area use factors (AUFs) into the analysis. Receptor-specific dietary composition is built into the receptor-specific ESLs. The concentrations for each of the samples in the duplicate pair 3 and 3 dup (Figure 1-1) were averaged and the UCL95 calculated with a sample size of 12.

UCL95 values for barium, nickel, silver, and zinc exceeded the BV. UCL95 values for barium, nickel, silver, and zinc also exceeded the NE ESL, but only UCL95s for barium and silver exceeded the LE ESL as well. The UCL95 for lead (14.91 mg/kg) was below background (22.3 mg/kg) and below LE ESLs. The maximum value of these five constituents was detected in the sample collected at grid point 9 (Figure 1-1). This sample also had the maximum concentration of chromium and copper. The HI for the NE ESL was 60, and the HI for the LE ESL was 10.

The analysis suggests some extremely limited potential for adverse ecological effects at TA-16-388, and therefore the COPECs for which the UCL95s exceeded the LE ESLs were evaluated in more detail by looking further at spatial distribution and toxicity as follows:

- Barium and silver are the only inorganics for which the UCL95 exceeded the LE Eco SL.
- The silver ESL is based on potential toxicity to an American robin modeled as an insectivore.
    - Only two samples had silver concentrations above both the BV and the NE ESL for the robin, and only one sample had silver concentrations above the minimum LE ESL for the robin.
    - Silver is not elevated in bird eggs from TA-16 (LANL 2018a). Egg concentrations are discussed further in Section 3.4.5.
    - This suggests that due to the limited areal extent of elevated silver concentrations that silver does not present an ecological risk.
- The minimum barium Eco SLs are based on potential toxicity to plants, however:
    - The NE ESL of 110 mg/kg is well below site background of 295 mg/kg. No toxicity to plants was noted in the field visit (i.e., chlorosis, dead plants).
    - Vegetation is controlled by removal for fire danger around the site so plant receptors are not present within or near the fenced area much of the time.
    - Nearly all of the samples (12/12) exceeded the minimum barium NE Eco SL, whereas only 7/12 (1, 2, 6, 8, 9, 10, 12 on Figure 1-1) exceeded the minimum barium LE Eco SL of 260 mg/kg. These same seven samples also exceeded the BV of 295 mg/kg.
    - For only one sample (sample grid point 9 on Figure 1-1) was the LE Eco SL HQ greater than 10.
    - The barium UCL95 concentration for the TA-16 388 data is 2223 milligrams/kilogram (2223 mg/kg). Sources of toxicity information for plants suggest that it takes concentrations of barium in soils similar to this to cause toxicity (Chaudhry et al. 1977). Chaudhry et al. (1977) found that yield depressions occurred at 2,000 mg/kg and higher barium in soil. At only one sample location (grid point 9, concentration 4060 mg/kg) was the concentration greater than 2000 mg/kg. The next highest concentration was 1550 mg/kg.
    - The data were compared first to site background values, which for barium is 295 mg/kg. However, EPA (2005) indicates barium background concentrations in the Western US range from about 350 mg/kg to about 1100 mg/kg. Only two samples had concentrations

higher than 1100 mg/kg. Thus, half the samples exceed site-specific background, and only 17% exceed the upper bound of background for the Western US. All samples above Western U.S. background fall within the fenced area (grid point samples 9 and 10).

- All samples with concentrations above 1000 mg/kg (samples 6, 8, 9, and 10) are within the fenced area where vegetation is controlled for fire suppression. The remaining three samples with concentrations above site background were not even two times higher than background.
- This analysis suggests that there may be limited toxicity to plant populations at the site due to barium concentrations in surface soils; however, it appears unlikely and very localized to areas where plants as a receptor are removed for fire suppression.

3.3.2. Dioxin and Furans

Dioxin and furans were detected in multiple samples in the Fall 2018 data set. One sample (grid point 3; Figure 1-1) had concentrations an order of magnitude higher than the other samples. The TEFs for birds and mammals were applied to calculate a TEQ for each sample (Table 3-3). Several samples had TEQs that exceeded the NE Eco SL for TCDD for mammals (Table 3-4) or birds (Table 3-5) when evaluated on a sample by sample basis. Note that dioxins and furans were not detected above the sample quantitation limits in small mammal tissue samples (Fresquez et al. 2013), discussed further in Section 3.4.4.

A UCL95 based on the sample-specific data for each congener was calculated with ProUCL (EPA 2015) using both the detected and nondetected data to obtain the EPC, and then TEQs were calculated for mammals and birds from the congener-specific UCL95s and TEFs (Table 3-6). If the UCL95 recommended by ProUCL exceeded the maximum detected value, the next recommended UCL that did not exceed the maximum TEQ was selected as the EPC. When the TEQ calculated from the UCL95s was divided by the NE Eco SL for mammals or birds for TCDD, the resulting HQ exceeded 1, as shown below.

Receptor Category	TEQ	NE Eco SL	NE HQ	LE Eco SL	LE HQ
Mammal	2.54E-05	5.80E-07	44	3.80E-06	7
Bird	1.59E-05	4.10E-06	4	4.10E-05	0.4

A box-plot of the TEQs indicates that the two highest TEQs (Table 3-4), which are for the duplicate pair collected at grid point 3, are statistical outliers (Figure 3-3). These two highest samples are the only ones for which the mammalian LE Eco SL is also exceeded.

3.3.3. Other Organics

For this risk assessment, the highest concentration found, regardless of the method used, or whether the sample was a primary sample or a duplicate, was used as the basis of the EPC in the initial screening-level assessment. This is considered conservative for the evaluation of potential risks.

Organic analytes are not compared to any background values, although there are naturally occurring sources of organic constituents. Organics are compared to risk-based ecological SLs. Where an SL was not available, a suitable surrogate is proposed. Surrogates were obtained for the following analytes:

- TATB - Eco SLs for 1,3,5-trinitrobenzene were used as a surrogate because of structural similarity.
- Xylenes – the toxicity values for total xylenes were used to represent each of the fractions.

Only TATB had an HQ greater than 0.3 for comparison of the maximum value to the minimum NE ESL. Although there were no individual samples that exceeded the NE ESL, the highest HQ was 0.7. The HQ for comparison to the LE ESL did not exceed 0.3. The UCL95 for TATB did not exceed the NE ESL or the LE ESL (Table 3-2). TATB was detected at grid points 6, 7, 8, and 9, all within the fenceline, and at 12.

The results of the screening evaluation for ecological receptors indicated that no detected VOCs, or SVOCs exceeded any of the ESLs (Table 3-1).

3.4. Uncertainty Analysis

3.4.1. Chemical Form

Inorganic analytes can speciate into different forms with varying degrees of toxicity. The assumptions used in the ESL derivations are conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. These factors tend to result in conservative ESL estimates, which may lead to an overestimation of the potential risk. Toxicological data are typically based on the most toxic and bioavailable chemical species, which may or may not be typically found in the environment. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2012a), and the values are biased toward overestimating the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation.

3.4.2. Exposure and Risk Estimates

Exposure parameters including the EPC and the intakes are likely to bias risk estimates high since they presume no movement by receptors in and out of source areas. Sampling focused on areas of known or expected contamination which biases the EPC high. Receptors are assumed to spend 100% of their time in the contaminated area, resulting in conservative estimates of exposure. In addition, COPECs may not be 100% bioavailable to receptors in the natural environment because of interference from other natural processes, such as the adsorption of chemical constituents to matrix surfaces (e.g., soil) or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes.

Another source of uncertainty is inherent in the calculation of exposure and risk estimates. Although the toxicity values are expressed to more than one significant figure, it is unlikely that the toxicity data are this accurate, especially given that the data are extrapolated from laboratory animal studies to wildlife receptors that are mobile in the environment. Likewise, given all the variables inherent in assessing exposure, exposure intakes by ecological receptors also should not be considered more accurate than one significant figure. This means that an HQ identified as 0.8 or 1.2 is actually 1, and an HQ identified as 1.5 is actually 2.

Calculating risk for dioxins is a multi-step process that involves multiplying the measured concentration by a toxicity factor (TEF) to obtain a value called the TECi that when summed adjusts the measured congener concentrations to that relative to TCDD, where the sum of all TECi is called the TEQ. Nondetected congeners were not included in the TEQ calculation, which biases the TEQ high, and biases dioxin risk estimates high for any given sample. When calculating the UCL95 as the EPC, the TEQs can be used directly but this provides a UCL95 EPC based only on detected data. ProUCL (EPA 2015) accommodates both detected and nondetected results, reducing bias and uncertainty by not ignoring the influence of nondetects on the EPC. Therefore, UCL95s were calculated for each congener, then adjusted with the TEFs, and then TECi for each congener summed to obtain the TEQ as opposed to averaging the TEQs directly. This procedure of calculating UCL95s for each congener increased the TEQ and HQs slightly for mammals, and reduced the TEQ and HQ for birds, but was considered to be slightly more accurate.

3.4.3. Mixture Toxicity

The assumption of additive effects for multiple COPECs may result in an over- or under-estimation of the potential risk to receptors. Exposure to multiple contaminants may result in other than additive effects.

3.4.4. Small-Mammal Field Investigations

Small mammal trapping and analysis of whole organisms were conducted in the area around unit TA-16-388 in 2011 and 2012. This information was considered useful for the current analysis as an additional line of evidence. Field mice and voles were collected around the open-burn site and analyzed for dioxins and furans as well as metals in 2011, and for polychlorinated biphenyls (PCBs), high explosives, and perchlorate in 2012. Small-mammal community and population parameters were also measured across the site in 2012 (Fresquez et al. 2013).

Of the analytes that exceeded SLs, historically only barium and nickel were detected in whole body samples above the regional statistical reference levels (RSRLs), which are the upper bounds of concentrations (mean plus three standard deviations) calculated from field mice collected at regional locations away from the influence of the Laboratory (over 9 miles away) (Fresquez 2009 and 2011a). The nickel concentrations were slightly above the RSRLs, while barium concentrations were 3 to 4 times the RSRL, in small mammals from TA-16-388. No high explosives were detected in any of the animals collected, and perchlorate concentrations were 1 or 2 orders of magnitude below the RSRL.

Dioxin and furan congeners were not detected above the sample quantitation limit in any of the whole-body samples analyzed. Eight congeners were detected in one deer mouse sample; one congener was detected in one long-tailed vole sample, and no congeners were detected in the other four small mammals (three voles and one deer mouse) (Fresquez et al. 2013). Concentrations in whole body samples were well below those concentrations detected in the soil, and biological samples had fewer congeners detected than in 40% of the soil samples. The dioxin and furan data are similar to other dioxin/furan field-mouse uptake studies nationally (Krouskop et al. 1991).

The data indicate dioxins and furans at the concentrations found in soil under natural field conditions are not significantly assimilated, either by ingestion and/or by surface contact, by field mice/voles possibly because of the adsorption of the chemical to soil surfaces or because of oxidation/reduction changes. In addition, the samples analyzed included the pelt and carcass so it is not clear whether the congeners detected represent uptake or adherence of soil particles to the pelt. Also, no adverse effect of burning ground operations was found on local small mammal populations based on species richness, capture rate, species diversity, sex ratios, and adult body weights (Fresquez et al. 2013).

The presence of dioxins and furans in soil does not determine exposure and risk to receptors even though HQs are above 1. Dioxins and furans are relatively unavailable for uptake by plants and animals because these compounds are tightly bound to soil particles, are immobile, and insoluble (Umbreit et al. 1986).

EPA reported that the relative bioavailability of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofuran congeners in soil is less than 100% as compared with a lipid or organic solvent vehicle as the reference material (EPA 2010a). Abiotic constituents, compound aging, and other associated soil factors may influence soil bioavailability (e.g., bioavailability appears to decrease with aging based on comparisons of laboratory spiked soil and soil contaminated in situ [Umbreit et al. 1986]). This relationship is supported by the lack of uptake and impacts to biota around the Laboratory and at the TA-16 Burn Ground where dioxin and furan congeners have been detected.

The difference between the toxicity predicted by the ESLs and the lack of adverse effects may be related to the low bioavailability of dioxins and furans in soil, or it may suggest that the ESLs are overly conservative. Because small mammal populations do not appear impacted, and because the LE Eco SL is only exceeded by soil samples identified as statistical outliers, risks to ecological receptors due to exposure to dioxins/furans are likely to be minimal.

3.4.5. Avian Studies

Avian surveys were conducted at the TA-16 Burn Ground from 2010 to 2017. Data from May to July 2014 indicated that avian abundance and diversity was greater at TA-16 than at control sites (Hathcock 2014). Data from 2017 indicated that operations were not negatively affecting local bird populations. Species richness and diversity were not different than controls (Hathcock et al. 2018). At TA-16, 17 nests were found of which 13 successfully fledged young, and some nest boxes had double clutches (Hathcock et al. 2018). There was an occupancy rate of 100% with a 76% success rate.

In 2017, nonviable avian eggs and tissue samples from nestlings that died before fledging were opportunistically collected at Los Alamos National Laboratory near open detonation sites near the TA-16 burning grounds and were evaluated for metals and other inorganics (LANL 2018a). Western bluebird (*Sialia mexicana*) and ash-throated flycatcher (*Myiarchus cinerascens*) egg samples were collected. Dioxin/furan congeners were detected in one nestling from TA-16 (Hathcock et al. 2018; Gaukler and Stanek 2020).

Most inorganics were not detected (LANL 2018a). Analyte concentrations in eggs were compared with the upper-level bounds of background concentrations (mean + three standard deviations = 99% confidence interval) known as the RSRL. The COPECs identified in this risk assessment for which the UCL95s for soils exceeded BVs and the NE ESLs were all below the RSRL in eggs with the exception of barium (Gaukler and Stanek 2020), suggesting inorganics will not adversely affect breeding bird populations:

- Barium – maximum and UCL95 in soil exceed NE and LE ESLs; egg>RSRL
- Nickel – maximum in soil exceeds NE and LE ESLs; not detected in eggs
- Silver– maximum and UCL95 in soil exceed NE and LE ESLs; egg<RSRL
- Zinc– maximum in soil exceeds NE and LE ESLs; egg<RSRL

The maximum and UCL95 in soil exceeds NE ESL for birds for dioxin/furans. In addition, nestling tissue exceeds the RSRL for background concentrations in tissue. However, the TEQ was less than the LOAEL for toxicity (Gaukler and Stanek 2020). This suggests that dioxin/furans will not have adverse effects on avian reproduction.

3.4.6. COPECs without ESLs

Several chemicals do not have ESLs for any receptor in release 4.1 of the ECORISK Database (LANL 2017). In the absence of a chemical-specific ESL, concentrations can be compared with the ESLs for a surrogate chemical. Comparison to surrogate ESLs provides an estimate of potential effects of a chemically related compound and a line of evidence to indicate the likelihood that ecological receptors are potentially impacted. Some chemicals without ESLs do not have chemical-specific toxicity data or surrogate chemicals to be used in the screening assessments and cannot be assessed quantitatively for potential ecological risk.

These chemicals are often infrequently detected across the site. In these cases, comparisons with human health SSLs are presented as part of a qualitative assessment. The comparison of concentrations to human health SSLs is a viable alternative for several reasons. Animal studies are used to infer effects on humans and are the basic premise of modern toxicology (EPA 1989). In addition, toxicity values derived for the calculation of human health SSLs are often based on potential effects that are more sensitive than the ones used to derive ESLs (e.g., cellular effects for humans versus survival or reproductive effects for terrestrial animals). EPA also applies uncertainty factors or modifying factors to ensure the toxicity values are protective (i.e., they are adjusted by uncertainty factors to values much lower than the study results). Concentrations compared with these values are frequently an order of magnitude or more below the SSLs, which corresponds to uncertainty factors of 10 or more. Therefore, it is assumed the differences in toxicity would not be more than an order of magnitude for any given chemical. The relative difference between values provides a weight of evidence that the potential toxicity of the chemical is likely to be low or very low to the receptor(s). Since there were no predicted adverse effects on human health, chemicals lacking ESLs are unlikely to pose an ecological risk.

There is no avian ESL for TCDD in the current (2019) LANL EcoRisk database. A value from the 2002 EcoRisk database (LANL 2003) was used as the NE ESL. The lowest ESL value is 4.1×10^{-6} mg/kg based on the robin feeding as an insectivore, which has previously been utilized in LANL risk assessments. A reported LOAEL-based ESL is 4.1×10^{-5} mg/kg. These values were used in the current risk assessment in the absence of more recent data.

3.4.7. Area Use Factors (AUFs) and Population Area Use Factors (PAUFs)

The TA-16-388 Flash Pad is a small unit. The areal extent of TA-16-388 Flash Pad is 0.2 acres within the fenceline, and only 1.18 acres (ac) or 0.478 hectares (ha) for the entire sampled area. This is about the size of the home range of an individual robin or a deer mouse (LANL 2018b). The home range (HR) is used to calculate AUFs that are used in the EcoPRG equations (LANL 2018b). Individual AUFs and population area use factors (PAUFs) may be used to modify the estimate of risk to wildlife receptors to allow estimates to be more site-specific. The application of AUFs or PAUFs reduces potential overestimation of risks for those receptors with HRs larger than the area of contamination being evaluated. The estimated ecological risk as indicated by the HQ or HI is multiplied AUF or PAUF. HQs for plants or invertebrates are not adjusted by area use.

Table 3-6 presents the area use hazard analysis. The NE ESLs for each receptor for each COPC that failed the screening evaluation are shown. The site specific AUF and PAUFs are shown for an area equivalent to the fenced area of TA-16-388 and the additional sampled area outside the fenceline. The UCL95 EPC (Appendix A) is divided by the ESL and multiplied by the PAUF to obtain revised HQs. The habitat is not suitable for Mexican Spotted Owls or other special status species, and so an AUF evaluation was not conducted.

HQs were greater than 1 for plants and invertebrates, which are taxa for which the PAUF does not affect the HQ or HI since they are not mobile in the ecosystem. Table 3-7 presents the area use hazard analysis based on LE ESLs. The HQ for plants is greater than 1.

It is appropriate to use the PAUFs for mobile receptors in order to spatially average overall exposure and obtain a more realistic estimate of potential ecological risk. Barium exceeds background as well as the LE ESL at samples 6, 8, 9, 10 (all within the fenced area) by more than a factor of 2 (Figure 1-1). Barium exceeds background at sample 12 by a factor of 2, and also exceeds the LE ESL there as well. The remainder of the samples had no elevated barium, indicating limited site-related barium contamination outside of the fenced area. The NE ESL was exceeded by other metals only at samples 9 and 10, and the LE ESL was exceeded by other metals only at sample 9 (Figure 1-1). Dioxin/furans did not follow the general pattern of metal contamination and were elevated only in sample 3.

3.5. Conclusions

For the Fall 2018 sampling data, barium, nickel, silver, and zinc were the only inorganics for which the UCL95 exceeded both the BV and the NE Eco SL. Barium and silver are the only inorganics for which the UCL95 exceeded the LE Eco SL.

Only one sample exceeded the silver LE Eco SL, suggesting that any contamination is spatially limited and unlikely to have any individual or population-level effects on ecological receptors. The minimum silver ESL is based on the exposure parameters for the American robin.

All of the samples exceeded the minimum barium NE Eco SL, whereas seven exceeded the minimum barium LE Eco SL (1, 2, 6, 8, 9, 10, 12 on Figure 1-1) of 260 mg/kg. These same seven samples also exceeded the BV of 295 mg/kg. For only one sample (sample grid point 9) was the HQ based on the LE ESL greater than 10. Note that all locations with barium concentrations above 1000 mg/kg were within the fenceline (samples 6, 8, 9, and 10). The remaining three samples were not even two times higher than background. The minimum barium Eco SLs are based on toxicity to plants, and the NE ESL is well below background.

Further evaluating the data by using the UCL95s and performing a receptor-specific hazard analysis with population area use factors indicates that plants are the only receptor likely to be affected by inorganics at TA 16-388. The barium concentrations in the sample from grid point 9 (4060 mg/kg) are producing the majority of the excess potential risk, although other samples also exceed the LE ESL for plants. No effects on plants were noted in a site visit, and vegetation is removed and controlled for prevention of fire danger, thereby eliminating plants as a receptor within the fenceline.

Dioxin/furans exceed Eco SLs in few samples, suggesting that there is elevated exposure but that this elevated exposure above the LE ESL is spatially limited to one sample for mammals. Exposure above the NE ESL is limited to the same sample for birds. The sample is the duplicate pair collected at grid point 3, which is a statistical outlier. The LE ESL HQ is 10 for mammals and 0.8 for birds for this sample location. The historical small mammal tissue study indicated little uptake of dioxins/furans by small mammals at TA 16, and no effects on population biometrics.

Because of the limited number of COPCs and the low magnitude of estimated HQs, and because risk above the LE ESL for mammals and the NE ESL for birds is limited to one sample location for dioxin/furans, it is recommended that a baseline risk assessment not be prepared. Small mammal and avian population studies have been performed and evaluated for this report and the data indicate that there are no obvious adverse effects. The ESLs are conservative, and both maximum and UCL95 EPCs were used in comparison to ESLs, and further analysis of the data would not reduce uncertainty or modify predicted ecological risk to any significant extent.

4. REFERENCES

Chaudhry, F., Wallace, A., and R.T. Mueller. 1977. Communications in Soil Science and Plant Analysis. Vol 8:795-797. (Chaudhry et al. 1977).

EPA (U.S. Environmental Protection Agency), December 1989. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final," EPA/540/1-89/002, Office of Emergency and Remedial Response, Washington, D.C. (EPA 1989)

EPA (U.S. Environmental Protection Agency), 1993. "Wildlife Exposure Factors Handbook," U.S. Environmental Protection Agency document EPA/600/P93/187A, Office of Research and Development, Washington, D.C. (EPA 1993)

EPA (U.S. Environmental Protection Agency), June 5, 1997. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final," U.S. Environmental Protection Agency, Environmental Response Team, Edison NJ. (EPA 1997)

EPA (U.S. Environmental Protection Agency), November 2003. "Guidance for Developing Ecological Soil Screening Levels, Evaluation of Dermal Contact and Inhalation Exposure Pathways for the Purpose of Setting Eco-SSLs, Attachment 1-3, U.S. Environmental Protection Agency document OSWER Directive 92857-55, Office of Solid Waste and Emergency Response. (EPA 2003)

EPA (U.S. Environmental Protection Agency), February 2005. "Ecological Soil Screening Levels for Barium". Interim Final OSWER Directive 9285.7- 63. U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response. (EPA 2005)

EPA (U.S. Environmental Protection Agency), December 2010a. "Final Report Bioavailability of Dioxins and Dioxin-Like Compounds in Soil," Office of Superfund Remediation and Technology Innovation, Environmental Response Team, West Las Vegas, Nevada (http://epa.gov/superfund/health/contaminants/dioxin/pdfs/Final_dioxin_RBA_Report_12_20_10.p df). (EPA 2010a)

EPA (U.S. Environmental Protection Agency), December 2010b. "Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8=Tetrachloro-p-dioxin and Dioxin-Like Compounds." EPA/100/R 10/005. (EPA 2010b)

EPA (U.S. Environmental Protection Agency), October 2015. "ProUCL Version 5.1.002 User Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations." EPA/600/R-07/041. ORD Site Characterization and Monitoring Technical Support Center. (EPA 2015)

EPA (U.S. Environmental Protection Agency), 2018. Regional Screening Levels (RSLs) - Generic Tables. November 19, 2018. https://www.epa.gov/risk/regional-screening-levels-rsls

Fresquez, P.R., 2009. "The Concentration of Radionuclides, Heavy Metals, and Polychlorinated Biphenyls in Field Mice collected from Regional Background Areas" Los Alamos National Laboratory document LA-UR-09-07580, Los Alamos, New Mexico. (Fresquez 2009)

Fresquez, P.R., 2011a. "The Concentration of Radionuclides, Heavy Metals, and Polychlorinated Biphenyls in Field Mice collected from Regional Background Areas: Revision 1" Los Alamos National Laboratory document LA-UR-11-11687, Los Alamos, New Mexico. (Fresquez 2011a)

Fresquez, P.R., 2013. “Chemical Concentrations in Field Mice/Voles Collected from an Open-Burn Site at Technical Area 16 at Los Alamos National Laboratory,” Los Alamos National Laboratory document LA-UR-11-10614, Los Alamos, New Mexico. (Fresquez 2013)

Fresquez, P.R., L. Hansen, and C. Hathcock, 2013. “Chemical Concentrations in Field Mice/Voles Collected from an Open-Burn Site at Technical Area 16 at Los Alamos National Laboratory, Revision 1,” Los Alamos National Laboratory document LA-UR-13-200040, Los Alamos, New Mexico. (Fresquez et al. 2013)

Gaukler S.M. and J.E. Stanek, 2020. 2019 Results for Avian Monitoring of Inorganic and Organic Element Concentrations in Passerine Eggs and a Nestling Collected from Technical Area 16 Burn Grounds, Technical Area 36 Minie, and Technical Area 39 Point 6 at Los Alamos National Laboratory. LA-UR-20-22529 (Gaukler and Stanek 2020).

Hathcock, C.D. 2014. Avian Monitoring at the TA-36 Minie Site, TA-39 Point 6, and TA-16 Burn Ground at Los Alamos National Laboratory. Los Alamos National Laboratory document LA-UR-14-28161, Los Alamos, New Mexico. (Hathcock 2014).

Hathcock, C.D., A.W. Bartlow, and B.E. Thompson. 2018. 2017 Results for Avian Monitoring at the TA-36 Minie Site, TA-39 Point 6, and TA-16 Burn Ground at Los Alamos National Laboratory. Los Alamos National Laboratory document LA-UR-18-22897, Los Alamos, New Mexico. (Hathcock 2018).

Krouskop, K.J., K.C. Ayers, and J.L. Proctor. 1991. “Multimedia Sampling for Dioxin at a Strip Mine Reclaimed with Sludge from Bleached Kraft Wastewater Treatment,” Tappi Journal, 74(4):235–240. (Krouskop et al. 1991)

LANL (Los Alamos National Laboratory), September 1998. “Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory,” Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998)

LANL (Los Alamos National Laboratory), November 2003. “ECORISK Database (Version 2.0),” on CD, Los Alamos, New Mexico. (LANL 2003)

LANL (Los Alamos National Laboratory), November 2012a. “Screening-Level Ecological Risk Assessment Methods, Revision 3,” Los Alamos National Laboratory document LA-UR-12-24152, Los Alamos, New Mexico. (LANL 2012a)

LANL (Los Alamos National Laboratory), October 2012b. “ECORISK Database (Release 3.1),” LA-UR-12- 24548, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012b)

LANL (Los Alamos National Laboratory), September 30, 2017. ECORISK Database (Release 4.1), LA-UR-17-26376, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2017)

LANL (Los Alamos National Laboratory), June 2018a. Inorganic Element Concentrations in Passerine Eggs Collected at Technical Areas 36, 39, and 16 at Los Alamos National Laboratory. LA-UR-19-25647. (LANL 2018a)

LANL (Los Alamos National Laboratory), February 2018b. “Development of Ecological Preliminary Remediation Goals for Los Alamos National Laboratory, Revision 1.1”. Los Alamos National Laboratory, Los Alamos, New Mexico. February 13, 2018. LA-UR-18-20670. EP2018-0017 (LANL 2018b)

NMED (New Mexico Environment Department). 2017. Risk Assessment Guidance for Site Investigations and Remediation. Volume II. Soil Screening Guidance for Ecological Risk Assessments. (NMED 2017)

NMED (New Mexico Environment Department). February 2019. Risk Assessment Guidance for Site Investigations and Remediation. Volume I. Soil Screening Guidance for Human Health Risk Assessments. February 2019. Rev. 1 (3/7/19) (NMED 2019)

Nyhan, J.W., C. W. Hacker, 7. E. Calhoun, and D. L. Young, June 1978. "Soil Survey of Los Alamos County, New Mexico," Los Alamos Scientific Laboratory Report LA-6779-MS, Los Alamos, New Mexico. ER ID 05702 (Nyhan et al. 1978)

Sample, B.E., Suter III, G.W., Efroymson, R.A., and Jones, D.A., May 1998. "A Guide to the ORNL Ecotoxicological Screening Benchmarks: Background, Development, and Application," Oak Ridge National Laboratory, Environmental Sciences Division, Publication No. 4783, ORNL/TM13615, Oak Ridge, TN. May 1998 (Sample et al. 1998)

Umbreit, T.H., Hesse, E.J., and Gallo, M.A., 1986. "Bioavailability Of Dioxin In Soil From A 2,4,5-T Manufacturing Site," Science 232:497–499. (Umbreit et al. 1986)

Van den Berg et.al, 2006. The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency factors for Dioxin and Dioxin-like Compounds. ToxiSci Advance Access, July 7, 2006. (Van den Berg et al. 2006)

WHO (World Health Organization). September 2009. "Project For The Re-Evaluation Of Human And Mammalian Toxic Equivalency Factors (TEFS) Of Dioxins And Dioxin-Like Compounds". International Programme on Chemical Safety. http://www.who.int/ipcs/assessment/tef_update/en/ (WHO 2009)

Tables

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
INORGANICS									
Aluminum	Al	13	5.46E+03	1.29E+04	9.06E+03	2.55E+03	6.59E+00	8.76E+00	13
Antimony	Sb	13	3.20E-01	6.61E+00	8.25E-01	1.74E+00	3.20E-01	4.25E-01	1
Arsenic	As	13	1.58E+00	5.25E+00	2.56E+00	1.14E+00	3.21E-01	4.20E-01	13
Barium	Ba	13	1.43E+02	4.06E+03	7.80E+02	1.08E+03	9.69E-02	1.03E+00	13
Beryllium	Be	13	4.07E-01	1.17E+00	7.38E-01	2.15E-01	1.90E-02	2.49E-02	13
Cadmium	Cd	13	9.69E-02	1.29E-01	1.05E-01	8.57E-03	9.69E-02	1.29E-01	1
Chromium	Cr	13	5.08E+00	1.23E+01	8.50E+00	2.23E+00	1.45E-01	1.93E-01	13
Cobalt	Co	13	2.99E+00	1.31E+01	5.90E+00	2.48E+00	1.45E-01	1.55E+00	13
Copper	Cu	13	5.22E+00	2.44E+01	8.82E+00	5.17E+00	2.91E-01	3.86E-01	13
Iron	Fe	13	9.12E+03	1.75E+04	1.19E+04	2.49E+03	7.75E+00	1.03E+01	13
Lead	Pb	13	9.22E+00	2.67E+01	1.23E+01	4.48E+00	3.20E-01	4.25E-01	13
Manganese	Mn	13	2.06E+02	3.10E+02	2.62E+02	3.15E+01	1.94E-01	2.58E-01	13
Mercury	Hg	13	5.97E-03	3.15E-02	1.33E-02	8.00E-03	3.64E-03	4.67E-03	13
Nickel	Ni	13	3.78E+00	5.53E+01	1.12E+01	1.36E+01	9.51E-02	1.24E-01	13
Perchlorate	ClO4	13	5.05E-04	6.37E-04	5.40E-04	4.67E-05	5.05E-04	6.37E-04	2
Selenium	Se	13	5.14E-01	1.09E+00	7.37E-01	1.75E-01	3.42E-01	4.47E-01	13
Silver	Ag	13	1.01E-01	8.57E+01	7.40E+00	2.36E+01	9.69E-02	1.29E-01	12
Thallium	Tl	13	1.48E-01	4.06E-01	2.34E-01	8.33E-02	1.33E-01	1.74E-01	13
Vanadium	V	13	1.37E+01	2.70E+01	2.04E+01	4.44E+00	9.69E-02	1.29E-01	13
Zinc	Zn	13	1.91E+01	3.34E+02	5.77E+01	8.42E+01	3.88E-01	5.15E-01	13
ORGANICS									
2,4-Diamino-6-nitrotoluene	6629-29-4	13	4.93E-01	5.00E-01	4.95E-01	2.64E-03	4.93E-01	5.00E-01	0

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
2,6-Diamino-4-nitrotoluene	59229-75-3	13	6.50E-01	6.60E-01	6.53E-01	3.73E-03	6.50E-01	6.60E-01	0
3,5-Dinitroaniline	618-87-1	13	2.96E-01	3.00E-01	2.97E-01	1.55E-03	2.96E-01	3.00E-01	0
Acenaphthene	83-32-9	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Acenaphthylene	208-96-8	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Acetone	67-64-1	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Amino-2,6-dinitrotoluene [4-]	19406-51-0	13	1.48E-01	6.55E-01	1.87E-01	1.41E-01	1.48E-01	1.50E-01	1
Amino-4,6-dinitrotoluene [2-]	35572-78-2	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0
Aniline	62-53-3	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Anthracene	120-12-7	13	1.02E-02	5.19E-02	2.10E-02	1.77E-02	1.02E-02	5.19E-02	1
Azobenzene	103-33-3	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Benzene	71-43-2	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Benzo(a)anthracene	56-55-3	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Benzo(a)pyrene	50-32-8	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Benzo(b)fluoranthene	205-99-2	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Benzo(g,h,i)perylene	191-24-2	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Benzo(k)fluoranthene	207-08-9	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Benzoic Acid	65-85-0	13	1.71E-01	8.66E-01	3.35E-01	2.99E-01	1.71E-01	8.66E-01	0
Benzyl Alcohol	100-51-6	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Bis(2-chloroethoxy)methane	111-91-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Bis(2-chloroethyl)ether	111-44-4	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Bis(2-ethylhexyl)phthalate	117-81-7	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Bromobenzene	108-86-1	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Bromochloromethane	74-97-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Bromodichloromethane	75-27-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Bromoform	75-25-2	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Bromomethane	74-83-9	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Bromophenyl-phenylether [4-]	101-55-3	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Butanone [2-]	78-93-3	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Butylbenzene [n-]	104-51-8	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Butylbenzene [sec-]	135-98-8	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Butylbenzene [tert-]	98-06-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Butylbenzylphthalate	85-68-7	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Carbon Disulfide	75-15-0	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Carbon Tetrachloride	56-23-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chloro-3-methylphenol [4-]	59-50-7	13	1.36E-01	6.93E-01	2.68E-01	2.39E-01	1.36E-01	6.93E-01	0
Chloroaniline [4-]	106-47-8	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Chlorobenzene	108-90-7	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chlorodibromomethane	124-48-1	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chloroethane	75-00-3	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chloroform	67-66-3	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chloromethane	74-87-3	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chloronaphthalene [2-]	91-58-7	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Chlorophenol [2-]	95-57-8	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Chlorophenyl-phenyl [4-] Ether	7005-72-3	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Chlorotoluene [2-]	95-49-8	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chlorotoluene [4-]	106-43-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Chrysene	218-01-9	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Dibenz(a,h)anthracene	53-70-3	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Dibenzofuran	132-64-9	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Dibromo-3-Chloropropane [1,2-]	96-12-8	14	4.94E-04	6.32E-04	5.21E-04	3.30E-05	4.94E-04	6.32E-04	0

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Dibromoethane [1,2-]	106-93-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dibromomethane	74-95-3	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichlorobenzene [1,2-]	95-50-1	27	3.29E-04	5.19E-01	9.70E-02	1.59E-01	3.29E-04	5.19E-01	0
Dichlorobenzene [1,3-]	541-73-1	27	3.29E-04	5.19E-01	9.70E-02	1.59E-01	3.29E-04	5.19E-01	0
Dichlorobenzene [1,4-]	106-46-7	27	3.29E-04	5.19E-01	9.70E-02	1.59E-01	3.29E-04	5.19E-01	0
Dichlorobenzidine [3,3'-]	91-94-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Dichlorodifluoromethane	75-71-8	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloroethane [1,1-]	75-34-3	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloroethane [1,2-]	107-06-2	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloroethene [1,1-]	75-35-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloroethene [cis-1,2-]	156-59-2	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloroethene [trans-1,2-]	156-60-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichlorophenol [2,4-]	120-83-2	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Dichloropropane [1,2-]	78-87-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloropropane [1,3-]	142-28-9	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloropropane [2,2-]	594-20-7	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloropropene [1,1-]	563-58-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloropropene [cis-1,3-]	10061-01-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Dichloropropene [trans-1,3-]	10061-02-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Diethylphthalate	84-66-2	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Dimethyl Phthalate	131-11-3	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Dimethylphenol [2,4-]	105-67-9	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Di-n-butylphthalate	84-74-2	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Dinitro-2-methylphenol [4,6-]	534-52-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Dinitrobenzene [1,3-]	99-65-0	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Dinitrophenol [2,4-]	51-28-5	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Dinitrotoluene [2,4-]	121-14-2	26	1.02E-01	5.19E-01	1.75E-01	1.27E-01	1.02E-01	5.19E-01	0
Dinitrotoluene [2,6-]	606-20-2	26	1.02E-01	5.19E-01	1.75E-01	1.27E-01	1.02E-01	5.19E-01	0
Di-n-octylphthalate	117-84-0	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Diphenylamine	122-39-4	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Ethylbenzene	100-41-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Fluoranthene	206-44-0	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Fluorene	86-73-7	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Heptachlorodibenzodioxin [1,2,3,4,6,7,8-]	35822-46-9	13	5.15E-07	1.05E-03	1.59E-04	3.71E-04	1.66E-06	1.68E-06	12
Heptachlorodibenzodioxins (Total)	37871-00-4	13	0.00E+00	1.80E-03	2.79E-04	6.35E-04			11
Heptachlorodibenzofuran [1,2,3,4,6,7,8-]	67562-39-4	13	4.99E-07	3.50E-04	5.39E-05	1.24E-04	1.66E-06	1.68E-06	9
Heptachlorodibenzofuran [1,2,3,4,7,8,9-]	55673-89-7	13	4.99E-07	1.61E-05	2.83E-06	5.51E-06	1.66E-06	1.68E-06	4
Heptachlorodibenzofurans (Total)	38998-75-3	13	0.00E+00	7.45E-04	1.13E-04	2.65E-04			9
Hexachlorobenzene	118-74-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Hexachlorobutadiene	87-68-3	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Hexachlorocyclopentadiene	77-47-4	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Hexachlorodibenzodioxin [1,2,3,4,7,8-]	39227-28-6	13	4.98E-07	1.90E-05	3.27E-06	6.64E-06	1.73E-06	1.75E-06	3
Hexachlorodibenzodioxin [1,2,3,6,7,8-]	57653-85-7	13	4.98E-07	3.93E-05	6.27E-06	1.37E-05	1.66E-06	1.68E-06	4
Hexachlorodibenzodioxin [1,2,3,7,8,9-]	19408-74-3	13	4.98E-07	4.96E-05	7.92E-06	1.76E-05	1.95E-06	1.97E-06	4
Hexachlorodibenzodioxins (Total)	34465-46-8	13	0.00E+00	3.56E-04	5.57E-05	1.26E-04			8
Hexachlorodibenzofuran [1,2,3,4,7,8-]	70648-26-9	13	4.98E-07	1.08E-05	2.04E-06	3.68E-06	1.66E-06	1.68E-06	4
Hexachlorodibenzofuran [1,2,3,6,7,8-]	57117-44-9	13	4.98E-07	1.47E-05	2.62E-06	5.04E-06	1.66E-06	1.68E-06	4
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	13	4.97E-07	1.30E-06	6.12E-07	2.76E-07	1.71E-06	1.74E-06	2
Hexachlorodibenzofuran [2,3,4,6,7,8-]	60851-34-5	13	4.98E-07	1.95E-05	3.35E-06	6.78E-06	1.66E-06	1.68E-06	4
Hexachlorodibenzofurans (Total)	55684-94-1	13	0.00E+00	3.79E-04	5.82E-05	1.36E-04			7

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Hexachloroethane	67-72-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Hexanone [2-]	591-78-6	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
HMX	2691-41-0	13	1.48E-01	1.84E+00	3.63E-01	4.80E-01	1.48E-01	1.50E-01	5
Indeno(1,2,3-cd)pyrene	193-39-5	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Iodomethane	74-88-4	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Isophorone	78-59-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Isopropylbenzene	98-82-8	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Isopropyltoluene [4-]	99-87-6	14	3.29E-04	6.68E-04	3.71E-04	8.83E-05	3.29E-04	4.21E-04	1
Methyl-2-pentanone [4-]	108-10-1	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Methylene Chloride	75-09-2	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Methylnaphthalene [2-]	91-57-6	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Methylphenol [2-]	95-48-7	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Methylphenol [3-,4-]	65794-96-9	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Naphthalene	91-20-3	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Nitroaniline [2-]	88-74-4	13	1.13E-01	5.71E-01	2.21E-01	1.97E-01	1.13E-01	5.71E-01	0
Nitroaniline [3-]	99-09-2	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Nitroaniline [4-]	100-01-6	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Nitrobenzene	98-95-3	26	1.02E-01	5.19E-01	1.75E-01	1.27E-01	1.02E-01	5.19E-01	0
Nitrophenol [2-]	88-75-5	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Nitrophenol [4-]	100-02-7	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Nitrosodimethylamine [N-]	62-75-9	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Nitroso-di-n-propylamine [N-]	621-64-7	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Nitrotoluene [2-]	88-72-2	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0
Nitrotoluene [3-]	99-08-1	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0
Nitrotoluene [4-]	99-99-0	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Octachlorodibenzodioxin [1,2,3,4,6,7,8,9-]	3268-87-9	13	2.78E-06	5.53E-03	8.47E-04	1.97E-03	3.32E-06	3.36E-06	13
Octachlorodibenzofuran [1,2,3,4,6,7,8,9-]	39001-02-0	13	9.97E-07	5.88E-04	9.11E-05	2.11E-04	3.32E-06	3.36E-06	9
Oxybis(1-chloropropane) [2,2'-]	108-60-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Pentachlorodibenzodioxin [1,2,3,7,8-]	40321-76-4	13	4.97E-07	7.95E-06	1.59E-06	2.67E-06	1.66E-06	1.68E-06	2
Pentachlorodibenzodioxins (Total)	36088-22-9	13	0.00E+00	4.38E-05	6.54E-06	1.54E-05			4
Pentachlorodibenzofuran [1,2,3,7,8-]	57117-41-6	13	4.97E-07	1.05E-06	5.75E-07	1.86E-07	1.66E-06	1.68E-06	2
Pentachlorodibenzofuran [2,3,4,7,8-]	57117-31-4	13	4.97E-07	1.32E-06	6.19E-07	2.92E-07	1.75E-06	1.78E-06	2
Pentachlorodibenzofurans (Totals)	30402-15-4	13	0.00E+00	7.08E-05	1.13E-05	2.59E-05			5
Pentachlorophenol	87-86-5	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
PETN	78-11-5	13	2.46E-01	2.50E-01	2.47E-01	1.57E-03	2.46E-01	2.50E-01	0
Phenanthrene	85-01-8	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Phenol	108-95-2	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Propylbenzene [1-]	103-65-1	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Pyrene	129-00-0	13	1.02E-02	5.19E-02	2.01E-02	1.79E-02	1.02E-02	5.19E-02	0
Pyridine	110-86-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
RDX	121-82-4	13	1.48E-01	2.01E-01	1.53E-01	1.46E-02	1.48E-01	1.50E-01	1
Styrene	100-42-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
TATB	3058-38-6	13	2.96E-01	7.22E+00	2.03E+00	2.46E+00	2.96E-01	7.39E-01	6
Tetrachlorodibenzodioxin [2,3,7,8-]	1746-01-6	13	9.97E-08	4.15E-07	1.54E-07	1.04E-07	3.32E-07	3.36E-07	3
Tetrachlorodibenzodioxins (Total)	41903-57-5	13	0.00E+00	2.34E-06	2.75E-07	6.38E-07			6
Tetrachlorodibenzofuran [2,3,7,8-]	51207-31-9	13	1.21E-07	4.07E-07	2.16E-07	8.56E-08	3.32E-07	3.36E-07	2
Tetrachlorodibenzofurans (Totals)	55722-27-5	13	0.00E+00	1.12E-05	1.96E-06	3.55E-06			8
Tetrachloroethane [1,1,1,2-]	630-20-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Tetrachloroethane [1,1,2,2-]	79-34-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Tetrachloroethene	127-18-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0

Table 2-1. Summary Statistics for the 2018 Soil Data

Analyte Name	CAS	Sample Size	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Minimum MDL (mg/kg)	Maximum MDL (mg/kg)	Number of Detected Values
Tetryl	479-45-8	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0
Toluene	108-88-3	14	3.29E-04	6.99E-04	3.88E-04	9.91E-05	3.29E-04	4.21E-04	3
Trichloro-1,2,2-trifluoroethane [1,1,2-]	76-13-1	14	1.65E-03	2.11E-03	1.74E-03	1.11E-04	1.65E-03	2.11E-03	0
Trichlorobenzene [1,2,4-]	120-82-1	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Trichloroethane [1,1,1-]	71-55-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Trichloroethane [1,1,2-]	79-00-5	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Trichloroethene	79-01-6	14	3.29E-04	4.21E-04	3.48E-04	2.19E-05	3.29E-04	4.21E-04	0
Trichlorofluoromethane	75-69-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Trichlorophenol [2,4,5-]	95-95-4	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Trichlorophenol [2,4,6-]	88-06-2	13	1.02E-01	5.19E-01	2.01E-01	1.79E-01	1.02E-01	5.19E-01	0
Trichloropropane [1,2,3-]	96-18-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Trimethylbenzene [1,2,4-]	95-63-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Trimethylbenzene [1,3,5-]	108-67-8	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Trinitrobenzene [1,3,5-]	99-35-4	13	1.48E-01	1.50E-01	1.48E-01	6.60E-04	1.48E-01	1.50E-01	0
Trinitrotoluene [2,4,6-]	118-96-7	13	1.48E-01	2.52E+00	3.49E-01	6.56E-01	1.48E-01	1.50E-01	2
Tris (o-cresyl) phosphate	78-30-8	13	2.96E-01	3.00E-01	2.97E-01	1.55E-03	2.96E-01	3.00E-01	0
Vinyl Chloride	75-01-4	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Xylene [1,2-]	95-47-6	14	3.29E-04	4.21E-04	3.47E-04	2.20E-05	3.29E-04	4.21E-04	0
Xylene [1,3-]+Xylene [1,4-]	Xylene [m+p]	14	6.59E-04	8.44E-04	6.95E-04	4.42E-05	6.59E-04	8.44E-04	0

Table 2-2. Human Health Screening Results for Comparison to Maximum Exposure Point Concentrations - 2018 Sampling Data

Parameter Name	Max (mg/kg)	BV (mg/kg)	Max/ BV	NMSSL Res - Cancer (mg/kg)	NMSSL Worker- Cancer (mg/kg)	Res Cancer Ratio	Worker Cancer Ratio	NMSSL Res – NC (mg/kg)	NMSSL Worker - NC (mg/kg)	Res HQ	Worker HQ
Aluminum	1.29E+04	29200	0.44								
Antimony	6.61E+00	0.83	7.96	NA	NA	NA	NA	3.1E+01	5.2E+02	2E-01	1E-02
Arsenic	5.25E+00	8.17	0.64								
Barium	4.06E+03	295	13.76	NA	NA	NA	NA	1.6E+04	2.5E+05	3E-01	2E-02
Beryllium	1.17E+00	1.83	0.64								
Cadmium	1.29E-01	0.4	0.32								
Calcium	3.29E+03	6120	0.54								
Chromium	1.23E+01	19.3	0.64								
Cobalt	1.31E+01	8.64	1.52	1.7E+04	8.3E+04	8E-04	2E-04	2.3E+01	3.9E+02	6E-01	3E-02
Copper	2.44E+01	14.7	1.66	NA	NA	NA	NA	3.1E+03	5.2E+04	8E-03	5E-04
Iron	1.75E+04	21500	0.81								
Lead	2.67E+01	22.3	1.20	NA	NA	NA	NA	4E+02	8E+02	7E-02	3E-02
Magnesium	2.93E+03	4610	0.64								
Manganese	3.10E+02	671	0.46								
Mercury	3.15E-02	0.1	0.32								
Nickel	5.53E+01	15.4	3.59	5.9E+05	2.9E+06	9E-05	2E-05	1.6E+03	2.6E+04	4E-02	2E-03
Perchlorate	6.37E-04	0	NA								
Potassium	2.66E+03	3460	0.77								
Selenium	1.09E+00	1.52	0.72								
Silver	8.57E+01	1	85.70	NA	NA	NA	NA	3.9E+02	6.5E+03	2E-01	1E-02
Sodium	1.87E+02	915	0.20								
Thallium	4.06E-01	0.73	0.56								
Vanadium	2.70E+01	39.6	0.68								

Table 2-2. Human Health Screening Results for Comparison to Maximum Exposure Point Concentrations - 2018 Sampling Data

Parameter Name	Max (mg/kg)	BV (mg/kg)	Max/ BV	NMSSL Res - Cancer (mg/kg)	NMSSL Worker-Cancer (mg/kg)	Res Cancer Ratio	Worker Cancer Ratio	NMSSL Res – NC (mg/kg)	NMSSL Worker - NC (mg/kg)	Res HQ	Worker HQ
Zinc	3.34E+02	48.8	6.84	NA	NA	NA	NA	2.3E+04	3.9E+05	1E-02	9E-04
Amino-2,6-dinitrotoluene[4-]	6.55E-01	NA	NA	NA	NA	NA	NA	1.5E+02	2.3E+03	4E-03	3E-04
Anthracene	5.19E-02	NA	NA	NA	NA	NA	NA	1.7E+04	2.5E+05	3E-06	2E-07
HMX	1.84E+00	NA	NA	NA	NA	NA	NA	3.8E+03	6.3E+04	5E-04	3E-05
Isopropyltoluene[4-]	6.68E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RDX	2.01E-01	NA	NA	8.3E+01	4.3E+02	2E-03	5E-04	3.0E+02	4.9E+03	7E-04	4E-05
TATB	7.22E+00	NA	NA	NA	NA	NA	NA	*2.2E+03*	*3.2E+04*	3E-03	2E-04
Toluene	6.99E-04	NA	NA	NA	NA	NA	NA	5.2E+03	6.1E+04	1E-07	1E-08
Trinitrotoluene[2,4,6-]	2.52E+00	NA	NA	2.1E+02	1.1E+03	1E-02	2E-03	3.6E+01	5.7E+02	7E-02	4E-03
Hazard Index						**8E-06**	**1E-06**			**1E+00**	**8E-02**

Shaded Max/BV cells indicate the maximum>BV
Shaded NMSSL cells indicate the EPA RSL for an HQ of 1 is used because a NMSSL is not available
Italics – a surrogate is applied. See Section 1.2.3
If the maximum <BV, no further evaluation is performed
Cancer ratio = Maximum/NMSSL cancer
HQ = Maximum/NMSSL Noncancer

Abbreviations:
BV – Background value
Eco SL – Ecological screening level
HQ – Noncancer hazard quotient
HI – Hazard index
Max – Maximum reported result
NA – Not available
NC – Noncancer
NMSSL – New Mexico soil screening level
Res - Residential
SL – Screening level

Table 2-3. Fall 2018 Soil Data Dioxin and Furan Human Health TEFs and Screening Results by Sample

Congener Name	CAS	Grid Point=	1	Grid Point=	2	Grid Point=	3	Grid Point=	3 dup	Grid Point=	4	Grid Point=	5
		Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	4.68E-05	1	6.83E-06	1	9.39E-04	1	1.05E-03	1	5.11E-06	1	5.24E-07	0
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	2.08E-05	1	2.15E-06	1	3.16E-04	1	3.50E-04	1	2.39E-06	1	5.00E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	6.78E-07	1	4.99E-07	0	1.43E-05	1	1.61E-05	1	7.67E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	1.11E-06	1	4.99E-07	0	1.74E-05	1	1.90E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	1.95E-06	1	4.99E-07	0	3.50E-05	1	3.93E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	2.74E-06	1	4.99E-07	0	4.54E-05	1	4.96E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	7.82E-07	1	4.99E-07	0	9.84E-06	1	1.08E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	1.01E-06	1	4.99E-07	0	1.32E-05	1	1.47E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.97E-07	0	4.99E-07	0	1.16E-06	1	1.30E-06	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	1.27E-06	1	4.99E-07	0	1.77E-05	1	1.95E-05	1	4.98E-07	0	5.00E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	2.62E-04	1	4.92E-05	1	5.04E-03	1	5.53E-03	1	3.34E-05	1	2.78E-06	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	2.29E-05	1	4.29E-06	1	5.46E-04	1	5.88E-04	1	3.68E-06	1	1.00E-06	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.97E-07	0	4.99E-07	0	7.23E-06	1	7.95E-06	1	4.98E-07	0	5.00E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.97E-07	0	4.99E-07	0	9.29E-07	1	1.05E-06	1	4.98E-07	0	5.00E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.97E-07	0	4.99E-07	0	1.23E-06	1	1.32E-06	1	4.98E-07	0	5.00E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.21E-07	1	9.99E-08	0	3.50E-07	1	4.15E-07	1	1.20E-07	0	1.52E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.79E-07	0	1.21E-07	0	2.78E-07	0	3.28E-07	0	2.15E-07	0	2.12E-07	0
Congener Name	**CAS**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	4.68E-07	0.01	6.83E-08	0.01	9.39E-06	0.01	tyui	0.01	5.11E-08	0.01	5.24E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	2.08E-07	0.01	2.15E-08	0.01	3.16E-06	0.01	3.50E-06	0.01	2.39E-08	0.01	5.00E-09
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	6.78E-09	0.01	4.99E-09	0.01	1.43E-07	0.01	1.61E-07	0.01	7.67E-09	0.01	5.00E-09
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.10	1.11E-07	0.10	4.99E-08	0.10	1.74E-06	0.10	1.90E-06	0.10	4.98E-08	0.10	5.00E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.10	1.95E-07	0.10	4.99E-08	0.10	3.50E-06	0.10	3.93E-06	0.10	4.98E-08	0.10	5.00E-08
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.10	2.74E-07	0.10	4.99E-08	0.10	4.54E-06	0.10	4.96E-06	0.10	4.98E-08	0.10	5.00E-08
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.10	7.82E-08	0.10	4.99E-08	0.10	9.84E-07	0.10	1.08E-06	0.10	4.98E-08	0.10	5.00E-08
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.10	1.01E-07	0.10	4.99E-08	0.10	1.32E-06	0.10	1.47E-06	0.10	4.98E-08	0.10	5.00E-08
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.10	4.97E-08	0.10	4.99E-08	0.10	1.16E-07	0.10	1.30E-07	0.10	4.98E-08	0.10	5.00E-08
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.10	1.27E-07	0.10	4.99E-08	0.10	1.77E-06	0.10	1.95E-06	0.10	4.98E-08	0.10	5.00E-08
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	7.86E-08	0.0003	1.48E-08	0.0003	1.51E-06	0.0003	1.66E-06	0.0003	1.00E-08	0.0003	8.34E-10
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	6.87E-09	0.0003	1.29E-09	0.0003	1.64E-07	0.0003	1.76E-07	0.0003	1.10E-09	0.0003	3.00E-10
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1.00	4.97E-07	1.00	4.99E-07	1.00	7.23E-06	1.00	7.95E-06	1.00	4.98E-07	1.00	5.00E-07
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	1.49E-08	0.03	1.50E-08	0.03	2.79E-08	0.03	3.15E-08	0.03	1.49E-08	0.03	1.50E-08
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.30	1.49E-07	0.30	1.50E-07	0.30	3.69E-07	0.30	3.96E-07	0.30	1.49E-07	0.30	1.50E-07
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.00	1.21E-07	1.00	9.99E-08	1.00	3.50E-07	1.00	4.15E-07	1.00	1.20E-07	1.00	1.52E-07
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.10	1.79E-08	0.10	1.21E-08	0.10	2.78E-08	0.10	3.28E-08	0.10	2.15E-08	0.10	2.12E-08
TEQ			**2.50E-06**		**1.24E-06**		**3.63E-05**		**2.97E-05**		**1.25E-06**		**1.20E-06**
NMED SSL Residential	**4.90E-05**	**Risk Ratio =**	5.11E-02		2.52E-02		7.42E-01		6.07E-01		2.54E-02		2.46E-02
NMED SSL Industrial	**8.47E-03**	**Risk Ratio =**	2.96E-04		1.46E-04		4.29E-03		3.51E-03		1.47E-04		1.42E-04

Table 2-2. Fall 2018 Soil Data Dioxin and Furan Human Health TEFs and Screening Results by Sample, cont.

Congener Name	CAS	Grid Point=	6	Grid Point=	7	Grid Point=	8	Grid Point=	9	Grid Point=	10	Grid Point=	11	Grid Point=	12
		Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	2.05E-06	1	7.45E-07	1	4.90E-06	1	9.34E-06	1	3.24E-06	1	5.15E-07	1	4.12E-06	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	4.99E-07	0	5.00E-07	0	7.08E-07	1	4.05E-06	1	1.95E-06	1	4.99E-07	0	7.71E-07	1
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	4.99E-07	0	5.00E-07	0	4.99E-07	0	9.02E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.99E-07	0	5.00E-07	0	4.99E-07	0	7.32E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.99E-07	0	5.00E-07	0	4.99E-07	0	6.71E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	5.97E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	7.09E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.99E-07	0	5.00E-07	0	4.99E-07	0	6.27E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	6.77E-06	1	4.29E-06	1	1.43E-05	1	3.78E-05	1	1.36E-05	1	3.11E-06	1	1.70E-05	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	9.97E-07	0	1.00E-06	0	1.07E-06	1	8.99E-06	1	3.81E-06	1	9.99E-07	0	1.08E-06	1
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.97E-08	0	1.00E-07	0	9.98E-08	0	1.38E-07	0	1.00E-07	0	9.99E-08	0	1.01E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	2.77E-07	0	1.33E-07	0	1.62E-07	0	4.07E-07	1	2.13E-07	0	1.34E-07	0	1.49E-07	1
Congener Name	**CAS**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	0.01	2.05E-08	0.01	7.45E-09	0.01	4.90E-08	0.01	9.34E-08	0.01	3.24E-08	0.01	5.15E-09	0.01	4.12E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	0.01	4.99E-09	0.01	5.00E-09	0.01	7.08E-09	0.01	4.05E-08	0.01	1.95E-08	0.01	4.99E-09	0.01	7.71E-09
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	0.01	4.99E-09	0.01	5.00E-09	0.01	4.99E-09	0.01	9.02E-09	0.01	5.02E-09	0.01	4.99E-09	0.01	5.03E-09
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	4.99E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	7.32E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	6.71E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	5.97E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	7.09E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	4.99E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.10	4.99E-08	0.10	5.00E-08	0.10	4.99E-08	0.10	6.27E-08	0.10	5.02E-08	0.10	4.99E-08	0.10	5.03E-08
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	0.0003	2.03E-09	0.0003	1.29E-09	0.0003	4.29E-09	0.0003	1.13E-08	0.0003	4.08E-09	0.0003	9.33E-10	0.0003	5.10E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	0.0003	2.99E-10	0.0003	3.00E-10	0.0003	3.21E-10	0.0003	2.70E-09	0.0003	1.14E-09	0.0003	3.00E-10	0.0003	3.24E-10
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1.00	4.99E-07	1.00	5.00E-07	1.00	4.99E-07	1.00	4.99E-07	1.00	5.02E-07	1.00	4.99E-07	1.00	5.03E-07
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	1.50E-08	0.03	1.50E-08	0.03	1.50E-08	0.03	1.50E-08	0.03	1.51E-08	0.03	1.50E-08	0.03	1.51E-08
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.30	1.50E-07	0.30	1.50E-07	0.30	1.50E-07	0.30	1.50E-07	0.30	1.51E-07	0.30	1.50E-07	0.30	1.51E-07
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.00	9.97E-08	1.00	1.00E-07	1.00	9.98E-08	1.00	1.38E-07	1.00	1.00E-07	1.00	9.99E-08	1.00	1.01E-07
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.10	2.77E-08	0.10	1.33E-08	0.10	1.62E-08	0.10	4.07E-08	0.10	2.13E-08	0.10	1.34E-08	0.10	1.49E-08
TEQ			**1.17E-06**		**1.15E-06**		**1.19E-06**		**1.43E-06**		**1.20E-06**		**1.14E-06**		**1.20E-06**
NMED SSL Residential	**4.90E-05**		2.39E-02		2.34E-02		2.44E-02		2.92E-02		2.45E-02		2.33E-02		2.44E-02
NMED SSL Industrial	**8.47E-03**		1.38E-04		1.35E-04		1.41E-04		1.69E-04		1.42E-04		1.35E-04		1.41E-04

Notes: The TECi are summed in each column to obtain the TEQ. The TEQ is divided by the residential or the industrial SSLs for TCDD to obtain a risk ratio, shown directly under the TEQ. None of the TEQs exceeded the SLs. Grid point corresponds to sample locations on Figure 1-1.
Detect Code: 0= nondetect; 1=detect, ND – Not detected

Table 3-1. Ecological Screening Evaluation for the Fall 2018 Data

Parameter Name	Parameter Code	Maximum Reported Result	Number of Detected Values	Maximum BV (mg/kg)	EPC/ BV	Minimum No Effect Eco SL (mg/kg)	EPC/ Min Eco SL NE	Minimum Low Effect Eco SL (mg/kg)	EPC/ Min Eco SL LE
INORGANICS									
Aluminum	Al	1.29E+04	13	29200	4.4E-01				
Antimony	Sb	6.61E+00	1	0.83	8.0E+00	2.30E+00	3E+00	2.30E+01	3E-01
Arsenic	As	5.25E+00	13	8.17	6.4E-01				
Barium	Ba	4.06E+03	13	295	1.4E+01	1.10E+02	4E+01	2.60E+02	2E+01
Beryllium	Be	1.17E+00	13	1.83	6.4E-01				
Cadmium	Cd	1.29E-01	1	0.4	3.2E-01				
Calcium	Ca	3.29E+03	13	6120	5.4E-01				
Chromium	Cr	1.23E+01	13	19.3	6.4E-01				
Cobalt	Co	1.31E+01	13	8.64	1.5E+00	1.30E+01	1E+00	1.30E+02	1E-01
Copper	Cu	2.44E+01	13	14.7	1.7E+00	1.40E+01	2E+00	4.30E+01	6E-01
Iron	Fe	1.75E+04	13	21500	8.1E-01				
Lead	Pb	2.67E+01	13	22.3	1.2E+00	1.10E+01	2E+00	2.30E+01	1E+00
Magnesium	Mg	2.93E+03	13	4610	6.4E-01				
Manganese	Mn	3.10E+02	13	671	4.6E-01				
Mercury	Hg	3.15E-02	13	0.1	3.2E-01				
Nickel	Ni	5.53E+01	13	15.4	3.6E+00	1.00E+01	6E+00	2.10E+01	3E+00
Perchlorate	ClO4	6.37E-04	2	0	NA	1.20E-01	5E-03	2.40E-01	3E-03
Potassium	K	2.66E+03	13	3460	7.7E-01				
Selenium	Se	1.09E+00	13	1.52	7.2E-01				
Silver	Ag	8.57E+01	12	1	8.6E+01	2.60E+00	3E+01	2.60E+01	3E+00

Table 3-1. Ecological Screening Evaluation for the Fall 2018 Data

Parameter Name	Parameter Code	Maximum Reported Result	Number of Detected Values	Maximum BV (mg/kg)	EPC/ BV	Minimum No Effect Eco SL (mg/kg)	EPC/ Min Eco SL NE	Minimum Low Effect Eco SL (mg/kg)	EPC/ Min Eco SL LE
Sodium	Na	1.87E+02	13	915	2.0E-01				
Thallium	Tl	4.06E-01	13	0.73	5.6E-01				
Vanadium	V	2.70E+01	13	39.6	6.8E-01				
Zinc	Zn	3.34E+02	13	48.8	6.8E+00	4.70E+01	7E+00	1.20E+02	3E+00
ORGANICS									
Amino-2,6-dinitrotoluene[4-]	19406-51-0	6.55E-01	1	" "	" "	1.20E+01	6E-02	1.20E+02	6E-03
Anthracene	120-12-7	5.19E-02	1	" "	" "	6.80E+00	8E-03	9.00E+00	6E-03
HMX	2691-41-0	1.84E+00	5	" "	" "	1.60E+01	1E-01	1.60E+02	1E-02
Isopropyltoluene[4-]	99-87-6	6.68E-04	1	" "	" "	NA	NA	NA	NA
RDX	121-82-4	2.01E-01	1	" "	" "	2.30E+00	9E-02	4.30E+00	5E-02
TATB	3058-38-6	7.22E+00	6	" "	" "	*1.00E+01*	7E-01	*2.8E+01*	3E-01
Toluene	108-88-3	6.99E-04	3	" "	" "	2.30E+01	3E-05	2.30E+02	3E-06
Trinitrotoluene[2,4,6-]	118-96-7	2.52E+00	2	" "	" "	7.50E+00	3E-01	1.30E+01	2E-01

Shaded cells indicate the ratio > 1
Italics – a surrogate is used. See Section 1.2.3.

Abbreviations:
BV – Background Value
Eco SL – Ecological Screening Value
EPC – Maximum Exposure Point Concentration
Max – Maximum
mg/kg – Milligram per Kilogram
LE – Low Effect
NE – No Effect

Table 3-2. Ecological Risk Evaluation Using UCL95 EPCs.

Parameter Name	Maximum Reported Result (mg/kg)	Number of Detected Values[1]	BV (mg/kg)	UCL95 (mg/kg)	UCL Type	Distribution	UCL/BV	Minimum Eco SL NE	UCL/ Eco NE	Minimum Eco SL LE	UCL/ Eco LE
Antimony	6.61E+00	1	8.30E-01	3.39E-01	Median All Data (1 detect only)	None	4.08E-01	2.3E+00	1E-01	2.3E+01	1E-02
Barium	4.06E+03	12	2.95E+02	2.22+03	95% Chebyshev (Mean, Sd) UCL	Lognormal	7.54E+00	1.1E+02	2E+01	2.6E+02	9E+00
Cobalt	1.31E+01	12	8.64E+00	7.37E+00	95% Adjusted Gamma UCL	Gamma	8.53E-01	1.30E+01	6E-01	1.30E+02	6E-02
Copper	2.44E+01	12	1.47E+01	1.24E+01	95% Adjusted Gamma UCL	Gamma	8.40E-01	1.4E+01	9E-01	4.3E+01	3E-01
Lead	2.67E+01	12	2.23E+01	1.49E+01	95% Student's-t UCL	None	6.68E-01	1.1E+01	1E+00	2.3E+01	6E-01
Nickel	5.53E+01	12	1.54E+01	1.84E+01	95% H-UCL	Approximate Lognormal	1.20E+00	1.0E+01	2E+00	2.1E+01	9E-01
Silver	8.57E+01	12	1.00E+00	7.88E+01	99% KM (Chebyshev) UCL	Approximate Lognormal	7.88E+01	2.6E+00	3E+01	2.6E+01	3E+00
Zinc	3.34E+02	12	4.88E+01	1.70E+02	95% Chebyshev (Mean, Sd) UCL	Nonparametric	3.49E+00	4.7E+01	4E+00	1.2E+02	1E+00
TATB	7.22E+00	6	NA	5.001	95% Chebyshev (Mean, Sd) UCL	None	NA	1.00E+01	5E-01	2.80E+01	2E-01
HI									6E+01		2E+01

Shaded cells represent HQs>1
HI is the sum of all HQs > 0.3
1 – Number of detected values is based on sample count after averaging duplicates

Abbreviations:
BV – Background Value
Eco SL – Ecological Screening Level
HI – Hazard Index
LE – Low Effect
mg/kg – milligram per kilogram
NE – No Effect Sd
Sd – Standard deviation
UCL – Upper Confidence Limit

Table 3-3. Toxic Equivalency Factors (TEFs) Used for Calculating TCDD Equivalent Concentrations

Name	CAS	Mammalian TEF[a]	Avian TEF[b]
Chlorinated dibenzo-p-dioxins			
2,3,7,8-TCDD	1746-01-6	1	1
1,2,3,7,8-PeCDD	40321-76-4	1	1
1,2,3,4,7,8-HxCDD	39227-28-6	0.1	0.05
1,2,3,6,7,8-HxCDD	57653-85-7	0.1	0.01
1,2,3,7,8,9-HxCDD	19408-74-3	0.1	0.1
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.01	0.001
OCDD	3268-87-9	0.0003	0.0001
Chlorinated dibenzofurans			
2,3,7,8-TCDF	51207-31-9	0.1	1
1,2,3,7,8-PeCDF	57117-41-6	0.03	0.1
2,3,4,7,8-PeCDF	57117-31-4	0.3	0.1
1,2,3,4,7,8-HxCDF	70648-26-9	0.1	1
1,2,3,6,7,8-HxCDF	57117-44-9	0.1	0.1
1,2,3,7,8,9-HxCDF	72918-21-9	0.1	0.1
2,3,4,6,7,8-HxCDF	60851-34-5	0.1	0.1
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.01	0.01
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.01	0.01
OCDF	39001-02-0	0.0003	0.0001

[a] EPA (2010b); WHO (2009)
[b] Van den Berg et al. (1998).

Table 3-4. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Mammalian Risk Estimates by Sample

Congener Name	CAS	Grid Point=	1	Grid Point=	2	Grid Point=	3	Grid Point=	3 dup	Grid Point=	4	Grid Point=	5
		Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	4.68E-05	1	6.83E-06	1	9.39E-04	1	1.05E-03	1	5.11E-06	1	5.24E-07	0
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	2.08E-05	1	2.15E-06	1	3.16E-04	1	3.50E-04	1	2.39E-06	1	5.00E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	6.78E-07	1	4.99E-07	0	1.43E-05	1	1.61E-05	1	7.67E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	1.11E-06	1	4.99E-07	0	1.74E-05	1	1.90E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	1.95E-06	1	4.99E-07	0	3.50E-05	1	3.93E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	2.74E-06	1	4.99E-07	0	4.54E-05	1	4.96E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	7.82E-07	1	4.99E-07	0	9.84E-06	1	1.08E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	1.01E-06	1	4.99E-07	0	1.32E-05	1	1.47E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.97E-07	0	4.99E-07	0	1.16E-06	1	1.30E-06	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	1.27E-06	1	4.99E-07	0	1.77E-05	1	1.95E-05	1	4.98E-07	0	5.00E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9	3268-87-9	2.62E-04	1	4.92E-05	1	5.04E-03	1	5.53E-03	1	3.34E-05	1	2.78E-06	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	2.29E-05	1	4.29E-06	1	5.46E-04	1	5.88E-04	1	3.68E-06	1	1.00E-06	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.97E-07	0	4.99E-07	0	7.23E-06	1	7.95E-06	1	4.98E-07	0	5.00E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.97E-07	0	4.99E-07	0	9.29E-07	1	1.05E-06	1	4.98E-07	0	5.00E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.97E-07	0	4.99E-07	0	1.23E-06	1	1.32E-06	1	4.98E-07	0	5.00E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.21E-07	1	9.99E-08	0	3.50E-07	1	4.15E-07	1	1.20E-07	0	1.52E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.79E-07	0	1.21E-07	0	2.78E-07	0	3.28E-07	0	2.15E-07	0	2.12E-07	0
Congener Name	**CAS**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	0.01	4.68E-07	0.01	6.83E-08	0.01	9.39E-06	0.01	1.05E-05	0.01	5.11E-08	0.01	ND
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	0.01	2.08E-07	0.01	2.15E-08	0.01	3.16E-06	0.01	3.50E-06	0.01	2.39E-08	0.01	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	0.01	6.78E-09	0.01	ND	0.01	1.43E-07	0.01	1.61E-07	0.01	ND	0.01	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.10	1.11E-07	0.10	ND	0.10	1.74E-06	0.10	1.90E-06	0.10	ND	0.10	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.10	1.95E-07	0.10	ND	0.10	3.50E-06	0.10	3.93E-06	0.10	ND	0.10	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.10	2.74E-07	0.10	ND	0.10	4.54E-06	0.10	4.96E-06	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.10	7.82E-08	0.10	ND	0.10	9.84E-07	0.10	1.08E-06	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.10	1.01E-07	0.10	ND	0.10	1.32E-06	0.10	1.47E-06	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.10	ND	0.10	ND	0.10	1.16E-07	0.10	1.30E-07	0.10	ND	0.10	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.10	1.27E-07	0.10	ND	0.10	1.77E-06	0.10	1.95E-06	0.10	ND	0.10	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9	3268-87-9	0.0003	7.86E-08	0.0003	1.48E-08	0.0003	1.51E-06	0.0003	1.66E-06	0.0003	1.00E-08	0.0003	8.34E-10
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	0.0003	6.87E-09	0.0003	1.29E-09	0.0003	1.64E-07	0.0003	1.76E-07	0.0003	1.10E-09	0.0003	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1.00	ND	1.00	ND	1.00	7.23E-06	1.00	7.95E-06	1.00	ND	1.00	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	0.03	ND	0.03	2.79E-08	0.03	3.15E-08	0.03	ND	0.03	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.30	ND	0.30	ND	0.30	3.69E-07	0.30	3.96E-07	0.30	ND	0.30	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.00	1.21E-07	1.00	ND	1.00	3.50E-07	1.00	4.15E-07	1.00	ND	1.00	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND
TEQ			**1.78E-06**		**1.06E-07**		**3.63E-05**		**4.02E-05**		**8.61E-08**		**8.34E-10**
Mammalian No Effect SSL	**5.80E-07**	**Risk Ratio=**	3E+00		2E-01		6E+01		7E+01		1E-01		1E-03
Mammalian Low Effect SSL	**3.80E-06**	**Risk Ratio=**	5E-01		3E-02		1E+01		1E+01		2E-02		2E-04

Table 3-4. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Mammalian Risk Estimates by Sample.

Congener Name	CAS	Grid Point=	6	Grid Point=	7	Grid Point=	8	Grid Point=	9	Grid Point=	10	Grid Point=	11	Grid Point=	12
		Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	2.05E-06	1	7.45E-07	1	4.90E-06	1	9.34E-06	1	3.24E-06	1	5.15E-07	1	4.12E-06	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	4.99E-07	0	5.00E-07	0	7.08E-07	1	4.05E-06	1	1.95E-06	1	4.99E-07	0	7.71E-07	1
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	4.99E-07	0	5.00E-07	0	4.99E-07	0	9.02E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.99E-07	0	5.00E-07	0	4.99E-07	0	7.32E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.99E-07	0	5.00E-07	0	4.99E-07	0	6.71E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	5.97E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	7.09E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.99E-07	0	5.00E-07	0	4.99E-07	0	6.27E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,	3268-87-9	6.77E-06	1	4.29E-06	1	1.43E-05	1	3.78E-05	1	1.36E-05	1	3.11E-06	1	1.70E-05	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	9.97E-07	0	1.00E-06	0	1.07E-06	1	8.99E-06	1	3.81E-06	1	9.99E-07	0	1.08E-06	1
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.97E-08	0	1.00E-07	0	9.98E-08	0	1.38E-07	0	1.00E-07	0	9.99E-08	0	1.01E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	2.77E-07	0	1.33E-07	0	1.62E-07	0	4.07E-07	1	2.13E-07	0	1.34E-07	0	1.49E-07	1
Congener Name	**CAS**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	0.01	2.05E-08	0.01	7.45E-09	0.01	4.90E-08	0.01	9.34E-08	0.01	3.24E-08	0.01	5.15E-09	0.01	4.12E-08
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	0.01	ND	0.01	ND	0.01	7.08E-09	0.01	4.05E-08	0.01	1.95E-08	0.01	4.99E-09	0.01	7.71E-09
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	0.01	ND	0.01	ND	0.01	ND	0.01	9.02E-09	0.01	ND	0.01	4.99E-09	0.01	5.03E-09
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.10	ND	0.10	ND	0.10	ND	0.10	7.32E-08	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.10	ND	0.10	ND	0.10	ND	0.10	6.71E-08	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.10	ND	0.10	ND	0.10	ND	0.10	5.97E-08	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.10	ND	0.10	ND	0.10	ND	0.10	7.09E-08	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.10	ND	0.10	ND	0.10	ND	0.10	6.27E-08	0.10	ND	0.10	4.99E-08	0.10	5.03E-08
Octachlorodibenzodioxin[1,2,3,4,6,7,8,	3268-87-9	0.0003	2.03E-09	0.0003	1.29E-09	0.0003	4.29E-09	0.0003	1.13E-08	0.0003	4.08E-09	0.0003	9.33E-10	0.0003	5.10E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	0.0003	ND	0.0003	ND	0.0003	3.21E-10	0.0003	2.70E-09	0.0003	1.14E-09	0.0003	3.00E-10	0.0003	3.24E-10
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	4.99E-07	1.00	5.03E-07
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	ND	0.03	ND	0.03	ND	0.03	ND	0.03	ND	0.03	1.50E-08	0.03	1.51E-08
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.30	ND	0.30	ND	0.30	ND	0.30	ND	0.30	ND	0.30	1.50E-07	0.30	1.51E-07
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	9.99E-08	1.00	1.01E-07
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.10	ND	0.10	ND	0.10	ND	0.10	4.07E-08	0.10	ND	0.10	1.34E-08	0.10	1.49E-08
TEQ			**2.25E-08**		**8.74E-09**		**6.07E-08**		**5.31E-07**		**5.71E-08**		**1.14E-06**		**1.20E-06**
Mammalian No Effect SSL	**5.80E-07**		4E-02		2E-02		1E-01		9E-01		1E-01		2E+00		2E+00
Mammalian Low Effect SSL	**3.80E-06**		6E-03		2E-03		2E-02		1E-01		2E-02		3E-01		3E-01

Shaded cells indicate the ratio of the TEQ/SSL exceeds 1; Grid point corresponds to sample locations on Figure 1-1.
Detect Code: 0= nondetect; 1=detect
Abbreviations:
Ci – Measured Sample Concentration of Congener i; TECi – Toxicity Equivalent Concentration for Congener i; TEF – Toxicity Equivalency Factor; TEQ – Toxicity Equivalent Quotient, ND- Not detected

Table 3-5. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Congener Name	CAS	Grid Point=	1	Grid Point=	2	Grid Point=	3	Grid Point=	3 dup	Grid Point=	4	Grid Point=	5
		Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	4.68E-05	1	6.83E-06	1	9.39E-04	1	1.05E-03	1	5.11E-06	1	5.24E-07	0
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	2.08E-05	1	2.15E-06	1	3.16E-04	1	3.50E-04	1	2.39E-06	1	5.00E-07	0
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	6.78E-07	1	4.99E-07	0	1.43E-05	1	1.61E-05	1	7.67E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	1.11E-06	1	4.99E-07	0	1.74E-05	1	1.90E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	1.95E-06	1	4.99E-07	0	3.50E-05	1	3.93E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	2.74E-06	1	4.99E-07	0	4.54E-05	1	4.96E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	7.82E-07	1	4.99E-07	0	9.84E-06	1	1.08E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	1.01E-06	1	4.99E-07	0	1.32E-05	1	1.47E-05	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.97E-07	0	4.99E-07	0	1.16E-06	1	1.30E-06	1	4.98E-07	0	5.00E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	1.27E-06	1	4.99E-07	0	1.77E-05	1	1.95E-05	1	4.98E-07	0	5.00E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,	3268-87-9	2.62E-04	1	4.92E-05	1	5.04E-03	1	5.53E-03	1	3.34E-05	1	2.78E-06	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	2.29E-05	1	4.29E-06	1	5.46E-04	1	5.88E-04	1	3.68E-06	1	1.00E-06	0
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.97E-07	0	4.99E-07	0	7.23E-06	1	7.95E-06	1	4.98E-07	0	5.00E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.97E-07	0	4.99E-07	0	9.29E-07	1	1.05E-06	1	4.98E-07	0	5.00E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.97E-07	0	4.99E-07	0	1.23E-06	1	1.32E-06	1	4.98E-07	0	5.00E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.21E-07	1	9.99E-08	0	3.50E-07	1	4.15E-07	1	1.20E-07	0	1.52E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.79E-07	0	1.21E-07	0	2.78E-07	0	3.28E-07	0	2.15E-07	0	2.12E-07	0
Congener Name	**CAS**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	0.001	4.68E-08	0.001	6.83E-09	0.001	9.39E-07	0.001	1.05E-06	0.001	5.11E-09	0.001	ND
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	0.01	2.08E-07	0.01	2.15E-08	0.01	3.16E-06	0.01	3.50E-06	0.01	2.39E-08	0.01	ND
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	0.01	6.78E-09	0.01	ND	0.01	1.43E-07	0.01	1.61E-07	0.01	ND	0.01	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.05	5.55E-08	0.05	ND	0.05	8.70E-07	0.05	9.50E-07	0.05	ND	0.05	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.01	1.95E-08	0.01	ND	0.01	3.50E-07	0.01	3.93E-07	0.01	ND	0.01	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.10	2.74E-07	0.10	ND	0.10	4.54E-06	0.10	4.96E-06	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	1.00	7.82E-07	1.00	ND	1.00	9.84E-06	1.00	1.08E-05	1.00	ND	1.00	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.10	1.01E-07	0.10	ND	0.10	1.32E-06	0.10	1.47E-06	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.10	ND	0.10	ND	0.10	1.16E-07	0.10	1.30E-07	0.10	ND	0.10	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.10	1.27E-07	0.10	ND	0.10	1.77E-06	0.10	1.95E-06	0.10	ND	0.10	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,	3268-87-9	0.0001	2.62E-08	0.0001	4.92E-09	0.0001	5.04E-07	0.0001	5.53E-07	0.0001	3.34E-09	0.0001	2.78E-10
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	0.0001	2.29E-09	0.0001	4.29E-10	0.0001	5.46E-08	0.0001	5.88E-08	0.0001	3.68E-10	0.0001	ND
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1.00	ND	1.00	ND	1.00	7.23E-06	1.00	7.95E-06	1.00	ND	1.00	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.10	ND	0.10	ND	0.10	9.29E-08	0.10	1.05E-07	0.10	ND	0.10	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.10	ND	0.10	ND	0.10	1.23E-07	0.10	1.32E-07	0.10	ND	0.10	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.00	1.21E-07	1.00	ND	1.00	3.50E-07	1.00	4.15E-07	1.00	ND	1.00	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND
TEQ			**1.77E-06**		**3.37E-08**		**3.14E-05**		**3.46E-05**		**3.27E-08**		**2.78E-10**
Avian No Effect SSL	**4.10E-06**	**Risk Ratio=**	4E-01		8E-03		8E+00		8E+00		8E-03		7E-05
Avian Low Effect SSL	**4.10E-05**	**Risk Ratio=**	4E-02		8E-04		8E-01		8E-01		8E-04		7E-06

Table 3-5. Dioxin-Furan Concentrations, TEFs, TEQs, SLs, and Avian Risk Estimates by Sample

Congener Name	CAS	Grid Point=	6	Grid Point=	7	Grid Point=	8	Grid Point=	9	Grid Point=	10	Grid Point=	11	Grid Point=	12
		Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code	Ci	Detect Code
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	2.05E-06	1	7.45E-07	1	4.90E-06	1	9.34E-06	1	3.24E-06	1	5.15E-07	1	4.12E-06	1
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	4.99E-07	0	5.00E-07	0	7.08E-07	1	4.05E-06	1	1.95E-06	1	4.99E-07	0	7.71E-07	1
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	4.99E-07	0	5.00E-07	0	4.99E-07	0	9.02E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	4.99E-07	0	5.00E-07	0	4.99E-07	0	7.32E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	4.99E-07	0	5.00E-07	0	4.99E-07	0	6.71E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	5.97E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	7.09E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	4.99E-07	0	5.00E-07	0	4.99E-07	0	6.27E-07	1	5.02E-07	0	4.99E-07	0	5.03E-07	0
Octachlorodibenzodioxin[1,2,3,4,6,7,8,	3268-87-9	6.77E-06	1	4.29E-06	1	1.43E-05	1	3.78E-05	1	1.36E-05	1	3.11E-06	1	1.70E-05	1
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	9.97E-07	0	1.00E-06	0	1.07E-06	1	8.99E-06	1	3.81E-06	1	9.99E-07	0	1.08E-06	1
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	4.99E-07	0	5.00E-07	0	4.99E-07	0	4.99E-07	0	5.02E-07	0	4.99E-07	0	5.03E-07	0
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	9.97E-08	0	1.00E-07	0	9.98E-08	0	1.38E-07	0	1.00E-07	0	9.99E-08	0	1.01E-07	0
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	2.77E-07	0	1.33E-07	0	1.62E-07	0	4.07E-07	1	2.13E-07	0	1.34E-07	0	1.49E-07	1
Congener Name	**CAS**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**	**TEF**	**TECi**
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	0.001	2.05E-09	0.001	7.45E-10	0.001	4.90E-09	0.001	9.34E-09	0.001	3.24E-09	0.001	5.15E-10	0.001	4.12E-09
Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	0.01	ND	0.01	ND	0.01	7.08E-09	0.01	4.05E-08	0.01	1.95E-08	0.01	ND	0.01	7.71E-09
Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	0.01	ND	0.01	ND	0.01	ND	0.01	9.02E-09	0.01	ND	0.01	ND	0.01	ND
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.01	ND	0.01	ND	0.01	ND	0.01	7.32E-09	0.01	ND	0.01	ND	0.01	ND
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.10	ND	0.10	ND	0.10	ND	0.10	6.71E-08	0.10	ND	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	1.00	ND	1.00	ND	1.00	ND	1.00	5.97E-07	1.00	ND	1.00	ND	1.00	ND
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.10	ND	0.10	ND	0.10	ND	0.10	7.09E-08	0.10	ND	0.10	ND	0.10	ND
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.10	ND	0.10	ND	0.10	ND	0.10	6.27E-08	0.10	ND	0.10	ND	0.10	ND
Octachlorodibenzodioxin[1,2,3,4,6,7,8,	3268-87-9	0.0001	6.77E-10	0.0001	4.29E-10	0.0001	1.43E-09	0.0001	3.78E-09	0.0001	1.36E-09	0.0001	3.11E-10	0.0001	1.70E-09
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	0.0001	ND	0.0001	ND	0.0001	1.07E-10	0.0001	8.99E-10	0.0001	3.81E-10	0.0001	ND	0.0001	1.08E-10
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND	0.10	ND
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND	1.00	ND
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1.00	ND	1.00	ND	1.00	ND	1.00	4.07E-07	1.00	ND	1.00	ND	1.00	1.49E-07
TEQ			**2.73E-09**		**1.17E-09**		**1.35E-08**		**1.28E-06**		**2.45E-08**		**8.26E-10**		**1.63E-07**
Avian No Effect SSL	**4.10E-06**		7E-04		3E-04		3E-03		3E-01		6E-03		2E-04		4E-02
Avian Low Effect SSL	**4.10E-05**		7E-05		3E-05		3E-04		3E-02		6E-04		2E-05		4E-03

Shaded cells indicate the ratio of the TEQ/SSL exceeds 1; Grid point corresponds to sample locations on Figure 1-1.
Detect Code: 0= nondetect; 1=detect
Abbreviations:
Ci – Measured Sample Concentration of Congener i; TECi – Toxicity Equivalent Concentration for Congener i; TEF – Toxicity Equivalency Factor; TEQ – Toxicity Equivalent Quotient; ND – Not detected

Table 3-6. UCL95 Evaluation for Dioxins/Furans for Mammals and Birds

Congener Name	Parameter Code	UCL	UCL Type	Distribution
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	35822-46-9	9.12E-04	99% KM (Chebyshev) UCL	Lognormal
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	67562-39-4	3.11E-04	99% KM (Chebyshev) UCL	Lognormal
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	55673-89-7	9.02E-07	Median Detects - number detect =3	NA
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	1.82E-05	Maximum Detects - number detect = 2	NA
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	1.95E-06	Median Detects - number detect =3	NA
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	2.74E-06	Median Detects - number detect =3	NA
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	7.82E-07	Median Detects - number detect =3	NA
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	1.01E-06	Median Detects - number detect =3	NA
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	1.30E-06	Maximum Detect - 1 detect	NA
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	1.27E-06	Median Detects - number detect =3	NA
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3268-87-9	4.83E-03	99% Chebyshev (Mean, Sd) UCL	Lognormal
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	39001-02-0	5.29E-04	99% KM (Chebyshev) UCL	Lognormal
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	7.95E-06	Maximum - 1 detect	NA
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	1.05E-06	Maximum - 1 detect	NA
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	1.32E-06	Maximum - 1 detect	NA
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	3.83E-07	Maximum Detects - number detect = 2	NA
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	4.07E-07	Maximum Detects - number detect = 2	NA

Congener Name	CAS	TEF	TECi	Congener Name	CAS	TEF	TECi
Heptachlorodibenzodioxin[1,2,3,4,6,7,8	35822-46-9	0.01	9.12E-06	Heptachlorodibenzodioxin[1,2,3,4,6,7,	35822-46-9	0.001	9.12E-07
Heptachlorodibenzofuran[1,2,3,4,6,7,8-	67562-39-4	0.01	3.11E-06	Heptachlorodibenzofuran[1,2,3,4,6,7,8	67562-39-4	0.01	3.11E-06
Heptachlorodibenzofuran[1,2,3,4,7,8,9-	55673-89-7	0.01	9.02E-09	Heptachlorodibenzofuran[1,2,3,4,7,8,9	55673-89-7	0.01	9.02E-09
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	1.82E-06	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	39227-28-6	0.1	9.10E-07
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.1	1.95E-07	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	57653-85-7	0.01	1.95E-08
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	2.74E-07	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	19408-74-3	0.1	2.74E-07
Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	0.1	7.82E-08	Hexachlorodibenzofuran[1,2,3,4,7,8-]	70648-26-9	1	7.82E-07
Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	1.01E-07	Hexachlorodibenzofuran[1,2,3,6,7,8-]	57117-44-9	0.1	1.01E-07
Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	1.30E-07	Hexachlorodibenzofuran[1,2,3,7,8,9-]	72918-21-9	0.1	1.30E-07
Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	1.27E-07	Hexachlorodibenzofuran[2,3,4,6,7,8-]	60851-34-5	0.1	1.27E-07
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9	3268-87-9	0.0003	1.45E-06	Octachlorodibenzodioxin[1,2,3,4,6,7,8	3268-87-9	0.0001	4.83E-07
Octachlorodibenzofuran[1,2,3,4,6,7,8,9	39001-02-0	0.0003	1.59E-07	Octachlorodibenzofuran[1,2,3,4,6,7,8,	39001-02-0	0.0001	5.29E-08
Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	7.95E-06	Pentachlorodibenzodioxin[1,2,3,7,8-]	40321-76-4	1	7.95E-06
Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.03	3.15E-08	Pentachlorodibenzofuran[1,2,3,7,8-]	57117-41-6	0.1	1.05E-07
Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.3	3.96E-07	Pentachlorodibenzofuran[2,3,4,7,8-]	57117-31-4	0.1	1.32E-07
Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	3.83E-07	Tetrachlorodibenzodioxin[2,3,7,8-]	1746-01-6	1	3.83E-07
Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	0.1	4.07E-08	Tetrachlorodibenzofuran[2,3,7,8-]	51207-31-9	1	4.07E-07
TEQ			**2.54E-05**	**TEQ**			**1.59E-05**
Mammalian No Effect SSL	**5.80E-07**	**Risk Ratio=**	44	**Avian No Effect SSL**	**4.10E-06**	**Risk Ratio=**	4
Mammalian Low Effect SSL	**3.80E-06**	**Risk Ratio=**	7	**Avian Low Effect SSL**	**4.10E-05**	**Risk Ratio=**	0.4

Notes: Avian SSL is ESL from ECORISK Database, Version 2.0 (LANL 2003a) as used in Attachment H Technical Area 16 Burn Ground Human Health and Ecological Risk-Screening Assessments LA-UR-13-24177, Class 3 Permit Modification Request for Addition of an Open Burning Unit at Technical Area (TA) 16 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM0890010515. September 30, 2013. Refer To: WM-D0-13-0064 LAUR: 13-27579

SSL – Soil screening level or ESL
TEF – Toxicity equivalent factor
TECi –Toxicity equivalent concentration
NA – Not applicable

Table 3-7. Hazard Analysis by Receptor and Area Use Factors for TA 16-388 Flash Pad For No Effect ESLs

COPC Name	CAS	No Effect Ecological Screening Levels (ESLs) for Terrestrial Receptors (mg/kg)										
		Kestrel (carnivore)	Kestrel (insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
Antimony	SB	0	0	0	0	0	2.3	2.7	78	11	7.9	46
Barium	BA	24000	7500	720	820	770	1800	2900	330	110	2100	41000
Copper	CU	1100	80	34	14	20	63	260	80	70	42	4000
Lead	PB	540	83	18	11	14	120	310	1700	120	93	3700
Nickel	NI	2000	110	120	20	35	20	270	280	38	10	1200
Silver	AG	600	13	10	2.6	4.1	24	150	0	560	14	4400
Zinc	ZN	2600	220	330	47	83	170	1800	120	160	99	9600
TCDD	TCDD	1.40E-05	1.40E-05	2.40E-04	4.10E-06	8.10E-06	5.80E-07	4.80E-05	5.00E+00	NA	2.90E-07	1.20E-06
HR (ha)[a]		106	106	0.42	0.42	0.42	0.077	3.1	NA	NA	0.39	1038
Population Area[b]		4240	4240	16.8	16.8	16.8	3.08	124	NA	NA	15.6	41520
PAUF[c]		0.0001	0.0001	0.028	0.028	0.028	0.16	0.004	NA	NA	0.031	0.00001
AUF[d]		0.0045	0.0045	1.00	1.00	1.00	1.00	0.15	NA	NA	1.00	0.0005

COPC Name	UCL95 EPC (mg/kg)	Population Area Use Adjusted Hazard Quotients										
		Kestrel (carnivore)	Kestrel (insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Antimony	0.34	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	2E-02	5E-04	4E-03	3E-02	1E-03	8E-08
Barium	2223.00	1E-05	3E-05	9E-02	8E-02	8E-02	2E-01	3E-03	7E+00	2E+01	3E-02	6E-07
Copper	12.35	1E-06	2E-05	1E-02	3E-02	2E-02	3E-02	2E-04	2E-01	2E-01	9E-03	4E-08
Lead	15.11	3E-06	2E-05	2E-02	4E-02	3E-02	2E-02	2E-04	9E-03	1E-01	5E-03	5E-08
Nickel	18.41	1E-06	2E-05	4E-03	3E-02	1E-02	1E-01	3E-04	7E-02	5E-01	6E-02	2E-07
Silver	48.42	9E-06	4E-04	1E-01	5E-01	3E-01	3E-01	1E-03	NA, No ESL	9E-02	1E-01	1E-07
Zinc	159.50	7E-06	8E-05	1E-02	1E-01	5E-02	1E-01	3E-04	1E+00	1E+00	5E-02	2E-07
TCDD*	1.81E-05	1E-04	1E-04	2E-03	1E-01	6E-02	7E+00	2E-03	4E-06	NA	3E+00	2E-04

Notes:
Area of Site (ha) 0.478
NA - Not applicable
ESLs - Ecological screening level
PAUF - Population area use factor
AUF - Area use factor
HR - Home range

* The UCL95 of detected values only used for earthworm. TEQs (Table 3-6) for mammals and birds apply to these receptors.
a - Values from USEPA (1993)
b - Derived as 40*HR
c - PAUF is the area of site divided by the Population Area
d - AUF is the area of the site divided by the HR; AUF cannot exceed 1 and value is set to 1 if calculation results in a higher value

Table 3-8. Hazard Analysis by Receptor and Area Use Factors for TA 16-388 Flash Pad For Low Effect ESLs

COPC Name	CAS	Low Effect Ecological Screening Levels (ESLs) for Terrestrial Receptors (mg/kg)										
		Kestrel (carnivore)	Kestrel (insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Gray fox
Antimony	SB	0	0	0	0	0	23	27	780	58	79	460
Barium	BA	44000	13000	1200	1400	1300	8700	14000	3200	260	10000	190000
Copper	CU	3500	240	100	43	60	100	430	530	490	70	6700
Lead	PB	1000	160	36	23	28	230	600	8400	570	170	7000
Nickel	NI	8100	440	500	81	130	40	540	1300	270	21	2500
Silver	AG	6000	130	100	26	41	240	1500	0	2800	140	44000
Zinc	ZN	7000	590	120	120	220	1700	18000	930	810	980	94000
TCDD	1746-01-6	1.40E-04	1.40E-04	2.40E-03	4.10E-05	8.10E-05	3.80E-06	2.70E-04	1.00E+01	NA	1.90E-06	6.80E-04
HR (ha)[a]		106	106	0.42	0.42	0.42	0.077	3.1	NA	NA	0.39	1038
Population Area[b]		4240	4240	16.8	16.8	16.8	3.08	124	NA	NA	15.6	41520
PAUF[c]		0.0001	0.0001	0.028	0.028	0.028	0.16	0.004	NA	NA	0.031	0.00001
AUF[d]		0.0045	0.0045	1.00	1.00	1.00	1.00	0.15	NA	NA	1.00	0.0005

COPC Name	UCL95 EPC (mg/kg)	Population Area Use Adjusted Hazard Quotients										
		Kestrel (carnivore)	Kestrel (insectivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Antimony	0.34	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	NA, No ESL	2E-03	5E-05	4E-04	6E-03	1E-04	8E-09
Barium	2223.00	6E-06	2E-05	5E-02	5E-02	5E-02	4E-02	6E-04	7E-01	9E+00	7E-03	1E-07
Copper	12.35	4E-07	6E-06	4E-03	8E-03	6E-03	2E-02	1E-04	2E-02	3E-02	5E-03	2E-08
Lead	15.11	2E-06	1E-05	1E-02	2E-02	2E-02	1E-02	1E-04	2E-03	3E-02	3E-03	2E-08
Nickel	18.41	3E-07	5E-06	1E-03	6E-03	4E-03	7E-02	1E-04	1E-02	7E-02	3E-02	8E-08
Silver	48.42	9E-07	4E-05	1E-02	5E-02	3E-02	3E-02	1E-04	NA, No ESL	2E-02	1E-02	1E-08
Zinc	159.50	3E-06	3E-05	4E-02	4E-02	2E-02	1E-02	3E-05	2E-01	2E-01	5E-03	2E-08
TCDD*	1.81E-05	1E-05	1E-05	2E-04	1E-02	6E-03	1E+00	4E-04	2E-06	NA	4E-01	4E-07

Notes:
Area of Site (ha): 0.478
NA - Not applicable
ESLs - Ecological screening level
PAUF - Population area use factor
AUF - Area use factor
HR - Home range

* The UCL95 of detected values only used for earthworm. TEQs (Table 3-6) for mammals and birds apply to these receptors.
a - Values from USEPA (1993)
b - Derived as 40*HR
c - PAUF is the area of site divided by the Population Area
d - AUF is the area of the site divided by the HR; AUF cannot exceed 1 and value is set to 1 if calculation results in a higher value

Figures

Figure 1-1. Map of Sampling Locations For TA-16-388 Flash Pad

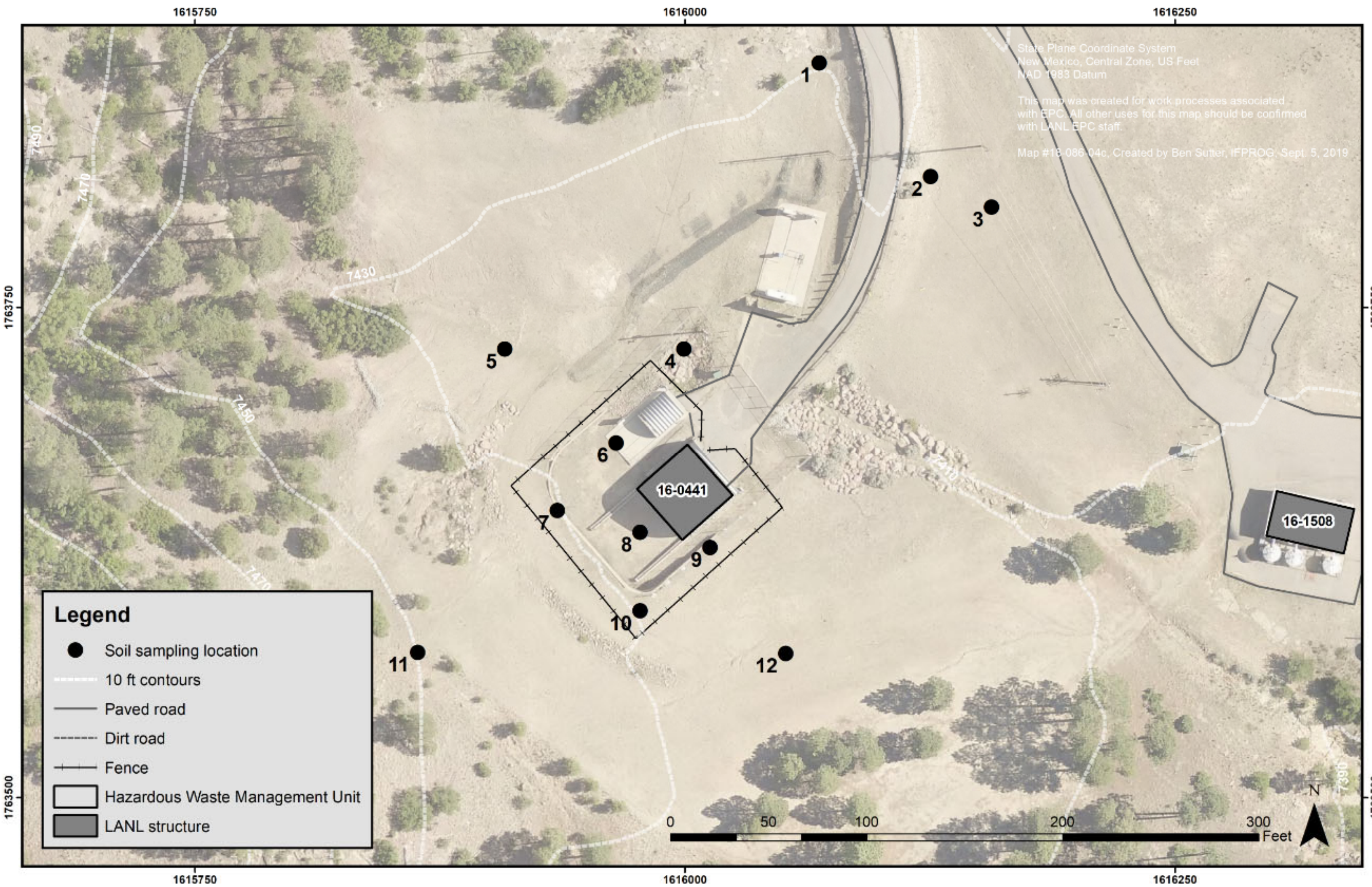


Figure 3-1. Aerial Photograph of Habitat at TA-16-388 and Vicinity

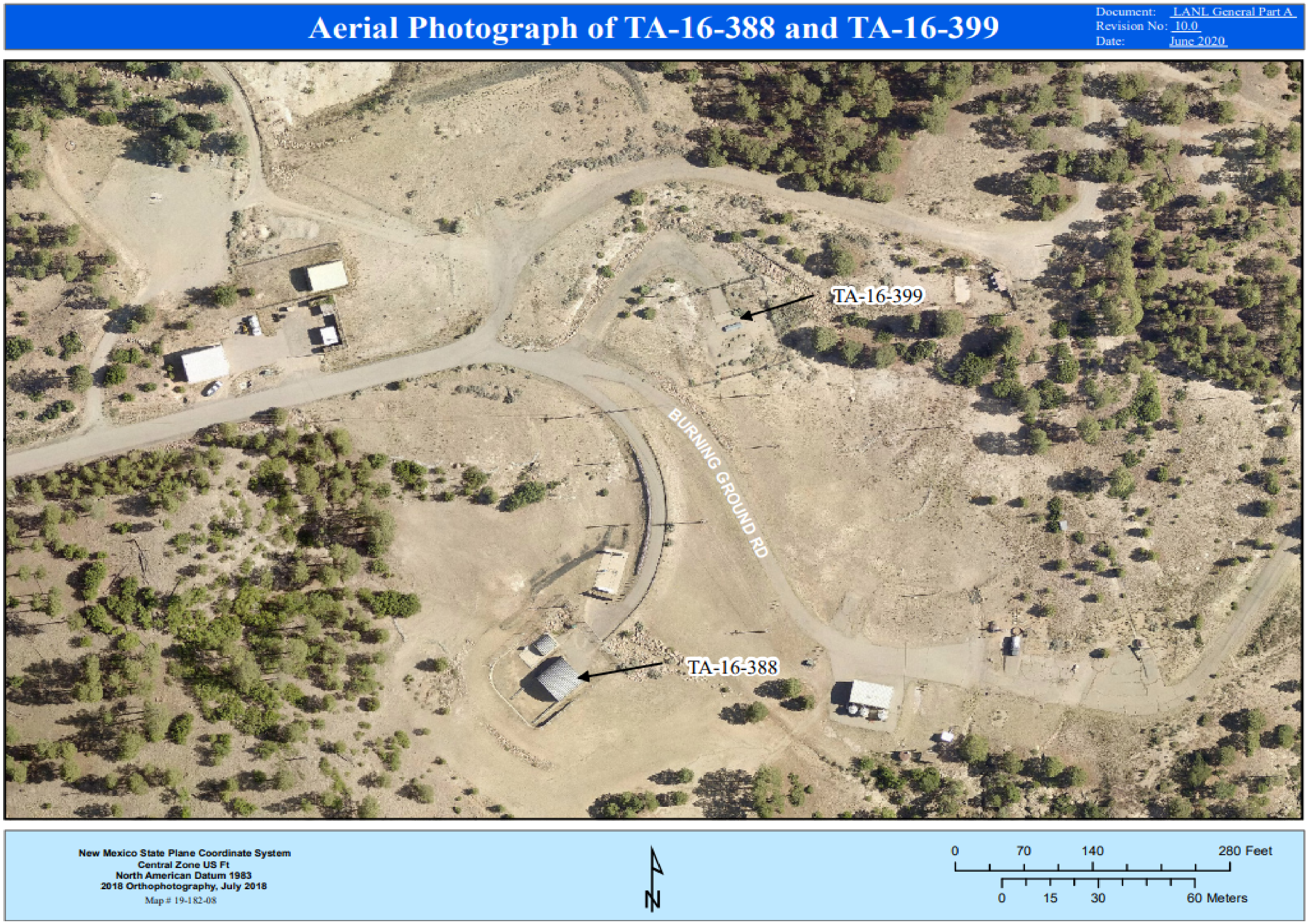
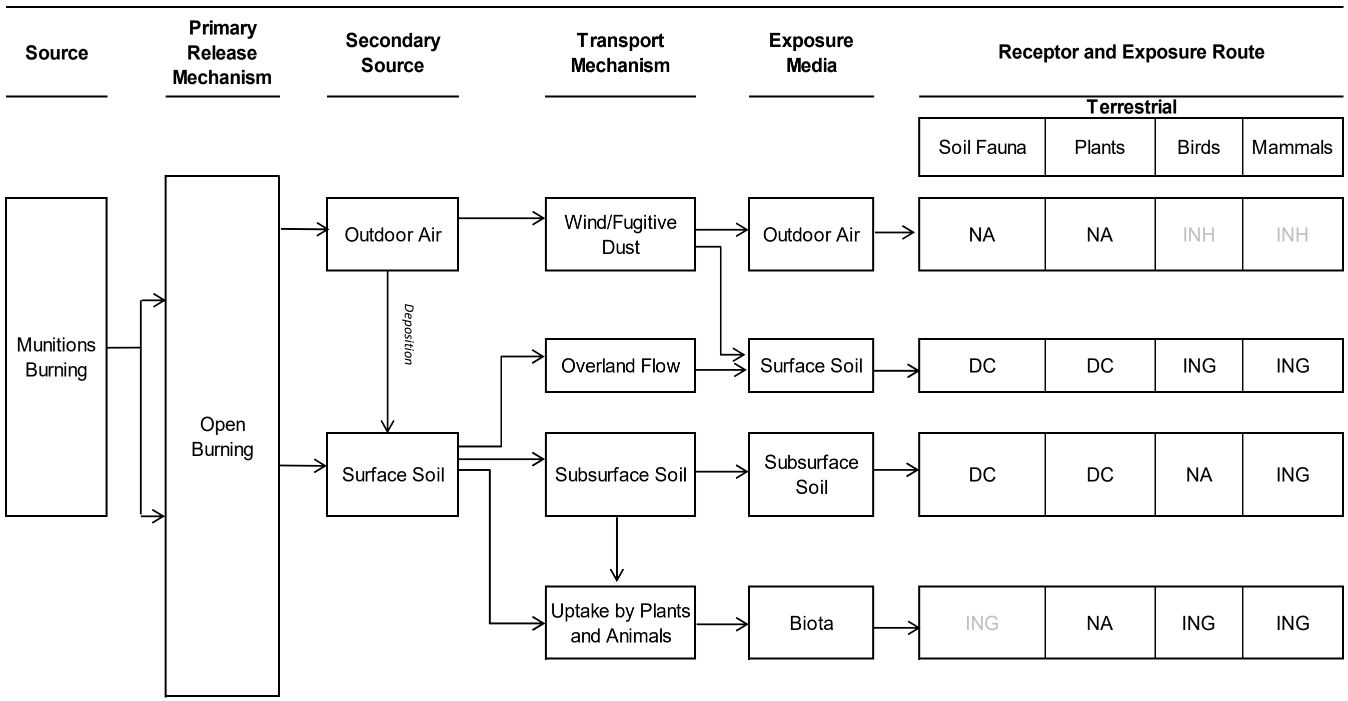


Figure 3-2. Preliminary Conceptual Site Exposure Model



Abbreviations

DC Direct contact; applies to receptors for which toxic effects are addressed by exposure concentration and not dose

ING Ingestion; typically quantified as dose for birds and mammals only

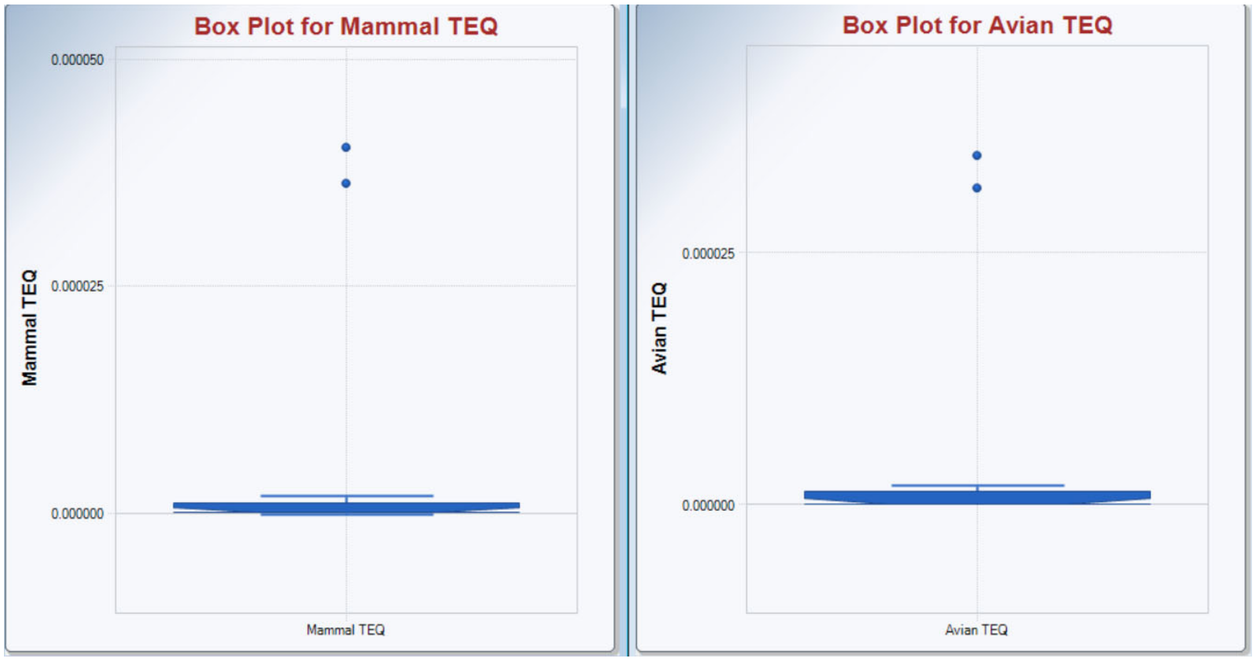
INH Inhalation; recognized to occur, but not typically quantified as standard practice with the exception of evaluating burrow air exposure by burrowing mammals

NA Pathway considered incomplete; not applicable

Notes:

Grayed text indicates pathways are recognized to potentially exist but are not quantified. Inhalation is considered minimal relative to dietary exposure. Ingestion by invertebrates is not typically quantified due to absence of accurate exposure parameters.

Figure 3-3. Box Plots for Mammalian and Avian Dioxin/Furan TEQs



Attachment A. ProUCL Output for Upper Confidence Limit Calculations

UCL Statistics for Data Sets with Non-Detects - Duplicates 3a 3b averaged			
User Selected Options			
Date/Time of Computation	ProUCL 5.16/19/2019 5:15:57 PM		
From File	ProUCL File Sept 2018 Data.xls		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operatioı	2000		
Sb			
General Statistics			
Total Number of Observations	13	Number of Distinct Observations	13
Number of Detects	1	Number of Non-Detects	12
Number of Distinct Detects	1	Number of Distinct Non-Detects	12
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT\			
The data set for variable Sb was not processed!			
Ba			
General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	143	Mean	825.6
Maximum	4060	Median	327.5
SD	1110	Std. Error of Mean	320.5
Coefficient of Variation	1.345	Skewness	2.611
Normal GOF Test			
Shapiro Wilk Test Statistic	0.638	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.269	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1401	95% Adjusted-CLT UCL (Chen-1995)	1611
		95% Modified-t UCL (Johnson-1978)	1441
Gamma GOF Test			
A-D Test Statistic	0.826	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.262	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.252	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.041	k star (bias corrected MLE)	0.837
Theta hat (MLE)	792.8	Theta star (bias corrected MLE)	986.9
nu hat (MLE)	24.99	nu star (bias corrected)	20.08
MLE Mean (bias corrected)	825.6	MLE Sd (bias corrected)	902.6
		Approximate Chi Square Value (0.05)	10.91
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	9.891
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1520	95% Adjusted Gamma UCL (use when n<50)	1676
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.905	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.224	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.963	Mean of logged Data	6.164
Maximum of Logged Data	8.309	SD of logged Data	1.016
Assuming Lognormal Distribution			

95% H-UCL	1961	90% Chebyshev (MVUE) UCL	1458
95% Chebyshev (MVUE) UCL	1778	97.5% Chebyshev (MVUE) UCL	2223
99% Chebyshev (MVUE) UCL	3096		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1353	95% Jackknife UCL	1401
95% Standard Bootstrap UCL	1325	95% Bootstrap-t UCL	2326
95% Hall's Bootstrap UCL	3281	95% Percentile Bootstrap UCL	1385
95% BCA Bootstrap UCL	1664		
90% Chebyshev(Mean, Sd) UCL	1787	95% Chebyshev(Mean, Sd) UCL	2223
97.5% Chebyshev(Mean, Sd) UCL	2827	99% Chebyshev(Mean, Sd) UCL	4015
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2223		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Cu			
General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	5.22	Mean	9.055
Maximum	24.4	Median	7.285
SD	5.331	Std. Error of Mean	1.539
Coefficient of Variation	0.589	Skewness	2.465
Normal GOF Test			
Shapiro Wilk Test Statistic	0.695	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.247	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	11.82	95% Adjusted-CLT UCL (Chen-1995)	12.76
		95% Modified-t UCL (Johnson-1978)	12
Gamma GOF Test			
A-D Test Statistic	0.796	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.733	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.201	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.246	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.773	k star (bias corrected MLE)	3.635
Theta hat (MLE)	1.897	Theta star (bias corrected MLE)	2.491
nu hat (MLE)	114.5	nu star (bias corrected)	87.24
MLE Mean (bias corrected)	9.055	MLE Sd (bias corrected)	4.749
		Approximate Chi Square Value (0.05)	66.71
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	63.98
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	11.84	95% Adjusted Gamma UCL (use when n<50)	12.35
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.858	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.178	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.652	Mean of logged Data	2.095
Maximum of Logged Data	3.195	SD of logged Data	0.447

Assuming Lognormal Distribution			
95% H-UCL	11.88	90% Chebyshev (MVUE) UCL	12.41
95% Chebyshev (MVUE) UCL	14	97.5% Chebyshev (MVUE) UCL	16.21
99% Chebyshev (MVUE) UCL	20.55		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	11.59	95% Jackknife UCL	11.82
95% Standard Bootstrap UCL	11.5	95% Bootstrap-t UCL	14.83
95% Hall's Bootstrap UCL	21.15	95% Percentile Bootstrap UCL	11.98
95% BCA Bootstrap UCL	12.83		
90% Chebyshev(Mean, Sd) UCL	13.67	95% Chebyshev(Mean, Sd) UCL	15.76
97.5% Chebyshev(Mean, Sd) UCL	18.66	99% Chebyshev(Mean, Sd) UCL	24.37
Suggested UCL to Use			
95% Adjusted Gamma UCL	12.35		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Ni			
General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	3.78	Mean	11.8
Maximum	55.3	Median	7.085
SD	14.05	Std. Error of Mean	4.056
Coefficient of Variation	1.191	Skewness	3.17
Normal GOF Test			
Shapiro Wilk Test Statistic	0.526	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.366	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	19.08	95% Adjusted-CLT UCL (Chen-1995)	22.44
		95% Modified-t UCL (Johnson-1978)	19.7
Gamma GOF Test			
A-D Test Statistic	1.28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.744	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.276	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.249	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.733	k star (bias corrected MLE)	1.355
Theta hat (MLE)	6.808	Theta star (bias corrected MLE)	8.705
nu hat (MLE)	41.59	nu star (bias corrected)	32.52
MLE Mean (bias corrected)	11.8	MLE Sd (bias corrected)	10.13
		Approximate Chi Square Value (0.05)	20.49
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	19.04
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	18.73	95% Adjusted Gamma UCL (use when n<50)	20.15
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.838	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.237	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	1.33	Mean of logged Data	2.152
Maximum of Logged Data	4.013	SD of logged Data	0.704
Assuming Lognormal Distribution			
95% H-UCL	18.41	90% Chebyshev (MVUE) UCL	17.59
95% Chebyshev (MVUE) UCL	20.68	97.5% Chebyshev (MVUE) UCL	24.97
99% Chebyshev (MVUE) UCL	33.41		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	18.47	95% Jackknife UCL	19.08
95% Standard Bootstrap UCL	18.05	95% Bootstrap-t UCL	38.07
95% Hall's Bootstrap UCL	42.24	95% Percentile Bootstrap UCL	19.12
95% BCA Bootstrap UCL	23.71		
90% Chebyshev(Mean, Sd) UCL	23.97	95% Chebyshev(Mean, Sd) UCL	29.48
97.5% Chebyshev(Mean, Sd) UCL	37.13	99% Chebyshev(Mean, Sd) UCL	52.15
Suggested UCL to Use			
95% H-UCL	18.41		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.			
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.			
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
Ag			
General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
Number of Detects	11	Number of Non-Detects	1
Number of Distinct Detects	11	Number of Distinct Non-Detects	1
Minimum Detect	0.12	Minimum Non-Detect	0.101
Maximum Detect	85.7	Maximum Non-Detect	0.101
Variance Detects	655.7	Percent Non-Detects	8.33%
Mean Detects	8.721	SD Detects	25.61
Median Detects	0.264	CV Detects	2.936
Skewness Detects	3.282	Kurtosis Detects	10.82
Mean of Logged Detects	-0.46	SD of Logged Detects	2.016
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.388	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.438	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	8.003	KM Standard Error of Mean	7.114
KM SD	23.5	95% KM (BCA) UCL	22.24
95% KM (t) UCL	20.78	95% KM (Percentile Bootstrap) UCL	21.73
95% KM (z) UCL	19.7	95% KM Bootstrap t UCL	690.8
90% KM Chebyshev UCL	29.35	95% KM Chebyshev UCL	39.01
97.5% KM Chebyshev UCL	52.43	99% KM Chebyshev UCL	78.79
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.93	Anderson-Darling GOF Test	
5% A-D Critical Value	0.833	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.397	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.278	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.268	k star (bias corrected MLE)	0.255
Theta hat (MLE)	32.59	Theta star (bias corrected MLE)	34.17
nu hat (MLE)	5.887	nu star (bias corrected)	5.615
Mean (detects)	8.721		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	7.995
Maximum	85.7	Median	0.245
SD	24.54	CV	3.07
k hat (MLE)	0.247	k star (bias corrected MLE)	0.241
Theta hat (MLE)	32.4	Theta star (bias corrected MLE)	33.22
nu hat (MLE)	5.923	nu star (bias corrected)	5.776
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (5.78, α)	1.526	Adjusted Chi Square Value (5.78, β)	1.219
95% Gamma Approximate UCL (use when n>=50)	30.25	95% Gamma Adjusted UCL (use when n<50)	37.87
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	8.003	SD (KM)	23.5
Variance (KM)	552.1	SE of Mean (KM)	7.114
k hat (KM)	0.116	k star (KM)	0.143
nu hat (KM)	2.784	nu star (KM)	3.421
theta hat (KM)	68.99	theta star (KM)	56.14
80% gamma percentile (KM)	8.342	90% gamma percentile (KM)	23.55
95% gamma percentile (KM)	44.47	99% gamma percentile (KM)	105.8
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.42, α)	0.507	Adjusted Chi Square Value (3.42, β)	0.37
95% Gamma Approximate KM-UCL (use when n>=5	53.96	95% Gamma Adjusted KM-UCL (use when n<50)	73.97
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.792	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.995	Mean in Log Scale	-0.838
SD in Original Scale	24.54	SD in Log Scale	2.327
95% t UCL (assumes normality of ROS data)	20.72	95% Percentile Bootstrap UCL	21.71
95% BCA Bootstrap UCL	29.79	95% Bootstrap t UCL	674.1
95% H-UCL (Log ROS)	348.7		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.612	KM Geo Mean	0.542
KM SD (logged)	1.909	95% Critical H Value (KM-Log)	4.763
KM Standard Error of Mean (logged)	0.578	95% H-UCL (KM -Log)	51.9
KM SD (logged)	1.909	95% Critical H Value (KM-Log)	4.763
KM Standard Error of Mean (logged)	0.578		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.999	Mean in Log Scale	-0.67
SD in Original Scale	24.54	SD in Log Scale	2.056
95% t UCL (Assumes normality)	20.72	95% H-Stat UCL	98.77
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
99% KM (Chebyshev) UCL	78.79		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Zn			
General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	19.1	Mean	59.97

Maximum	334	Median	36.1
SD	87.51	Std. Error of Mean	25.26
Coefficient of Variation	1.459	Skewness	3.301
Normal GOF Test			
Shapiro Wilk Test Statistic	0.466	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.414	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	105.3	95% Adjusted-CLT UCL (Chen-1995)	127.2
		95% Modified-t UCL (Johnson-1978)	109.3
Gamma GOF Test			
A-D Test Statistic	1.695	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.749	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.368	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.25	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.341	k star (bias corrected MLE)	1.061
Theta hat (MLE)	44.72	Theta star (bias corrected MLE)	56.51
nu hat (MLE)	32.18	nu star (bias corrected)	25.47
MLE Mean (bias corrected)	59.97	MLE Sd (bias corrected)	58.21
		Approximate Chi Square Value (0.05)	14.97
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	13.76
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	102	95% Adjusted Gamma UCL (use when n<50)	111
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.773	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.859	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.299	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.243	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.95	Mean of logged Data	3.677
Maximum of Logged Data	5.811	SD of logged Data	0.77
Assuming Lognormal Distribution			
95% H-UCL	95.51	90% Chebyshev (MVUE) UCL	87.67
95% Chebyshev (MVUE) UCL	104	97.5% Chebyshev (MVUE) UCL	126.7
99% Chebyshev (MVUE) UCL	171.3		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	101.5	95% Jackknife UCL	105.3
95% Standard Bootstrap UCL	99.96	95% Bootstrap-t UCL	362.5
95% Hall's Bootstrap UCL	326.6	95% Percentile Bootstrap UCL	107.5
95% BCA Bootstrap UCL	136.7		
90% Chebyshev(Mean, Sd) UCL	135.8	95% Chebyshev(Mean, Sd) UCL	170.1
97.5% Chebyshev(Mean, Sd) UCL	217.7	99% Chebyshev(Mean, Sd) UCL	311.3
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	170.1		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			