Los Alamos
NATIONAL LABORATORY

Waste Management Division
Waste Management Programs
P.O. Box 1663, Mail Stop K499
Los Alamos, New Mexico 87545
(505)667-4873/Fax:(505)-667-9201

National Nuclear Security Administrations
Los Alamos Field Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505)667-5948

Date: SEP 3 0 2013
Refer To: WM-DO-13-0064
LAUR: 13-27579

Mr. John E. Kieling
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Dear Mr. Kieling:

Subject: 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

The purpose of this letter is to submit and request approval for the included Resource Conservation and Recovery Act (RCRA) Class 3 permit modification request. The information provided within the request details the addition of a single hazardous waste management unit to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (Permit), issued by the New Mexico Environment Department (NMED) in November 2010. The unit requested for inclusion in the Permit is the hazardous waste open burning treatment unit at Technical Area (TA) 16, known as the TA-16-388 Flash Pad.

The information within the enclosed document (LA-UR-13-27579) and its attachments address the relevant permit application requirements of 40 CFR Part 270, Subpart B. This permit modification is necessary to incorporate an interim status treatment unit, the TA-16-388 Flash Pad, into the Permit. The open burning treatment unit currently operates under interim status requirements and is necessary for continued safe and compliant treatment of explosives hazardous waste. A letter received from your office, dated December 7, 2012, required this permit modification request to be submitted to the NMED-HWB on or before June 28, 2013. Extensions for this submittal were received on June 28, 2013 and July 26, 2013, and the time to submit the permit modification request was extended to September 30, 2013.

A pre-application public meeting for this permit modification request was held on June 6, 2013 in accordance with Code of Federal Regulations, Title 40, Part 124, Section 31 (40 CFR § 124.31). Section 2.2 of the permit modification request (Enclosure 1) discusses the pre-application meeting, and Attachment A contains responses to the comments received at the meeting, a summary of the pre-application meeting, a list of attendees, and copies of written comments or material submitted at the meeting.

Included herein are three hard copies and an electronic copy of the *Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad)*. Input and output files for air modeling as well as complete raw thermal data not included within the permit modification package are submitted on the compact disc (CD) containing the electronic copy to the NMED-HWB only. The document also includes a draft fact sheet (Attachment K of the permit modification request) about the proposed permit modification, the public comment period, and the public meeting that the Permittees will hold in accordance with the requirements of 40 CFR 270.42(c). This fact sheet will be sent to the NMED-maintained LANL facility mailing list within seven days of transmittal of this request and published in local newspapers.

If you have comments or questions regarding this permit modification, please contact Gene Turner at (505) 667-5794 or Mark Haagenstad at (505) 665-2014.

Sincerely,

Robert L. Dodge
Division Leader
Waste Management (WM-DO)
Los Alamos National Security, LLC

Sincerely,

Geoffrey L. Beausoleil
Acting Manager
Los Alamos Field Office
U.S. Department of Energy

RLD:MPH:LRVH/lm

Enclosure: Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad), Revision 0

Cy: Laurie King, USEPA/Region 6, Dallas, TX, w/enc.
Dave Cobrain, NMED/HWB, Santa Fe, NM, w/enc.
Tim Hall, NMED/HWB, Santa Fe, NM, w/enc.
Peter Maggiore, NA-OO-LA, w/enc., (E-File)
Gene E. Turner, NA-OO-LA, w/enc., (E-File)
Carl A. Beard, PADOPS, w/o enc., (E-File)
Michael T. Brandt, ADESH, w/o enc., (E-File)
David J. Funk, WX-DO, w/o enc., (E-File)

Cy (continued):
Michael F. Stevens, WX-DO, w/o enc., (E-File)
Robert L. Dodge, WM-DO, w/enc., (E-File)
Sandra J. Powell, WX-8, w/ enc., (E-File)
Jody A. Armijo, WM-PROG, w/o enc., (E-File)
Robert L. Lechel, DSESH-WFO, w/ enc., (E-File)
Mark P. Haagenstad, WM-PROG, w/o enc., (E-File)
Luciana Vigil-Holterman, WM-PROG, w/enc., (E-File)
LASOmailbox@nnsa.doe.gov, w/enc., (E-File)
locatesteam@lanl.gov (U1300222, U1301574, and U1301825), w/enc., (E-File)
WM-DO Correspondence File, w/enc., K499

COPY

Waste Management Division
Waste Management Programs
P.O. Box 1663, Mail Stop K499
Los Alamos, New Mexico 87545
(505)667-4873/Fax:(505)-667-9201

National Nuclear Security Administrations
Los Alamos Field Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505)667-5948

Date: SEP 3 0 2013
Refer To: WM-DO-13-0064
LAUR: 13-27579

RECEIVED

SEP 3 0 2013

NMED
Hazardous Waste Bureau

Mr. John E. Kieling
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Dear Mr. Kieling:

Subject: 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

The purpose of this letter is to submit and request approval for the included Resource Conservation and Recovery Act (RCRA) Class 3 permit modification request. The information provided within the request details the addition of a single hazardous waste management unit to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (Permit), issued by the New Mexico Environment Department (NMED) in November 2010. The unit requested for inclusion in the Permit is the hazardous waste open burning treatment unit at Technical Area (TA) 16, known as the TA-16-388 Flash Pad.

The information within the enclosed document (LA-UR-13-27579) and its attachments address the relevant permit application requirements of 40 CFR Part 270, Subpart B. This permit modification is necessary to incorporate an interim status treatment unit, the TA-16-388 Flash Pad, into the Permit. The open burning treatment unit currently operates under interim status requirements and is necessary for continued safe and compliant treatment of explosives hazardous waste. A letter received from your office, dated December 7, 2012, required this permit modification request to be submitted to the NMED-HWB on or before June 28, 2013. Extensions for this submittal were received on June 28, 2013 and July 26, 2013, and the time to submit the permit modification request was extended to September 30, 2013.

ENCLOSURE 1

Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad), Revision 0

WM-DO-13-0064

LAUR-13-27579

(U1300222, U1301574, and U1301825)

Date: SEP 3 0 2013

September 2013
LA-UR-13- 27579

Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad)

Revision 0

Prepared by:

Los Alamos National Laboratory
Waste Management Programs Group
Los Alamos, New Mexico 87545

[This page has been left intentionally blank.]

Permit Modification Request
Open Burning Unit at Technical Area 16
(TA-16-388 Flash Pad)

Revision 0

LA-UR-13- 27579

Prepared by:

Los Alamos National Laboratory

Waste Management Programs Group

Los Alamos, New Mexico 87545

[This page has been left intentionally blank.]

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

List of Tables

List of Figures

List of Attachments

List of Abbreviations and Acronyms

40 CFR	Title 40, U.S. Code of Federal Regulations
AEHA	U. S. Army Environmental Hygiene Agency
AOC	Area of Concern
AMSL	above mean sea level
CWA	Clean Water Act
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	feet
HI	Hazard Index
IFGMP	Interim Facility-Wide Groundwater Monitoring Plan (LANL 2012c)
IP	Storm Water Individual Permit
IRF	Inspection Record Form
LAFD	Los Alamos Fire Department
LANL (or the Facility)	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MSDS	Material Safety Data Sheet
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMED-HWB	New Mexico Environment Department- Hazardous Waste Bureau
NPDES	National Pollutant Discharge Elimination System
OB	open burning
OBODM	Open Burn/Open Detonation Dispersion Model
OJT	on-the-job training
the Permit	Los Alamos National Laboratory Hazardous Waste Facility Permit (NMED 2010)
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RFI	Remedial Facility Investigation
SMA	Site Monitoring Area
SVOC	semi-volatile organic compound
SW-846	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA-SW-846, (EPA 1986)
SWMU	Solid Waste Management Unit

List of Abbreviations and Acronyms

(continued)

TA	Technical Area
TAL	target action level
T&E	threatened and endangered
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

[This page has been left intentionally blank.]

1.0 INTRODUCTION

This document contains a Class 3 permit modification request to add a hazardous waste treatment unit to the *Los Alamos National Laboratory Hazardous Waste Facility Permit*, hereinafter referred to as the Permit, issued by the New Mexico Environment Department (NMED) in November 2010 (NMED 2010). Los Alamos National Laboratory (LANL or the Facility) U.S. Environmental Protection Agency (EPA) Identification Number is NM0890010515. The Facility is owned and co-operated by the U.S. Department of Energy (DOE) and co-operated by Los Alamos National Security, LLC (LANS) (collectively the Permittees). This modification request was prepared in accordance with requirements of the Permit Part 1.6.2 (20.4.1.900 New Mexico Administrative Code (NMAC)) specific to hazardous waste open burning (OB) treatment operations at the Technical Area (TA) 16-388 Flash Pad. The 20.4.1 NMAC adopts, with a few exceptions, all of the Code of Federal Regulations, Title 40, (40 CFR) Parts 260 to 266, Part 268, Part 270, and Part 273. Because of this, regulatory citations in this document reference the appropriate federal hazardous waste regulations. Table 1-1 provides a list of regulatory references and their corresponding locations in this permit modification request.

This permit modification request fully replaces a prior request included within the *Los Alamos National Laboratory Technical Area 16 Part B Permit Renewal Application, Revision 4.0* submitted in June 2003 (LANL 2003a). By letter dated July 26, 2013, the New Mexico Environment Department's Hazardous Waste Bureau (NMED-HWB) required that this modification request be submitted on or before September 30, 2013 and the information contained herein was reformatted and updated to facilitate the permitting process (NMED-HWB 2013). The Permit will serve as an "umbrella" document, covering the requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically 40 CFR, common to all hazardous waste management units at LANL. Together, information provided in this document and in the Permit will meet the applicable requirements specified in 40 CFR Parts 264 and 270.

Table 1-1

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
270.13(a)	Activities conducted by applicant which require a permit under RCRA	Attachment C
270.13(b)	Name, mailing address, and location of facility	Attachment C
270.13(c)	NAICS codes for the facility	Attachment C
270.13(d)	Operator's name, address, telephone number	Attachment C
270.13(e)	Owner's name, address, telephone number	Attachment C
270.13(f)	Whether the facility is located on Indian Lands	Attachment C
270.13(g)	New or existing facility	Attachment C
270.13(h)	Drawings and photographs	Attachment C[a]
27013(i)	Description and design capacity of processes for treating, storing and disposing of hazardous waste	Attachment C
270.13(j)	Specific wastes to be treated, stored, or disposed	Attachment C
270.13(k)	All permits or construction approvals received or applied for	Attachment C
270.13(l)	Topographic maps	Attachment C
270.13(m)	Description of the nature of the business	Attachment C
270.13(n)	Hazardous waste debris categories and contaminant categories	Section 3.2.2.1 and Attachment C
270.14(b)(1)	General facility description	Section 3.1[b]
270.14(b)(2)	Chemical and physical analyses	Section 3.2[b]
270.14(b)(3)	Waste analysis plan	Section 3.2[b]
264.13(b)	Development and implementation of waste analysis plan	Section 3.2[b]
264.13(c)	Off-site waste analysis requirements	NA[c]
270.14(b)(4)	Security procedures and equipment	Section 3.3
264.14	Security	Section 3.3
270.14(b)(5)	General inspection requirements	Section 3.4[b]
264.15	General inspection requirements	Section 3.4
264.174	Container inspections	NA
264.193(i)	Tank inspections	NA
264.195	Overfill control inspections	NA
264.226	Surface impoundments monitoring and inspection	NA
264.254	Waste pile monitoring and inspection	NA
264.273	Land treatment design and operating requirements	NA
264.303	Landfill monitoring and inspection	NA

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
264.602	Miscellaneous unit inspection	Section 2.3
264.1033	Closed-vent systems and control device standards	NA
264.1052	Equipment leak air emission standards	NA
264.1053	Compressor standards	NA
264.1058	Standards for pumps, valves, pressure relief devices, flanges and connections	NA
264.1084	Subpart CC waste determination procedures	NA
264.1085	Subpart CC inspection and monitoring requirements-Tank air emission standards	NA
264.1086	Subpart CC inspection and monitoring requirements-Surface impoundment standards	NA
264.1088	Subpart CC inspection and monitoring requirements-Closed vent systems and control devices	NA
270.14(b)(6)	Request for waiver from preparedness and prevention requirements of 264 Subpart C	NA
270.14(b)(7)	Contingency plan requirements under 264 Subpart D	Section 3.8[b]
264, Subpart D	Contingency plan and emergency procedures	Section 3.8[b]
264.227	Surface impoundment emergency repairs; contingency plans	NA
264.200	Air emissions standards for tanks	NA
264, Subpart C	Preparedness and prevention	Section 3.5
270.14(b)(8)	Preparedness and prevention	Section 3.6
270.14(b)(8)(i)	Prevention of hazards in unloading operations (ramps and special forklifts)	Section 3.6
270.14(b)(8)(ii)	Runoff prevention with berms, trenches, and dikes	Section 3.6
270.14(b)(8)(iii)	Prevention of contamination of water supplies	Section 3.6
270.14(b)(8)(iv)	Mitigation effects of equipment failure and power outages	Section 3.6
270.14(b)(8)(v)	Prevention of undue exposure of personnel by use of personal protective equipment	Section 3.6
270.14(b)(8)(vi)	Prevention of release to the atmosphere	Section 3.6
270.14(b)(9)	Prevention of accidental ignition or reaction	Section 3.7 [b]
264.17	General requirements for ignitable, reactive, or incompatible wastes	Section 3.7 [b]
264.17(c)	Documentation of compliance with 264.17 (general requirements for ignitable, reactive, or incompatible wastes)	Section 3.7 [b]
270.14(b)(10)	Traffic pattern, volume, and controls	Section 3.12 [b]

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
	Identification of turn lanes	Section 3.12
	Identification of traffic/stacking lanes	Section 3.12
	Description of road surface	Section 3.12
	Description of road load-bearing capacity	Section 3.12
	Identification of type and number of traffic controls	Section 3.12
270.14(b)(11)	Facility/unit location information	Section 3.10
264.18	Location standards	Section 3.10.1
270.14(b)(11)(i)	Seismic standard applicability [264.18(a)]	Section 3.10.1
270.14(b)(11)(ii)	Seismic standard requirements	NA
270.14(b)(11)(ii)(A)	No fault within 3,000 feet (ft) with displacement in Holocene time	NA
270.14(b)(11)(ii)(A)(1)	Published geological studies	NA
270.14(b)(11)(ii)(A)(2)	Aerial reconnaissance of a five-mile radius from the facility	NA
270.14(b)(11)(ii)(A)(3)	Analysis of aerial photographs covering 3,000-ft radius from the facility/unit	NA
270.14(b)(11)(ii)(A)(4)	Reconnaissance based on walking portions of the area within 3,000 ft of the facility	NA
270.14(b)(11)(ii)(B)	If faults which have displacement in Holocene time are present within 3,000 ft, no faults pass within 200 ft of portions of the facility where treatment, storage, or disposal will be conducted	NA
270.14(b)(11)(iii)	100-year floodplain standard	Section 3.10 [b]
270.14(b)(11)(iv)	If facility is within 100-year floodplain	Section 3.10.2
270.14(b)(11)(iv)(A)	Engineering analyses of hydrostatic forces expected in a 100-year flood	NA
270.14(b)(11)(iv)(B)	Structural engineering studies for flood protection to prevent washout	NA
270.14(b)(11)(iv)(C)	Detailed description of procedures to remove hazardous waste to safety before flood reaches the waste	NA
270.14(b)(11)(iv)(C)(1)	Timing of removal	NA
270.14(b)(11)(iv)(C)(2)	Location to be moved to	NA
270.14(b)(11)(iv)(C)(3)	Dedicated equipment and personnel to ensure removal	NA
270.14(b)(11)(iv)(C)(4)	Potential for accidental discharge during movement	NA
270.14(b)(11)(v)	Plan to show how the facility will be brought into compliance with 264.18(b)	NA
270.14(b)(12)	Personnel training program	Section 3.14 [b]

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
270.14(b)(13)	Closure and post-closure plans	Section 5.0 [b]
264.112	Amendment of closure plan	Section 5.0 [b]
264.118	Post-closure plan; amendment of plan	Section 5.0 [b]
264.178	Closure/containers	NA
264.197	Closure/tanks	NA
264.228	Closure/post-closure/surface impoundments	NA
264.258	Closure/post-closure/waste piles	NA
264.280	Closure/post-closure/land treatment	NA
264.310	Closure/post-closure/landfills	NA
264.351	Closure/incinerators	NA
264.601	Miscellaneous unit closure	Section 5.0 [b]
264.603	Post-closure care	Section 5.0 [b]
270.14(b)(14)	Post-closure notices (264.119)	NA
270.14(b)(15)	Closure cost estimate (264.142)	Section 5.1, NA
	Financial assurance (264.143)	Section 5.1, NA
270.14(b)(16)	Post-closure cost estimate (264.144)	Section 5.1, NA
	Post-closure care financial assurance (264.145)	Section 5.1, NA
270.14(b)(17)	Liability insurance (264.147)	Section 5.1, NA
270.14(b)(18)	Proof of financial coverage (264.149-150)	Section 5.1, NA
270.14(b)(19)	Topographic map requirements	Section 3.11 [a]
270.14(b)(19)(i)	Map scale and date	Section 3.11 [a]
270.14(b)(19)(ii)	100-year floodplain	Section 3.11 [a]
270.14(b)(19)(iii)	Surface waters	Section 3.11
270.14(b)(19)(iv)	Land use	Section 3.11
270.14(b)(19)(v)	Wind rose	Section 3.11
270.14(b)(19)(vi)	Map orientation	Section 3.11
270.14(b)(19)(vii)	Legal boundaries	Section 3.11
270.14(b)(19)(viii)	Access controls	Section 3.11
270.14(b)(19)(ix)	Wells	Section 3.11
270.14(b)(19)(x)	Buildings, treatment, storage, and disposal operations	Section 3.11 [b]
	Run-on/run-off control systems	Section 3.11
	Storm sewer systems	Section 3.11
	Sanitary sewer systems	Section 3.11

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
	Process sewer systems	Section 3.11
	Loading/unloading areas	Section 3.11
	Fire control facilities	Section 3.11 [b]
270.14(b)(19)(xi)	Drainage barriers	Section 3.11
270.14(b)(19)(xii)	Location of operational units	Section 3.11
270.14(b)(20)	Other federal laws	Section 3.16 [b]
270.3(a)	Wild and Scenic Rivers Act	Section 3.16
270.3(b)	National Historic Preservation Act	Section 3.16
270.3(c)	Endangered Species Act	Section 3.16
270.3(d)	Coastal Zone Management	Section 3.16
270.3(e)	Fish and Wildlife Coordination Act	Section 3.16
270.3(f)	Executive Orders	Section 3.16
270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
270.14(b)(22)	Summary of pre-application meeting	Section 2.2 and Attachment A
270.14(c)	Groundwater monitoring requirements	Section 3.13, NA
270.14(c)(1)	Groundwater monitoring under 265.90 through 265.94	NA
270.14(c)(2)	Identification of uppermost aquifer, groundwater flow rate and direction	NA
270.14(c)(3)	A topographic map required under 270.14(b)(19) that identifies proposed point of compliance	NA
	Proposed location of groundwater monitoring wells under 264.97.	NA
270.14(c)(4)	Description of plume of contamination that has entered groundwater	NA
270.14(c)(4)(i)	Extent of plume indicated on topographic map	NA
270.14(c)(4)(ii)	Identification of constituents and concentration for Appendix IX of 264	NA
270.14(c)(5)	Detailed plan and an engineering report describing proposed groundwater monitoring program under 264.97	NA
270.14(c)(6)	No releases detected in groundwater (264.98)	NA
270.14(c)(6)(i)	List of proposed indicator parameters	NA
270.14(c)(6)(ii)	Proposed groundwater monitoring system	NA
270.14(c)(6)(iii)	Background values for each proposed monitoring parameter	NA
270.14(c)(6)(iv)	Description of proposed sampling, analyses and	NA

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
	statistical comparisons to be used	
270.14(c)(7)	Release detected at point of compliance requires corrective action under 264.100	NA
270.14(c)(8)	Hazardous constituents exceeding concentration limits in 264.94	NA
270.14(d)	Information requirements for solid waste management units (SWMU)	6.0
270.14(d)(1)(i)	Location of SWMUs on topographic map	6.1
270.14(d)(1)(ii)	Types of SWMUs	6.1
270.14(d)(1)(iii)	Dimensions and descriptions of SWMUs	6.1
270.14(d)(1)(iv)	Dates of operation	6.1
270.14(d)(1)(v)	Waste types managed at SWMU	6.1
270.14(d)(2)	Information on releases from SWMUs	6.1
270.15	Containers	NA
270.16	Tank systems	NA
270.17	Surface impoundments	NA
270.18	Waste piles	NA
270.19	Incinerators	NA
270.20	Land treatment facilities	NA
270.21	Landfills	NA
270.22	Boilers & industrial facilities	NA
270.23(a)	Description of miscellaneous unit	Section 3.1.1
270.23(b)	Compliance with environmental performance standards at 264.601	Section 4.2
270.23(c)	Potential pathways of exposure of humans or environmental receptors	Section 4.2
270.23(d)	Effectiveness of treatment	Section 4.3
270.23(e)	Additional information necessary for evaluation of compliance with environmental performance standards of 264.601	Section 4.2
270.24	Process vents	NA
270.25	Equipment for compliance with part 264, subpart BB requirements	NA
270.26	Drip pads	NA
270.27	Air emission controls for tanks, surface impoundments, and containers	NA
270.28	Post-closure permits	NA

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
264.601(a)	Prevention of release of contaminants to groundwater	Section 4.2.1
264.601(a)(1)	Volume and characteristics of waste considering potential for migration through containing structures	Section 4.2.1
264.601(a)(2)	Hydrologic/geologic characteristics	Section 4.2.1
264.601(a)(3)	Quality of groundwater including other sources of contamination and their cumulative impact on groundwater	Section 4.2.1
264.601(a)(4)	Quantity and direction of groundwater flow	Section 4.2.1
264.601(a)(5)	Proximity to and withdrawal rates of potential groundwater users	Section 4.2.1
264.601(a)(6)	Regional patterns of land use	Section 4.2.1 [b]
264.601(a)(7)	Potential for deposition and migration of waste constituents	Section 4.2.1
264.601(a)(8)	Potential for health risks caused by human exposure to waste constituents	Section 4.2.1 and Attachment H
264.601(a)(9)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	Section 4.2.1 and Attachment H
264.601(b)	Prevention of release of contaminants to surface water	Section 4.2.2
264.601(b)(1)	Volume and characteristics of the waste	Sections 3.2.1 and 4.2.2
264.601(b)(2)	Effectiveness and reliability of containment, confinement, and collection systems and structures	Sections 3.6 and 4.2.2
264.601(b)(3)	Hydrologic characteristics of the unit and local area	Section 4.2.2
264.601(b)(4)	Regional precipitation patterns	Section 4.2.2
264.601(b)(5)	Quantity, quality, and direction of groundwater flow	Section 4.2.2
264.601(b)(6)	Proximity of the unit to surface water	Section 4.2.2
264.601(b)(7)	Current and potential uses of nearby surface waters and water quality standards for those waters	Section 4.2.2
264.601(b)(8)	Quality of surface waters and soils including other sources of contamination and their cumulative impact on surface waters and soils	Sections 4.2.2 and 4.2.3
264.601(b)(9)	Regional patterns of land use	Section 4.2.2 [b]
264.601(b)(10)	Potential for health risks caused by human exposure to waste constituents	Sections 4.2.2, 4.2.3, & 4.2.5 and Attachments F & H
264.601(b)(11)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	Sections 4.2.2, 4.2.3, & 4.2.5 and Attachment F & H

Table 1-1 (continued)

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR Section or Part)	Description of Requirement	Location in this Document
264.601(c)	Prevention of release of contaminants to air	Section 4.2.4
264.601(c)(1)	Volume and characteristics of waste including its potential for emission	Section 4.2.4 and Attachments G & I
264.601(c)(2)	Effectiveness and reliability of systems/structures to reduce/prevent emissions of hazardous constituents to the air	Sections 3.6 and 4.2.4
264.601(c)(3)	Operating characteristics of the unit	Section 4.1
264.601(c)(4)	Characteristics of the unit and the surrounding area	Section 3.0 [b]
264.601(c)(5)	Existing quality of the air including other sources of contaminants and their cumulative impact on the air	Section 4.2.4 and Attachments G & I
264.601(c)(6)	Potential health risks caused by human exposure to waste constituents	Section 4.2.4 and Attachments G, H, & I
264.601(c)(7)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	Section 4.2.5 and Attachments G, H, & I
264.33	Testing and maintenance of equipment	Section 3.5
264.75	Biennial report	Section 3.9
264.76	Unmanifested waste report	Section 3.9
264.77	Additional reports	Section 3.9
264.101	Corrective action for solid waste management units	Section 6.0
265.370	Other thermal treatment	Sections 2.3.3 and 4.1.1
265.373	Thermal treatment general operating requirements	Section 4.1
265.375	Thermal treatment waste analysis	Section 3.2
265.377	Thermal treatment monitoring and inspections	Sections 3.4 and 4.1
265.381	Thermal treatment unit closure	Section 5.0, Attachment D
265.382	Open burning; waste explosives	Section 3.2

[a] Some of the topographic map requirements are addressed in the "Los Alamos National Laboratory General Part A Permit Application," Revision 6.0 (LANL 2009a).
[b] Requirement or information is also addressed in the *Los Alamos National Laboratory Hazardous Waste Facility Permit* (NMED 2010), as appropriate.
[c] NA = not applicable.

[This page has been left intentionally blank.]

2.0 OVERVIEW OF CLASS 3 PERMIT MODIFICATION REQUEST

This Class 3 permit modification request was submitted prior to September 30, 2013, as requested by the NMED-HWB. The TA-16-388 Flash Pad is used to treat explosives waste streams by OB. The information within this document and its attachments address the relevant permit application requirements of 40 CFR Part 270, Subpart B. The TA-16-388 Flash Pad consists of a concrete pad set with 3-foot (ft) high walls along the back and two sides. A 5-ft long propane burner is mounted on each of the walls and is used to provide the heat source for OB treatment activities. The TA-16-388 Flash Pad is covered by a steel roof that is retracted when the unit is in use.

2.1 PERMIT MODIFICATION OUTLINE

This permit modification request is organized in to eight primary sections, as follows:

- Section 1.0: Includes an introduction to the permit modification request and a crosswalk of the regulatory requirements associated with the OB unit that DOE and LANS are requesting to include in the Permit.
- Section 2.0: Includes a brief outline of the permit modification request and a description of how the request is organized.
- Section 3.0: Discusses the OB unit's applicability to general facility requirements such as waste characterization, security requirements, inspection requirements, preparedness and prevention requirements, contingency plan requirements, recordkeeping, and facility location information, and evaluates other federal laws, other permit activities, and training specific to the OB unit.
- Section 4.0: Describes the OB unit operations and addresses unit-specific requirements associated with operations at the unit, environmental performance standards, and treatment effectiveness.
- Section 5.0: Includes general closure requirements for the OB unit and discusses the closure plan.
- Section 6.0: Describes Solid Waste Management Units (SWMUs) near the OB unit.
- Section 7.0: Contains a list of references.
- Section 8.0: Contains the certification statement and signatures as required by 40 CFR § 270.11.

In addition, this permit modification request contains eleven (11) attachments to provide more detailed information to meet regulatory requirements. Attachment A provides information on the pre-application public meeting held on June 6, 2013. A summary of the history of waste management units at the TA-16 Burn Ground is included as Attachment B. Suggested permit changes are included in Attachment C and D. Attachment E provides an assessment of alternative technologies to OB, and information on waste minimization practices specific to explosives waste streams and shipment of explosives waste streams for off-site disposal. Several attachments (Attachments F, G, H, and I) provide specific information demonstrating how the TA-16-388 Flash Pad meets environmental performance standards. Attachment J contains combustion temperature data from the LANL OB treatment operations. The final attachment within this permit modification request (Attachment K) includes a draft public notice that will be sent to the NMED-maintained LANL facility mailing list after submittal of the request.

2.2 PRE-APPLICATION PUBLIC MEETING

In accordance with the requirements of 40 CFR § 124.31(c), the Permittees held a pre-application public meeting on June 6, 2013. Public notice of the pre-application public meeting was given at least 30 days prior to the meeting in a newspaper of general circulation and by a mailing to the NMED-HWB-maintained facility mailing list. The newspaper advertisements were published on May 5, 2013 in the *Los Alamos Monitor, Santa Fe New Mexican,* and the *Albuquerque Journal North*, The notice was mailed on May 3, 2013. KRSN AM ran a public media announcement from June 3, 2013 through June 6, 2013. A sign was placed at Fuller Lodge, the location of the public meeting, because the TA-16-388 Flash Pad is not publicly accessible. The sign was displayed from June 3, 2013 through June 6, 2013. Evidence of these public notifications is included within Attachment A.

In addition, post-meeting documentation is incorporated in Attachment A as required by 40 CFR § 270.14(b)(22). It includes a summary of the pre-application meeting; a list of attendees; and copies of written comments or material submitted at the meeting. Although not required by regulation, the Permittees also included a transcription of the written public comments with brief responses to the comments, and made every attempt to clarify or incorporate the public's suggestions into this modification request. Questions that arose during the public meeting included requests for information on the location of soil samples, further discussion about contained burning to replace open burning, waste stream clarifications, and questions on the shipment of residual ash generated by open burning. Responses to written comments received are found in Attachment A. Information on soil monitoring, baseline assessment, assessment of alternatives to open burning treatment on-site, and waste descriptions and characterization that responds to questions raised at the meeting is included in Sections 2.3.3, 3.2, 4.2.3, and 4.2.5 of this permit modification request.

2.3 CLASS 3 PERMIT MODIFICATION REQUIREMENTS

The requirements at 40 CFR § 270.42(c) state that the Permittees shall submit a modification request to the Department that:

- Describes the exact changes to be made to the permit conditions and supporting documents referenced by the Permit;
- Identifies that the modification is a Class 3 modification;
- Explains why the modification is needed; and
- Provides the applicable information required by 40 CFR § 270.13 through 270.22, 270.62, 270.63, and 270.66.

Sections 2.3.1 through 2.3.3 provide the information required by the first three bullets above. The remainder of the document contains the application information that is required by the fourth bullet above. Table 1-1 outlines each of the regulatory references and the location where the information can be found in historical documentation and/or within this permit modification request.

2.3.1 Proposed Changes To Be Made

Attachment D contains the changes to the LANL Hazardous Waste Facility Permit proposed by the Permittees, as required by 40 CFR § 270.42(c)(i). For brevity, only the pages of the Permit for which specific changes are requested are included in Attachment D. Changes include the following:

- Permit Part 1, *General Permit Conditions;*
- Permit Part 2, *General Facility Conditions;*
- Permit Part 6, *(Reserved);*
- Permit Part 9, *Closure*;
- Attachment A, *Technical Area (TA) – Unit Descriptions*;
- Attachment B*, Part A Application*;
- Attachment C, *Waste Analysis Plan*;
- Attachment D, *Contingency Plan*;
- Attachment E, *Inspection Plan*;
- Attachment G, addition of closure plan, *Attachment G.28 Closure Plan Open Burning Treatment Unit Technical Area 16-388 Flash Pad*;
- Attachment I, *Compliance Schedule*;
- Attachment J, *Hazardous Waste Management Units*; and
- Attachment N, *Figures*.

Attachment C of this permit modification request contains Amendment 15.0 of the LANL Part A Application form (a former amendment is included as Attachment B of the Permit (NMED 2010)). Changes to the form have not been highlighted within Attachment C; however, the pages that have been changed are included within Attachment D and highlights have been added where changes were made. Also, the Permittees have made every effort to avoid duplicating the changes previously proposed in other outstanding permit modification requests that have not been acted upon by the NMED-HWB, for example, the requests for the interim status open detonation units and the TA-63 Transuranic Waste Facility. Suggested section numbers, listed item numbers, figure numbers, and information contained within Attachment D should be modified and should correspond with the open detonation units (e.g., Reserved Permit Part 5) and the TA-63 Transuranic Waste Facility Class 3 permit modification requests submitted for review and approval by the Permittees since November 2010.

2.3.2 Justification For Classification

The addition of a waste treatment unit is not specifically called out within Appendix I of 40 CFR § 270.42; therefore, the Permittees have submitted this permit modification request as a Class 3 permit modification in accordance with 40 CFR § 270.42(d)(1) to meet the requirements outlined in 40 CFR § 270.42(c)(1).

2.3.3 Purpose And Need For Permit Modification

This permit modification is necessary to incorporate the interim status treatment unit at the TA-16-388 Flash Pad into the Permit. The TA-16-388 Flash Pad currently operates as a hazardous waste thermal treatment unit under interim status requirements of 40 CFR Part 265, Subpart P. For permitting purposes, the unit is considered a miscellaneous unit under 40 CFR 264, Subpart X. Once the NMED-HWB approves the TA-16-388 Flash Pad as a modification to the Permit, interim status at the unit will terminate.

OB treatment is a recognized, well-characterized, and dependable method used to treat hazardous wastes that exhibit the explosive characteristic of reactivity (a subset of EPA hazardous waste code D003), which occurs by self-sustained combustion ignited by an external source. Reactive hazardous wastes are treated by OB when it has been determined to be the safest method for treatment compared to other modes of treatment. It renders the treatment residuals safe to handle and dispose. After OB treatment, the characteristic of reactivity is removed, and the remaining residues are tested and generally disposed as non-hazardous wastes. The TA-16-388 Flash Pad is used to treat certain types of explosives hazardous waste streams by OB.

Attachment E, Treatment Justification for Open Burning Activities at Los Alamos National Laboratory, evaluates (1) why explosives wastes are appropriate for on-site OB treatment activities at LANL; (2) explosives safety hazards associated with transporting the wastes off-site for treatment, and the availability of appropriate off-site treatment; and (3) the availability of alternative treatment methods for wastes treated at the TA-16-388 Flash Pad. It compares the explosive safety hazards as well as potential human health and environmental impacts of various alternatives. The Permitttes conclude that despite significant waste minimization efforts, LANL still needs the ability to perform thermal treatment (e.g., open burning, open detonation) on-site. Further, no single treatment technology exists that could treat all of the hazardous wastes currently treated by OB at LANL; therefore, multiple treatment technologies would have to be employed on-site to replace the TA-16-388 Flash Pad. These technologies would also require RCRA permits prior to construction and are not more protective of human health and the environment than OB.

Finally, the assessment outlines the safety considerations that are important for both on-site treatment activities and the shipment of explosives waste streams off-site and discusses why on-site OB treatment is the only option for treatment of certain waste streams. OB waste treatment is used on-site when it is determined to be the safest and most reliable method for the explosives waste stream to be treated.

3.0 FACILITY REQUIREMENTS

This section of the permit modification request addresses general facility requirements including facility descriptions, waste analysis, preparedness and prevention, inspections, emergency equipment, traffic patterns, location information (i.e., seismic standard, floodplain standard, and archeological sites). It provides a listing and location for required topographic maps, an evaluation of other federal laws, an evaluation of other permit activities, and describes training specific to the OB unit.

3.1 FACILITY DESCRIPTION

The following discussion addresses the general requirements of 40 CFR § 270.14(b)(1). 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 is owned by DOE and is operated jointly by the Permittees. The Facility mailing address is P.O. Box 1663, Los Alamos, New Mexico, 87545.

LANL is divided into TAs, as shown on Figure 3-1. LANL, which occupies an area of approximately 40 square miles, and the associated residential and commercial areas of Los Alamos County, which occupy an area of approximately 109 square miles, are situated on the Pajarito Plateau (40 CFR § 264.601(a)(6)). 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 all 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.

3.1.1 Description of the TA-16-388 Flash Pad

TA-16 is located in the southwestern portion of LANL (Figure 3-1). It is situated on a broad mesa that is bounded on the north by Cañon 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. Elevation ranges from approximately 7,700 feet at the west end of the TA to approximately 6,800 feet at the lower east end. Topography is varied, ranging from steep precipitous canyon walls to sloping mesa tops. The OB unit at LANL is located at the TA-16 Burn Ground in the northeast corner of TA-16 (Figures 3-1 & 3-2). It is located on a mesa that drains to the east and south, and that is bordered on the northern side by Cañon de Valle and on the southern side by Water Canyon. The location coordinates of the TA-16-388 Flash Pad in Universal Trans Mercator (UTM) Zone 13, North American Datum 1983 (NAD83) coordinates are X-Coordinate- 379670.0 and Y-Coordinate- 3967821.0.

The OB unit, known as the TA-16-388 Flash Pad (Figures 3-3 & 3-4), consists of a 22-ft by 22-ft concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft from the pad perimeter. Inset one ft from the edge of the concrete pad along the two sides and back is a 3-ft-high, 8-inch-thick, integrally-poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel roof that covers the entire unit when not in use.

Three 5-ft long forced air propane burners with adjustable mounts are mounted on the concrete wall. These propane burners provide the heat source for treatment activities at the unit. A burner is mounted outside the wall on each side and on the back of the pad. One, two, or three burners can be used, depending on the amount and configuration of the material to be treated. Most treatment events utilize the two side burners. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr). Therefore, the output of each burner is dependent on how many are used for a burn. Usually, the burners are operated at approximately 2.5 million BTU/hr. This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy explosives, and to maintain it at a level sufficient to avoid formation of incomplete combustion products for the duration of the treatment event. The burners and other components are maintained, modified, and/or replaced as needed to ensure proper operation and treatment effectiveness.

The TA-16-388 Flash Pad is used exclusively for OB treatment of explosives waste streams that are generated at LANL, and no other activities. Following waste placement at the unit, open burning operations are controlled and monitored remotely from Building 16-389 (the control building). Operations at the unit require visual surveys and post-burn covering of the unit. This practice minimizes the potential for precipitation contacting untreated hazardous or residual waste, if any exists.

3.2 WASTE CHARACTERIZATION AND ACCEPTANCE

Waste characterization, acceptance, authorized wastes, and plans for waste analysis are described within the following sections in accordance with the requirements at 40 CFR §§ 264.13(a-c), 265.375, 265.382, and 270.14(b)(2-3). This section of the permit modification request provides the information specific to waste analysis and acceptance at the TA-16-388 Flash Pad. The waste analysis plan is developed to ensure that all hazardous waste streams treated at the Flash Pad are properly characterized and any hazardous constituents that may contain or that are released through treatment are sufficiently identified. The *LANL Waste Analysis Plan* is located within Attachment C of the Permit (NMED 2010). A copy of the changes that are requested to the *LANL Waste Analysis Plan*, as required by 40 CFR §§ 264.13(b) and 270.14(b)(3), are suggested permit changes included within Attachment D of this permit modification request.

3.2.1 Waste Acceptance

In accordance with 40 CFR § 265.382, only hazardous waste that has the potential to detonate is treated by open burning. These explosive waste streams exhibit the RCRA characteristic of reactivity, as defined in 40 CFR § 261.23, because they are capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement. The TA-16-388 Flash Pad is used to treat dry explosives, wet explosives, and hazardous waste that is contaminated with explosives in order to remove the RCRA characteristic of reactivity (D003). Other EPA Hazardous Waste Numbers in addition to D003 that may be treated at the unit are identified in Attachment C (Part A Application) of this permit modification request. They are listed as associated with TA-16 and identified as utilizing waste process code X01 (Open Burning/Open Detonation Unit). 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. All explosives waste streams treated at the unit are generated at LANL and are primarily generated from explosives processing operations, such as machining and pressing; research and development activities, including pilot scale explosives production; decommissioning and demolition activities; and (very rarely) from corrective action activities. No off-site wastes are treated by OB at the TA-16-388 Flash Pad; therefore, 40 CFR § 264.13(c) is not applicable.

Prior to acceptance of waste for treatment at the TA-16-388 Flash Pad, waste characterization documentation and a request for treatment are received from the waste generator. This information is reviewed for acceptance at the unit by a site representative familiar with the waste characterization requirements of the waste analysis plan and the site-specific restrictions of the waste treatment unit. When the waste characterization documentation has been approved by the TA-16 Burn Ground Operator, waste acceptance personnel, explosives safety personnel, and responsible line management, treatment for the waste can be scheduled.

After the waste is shipped to the unit but prior to final acceptance for treatment, the Permittees will inspect the shipment to ensure that waste is properly identified and packaged, and that the received waste matches the description on the approved waste characterization and treatment documentation.

3.2.1.1 Waste Description

The Permittees treat two types of waste by OB at the TA-16-388 Flash Pad: explosives waste and explosives-contaminated waste. Tables 3-1 and 3-2 provide a list of explosives used at LANL and a summary of available information for these wastes (see also Attachment D). Explosive-contaminated wastes and explosive wastes treated by OB are as follows:

- Explosives machining waste that includes machining chips or cuttings, filters, and water;
- Excess and waste explosives that can vary from large pieces of explosives to small quantities or powders of explosives;
- Explosives-contaminated combustible waste that consists of debris generated in laboratories and during processing operations;
- Explosives-contaminated solvent; and
- Explosives-contaminated noncombustible debris that includes metal waste from decommissioning and demolition activities.

Of the above list of waste streams, the majority (up to 95%) treated by OB at the TA-16-388 Flash Pad within a year consist of the explosives machining waste stream. Excess explosives, including off-specification, damaged, and salvaged explosives, make up approximately 5-15% of waste treated annually by OB. The remaining three explosives-contaminated waste streams (e.g., solvent, noncombustible debris, and combustible debris) are treated infrequently. These waste treatment estimates are based on recent operations and are subject to change. Only the above waste streams will be treated at the OB unit. Before a new waste stream can be added to the inventory, the Permittees will provide written notice of a permit modification for NMED-HWB approval that evaluates the new waste stream in accordance with 40 CFR §265.375.

3.2.2 Waste Characterization

A description of the waste characterization procedures used for wastes treated at the TA-16-388

Flash Pad is provided below, in accordance with 40 CFR §§ 264.13(a)(1) and 264.13(b)(2), 40 CFR § 270.14(b)(2), and Permit Section 2.4, *Waste Analysis*. The explosives waste streams at LANL treated by OB are considered, by definition, to be reactive because they meet the RCRA requirement of being "capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement." All explosives and explosives-contaminated waste streams treated by OB follow the same characterization process. The following discussion explains each of these waste characterization methods for explosives waste streams. The parameters, rationale, and test methods are summarized in Table 3-3. No explosives waste will be treated by OB until the Permittees are satisfied on the basis of the physical and chemical data that OB treatment is appropriate, effective, and safe.

First, the characterization of explosives waste streams (explosives and explosives-contaminated) fall into the following categories: (1) the content of the waste is an explosives, part, powder, assembly, or machining waste; or (2) the waste is explosives-contaminated material, debris, or media (liquid or solid) that is deemed potentially detonable. The RCRA regulations do not specify a particular characterization method for reactivity of explosives waste streams; characterization of explosives waste is based mainly on the properties of the chemicals known or suspected to be in the waste (e.g., process knowledge or acceptable knowledge). Laboratory analysis or screening will routinely only be used to characterize waste residues or confirm waste constituents after treatment (see Section 3.2.2.1).

Explosives wastes have well-defined physical and chemical characteristics and are characterized by process knowledge, because they are wastes known by the generator to be predominantly explosives or contaminated with a detonable quantity of explosives, as described in Section C.3.1.1.1 of the *LANL Waste Analysis Plan* (Attachment C to the Permit [NMED 2010]). The primary source of information for process knowledge is published or documented data on the specific explosives contained within the waste stream such as Material Safety Data Sheets (MSDSs), package information, laboratory notebooks, standard operating procedures and detailed operating procedures, the chemical inventory for the waste-producing process or experiment, product labels, or contact with the manufacturer.

Explosives-contaminated waste streams are characterized by both process knowledge and/or other acceptable knowledge information to determine whether explosives content within the waste stream is detonable as follows:

- If it is unknown whether explosives are present, a screening method or field test, such as the High Explosives Spot Test (Baytos 1991) or DeTech, may be used.
- If the waste contains visible explosives, it is considered reactive.
- If the waste came into direct contact with explosives, and all of the surfaces cannot be tested or visually examined (e.g., debris or equipment), it is assumed to contain a reactive amount of explosives.

Verification for the waste streams treated at the TA-16-388 Flash Pad occurs through visual inspection before treatment to ensure that the received waste matches the description on the waste acceptance documentation. Explosives and explosives-contaminated wastes are not sampled, because the formulations are closely controlled and well characterized. Additionally, there is a greater risk to sampling and analyzing the waste for the following reasons: (1) explosives and explosives-contaminated waste samples do not fall under standard sample transport exclusions when transporting off-site for analysis, and (2) high explosives are by definition "energetic" and may react adversely to dissolution with acids, extraction with solvents, and sample size reduction techniques used in standard laboratory analytical procedures.

If the waste process changes the Permittees may require additional documentation or analysis. Additional documentation or analytical testing from generators may be requested based upon the following criteria:

- the complexity of the waste-generating process,
- constituents identified during testing of residues were not included in the original waste characterization documentation,
- incomplete or suspect documentation, and/or
- past performance of the waste generators.

3.2.2.1 Treatment Residues

All OB treatment residues shall be sampled and analyzed in accordance with the requirements of Section C.3.1.2 of the *LANL Waste Analysis Plan* (Attachment C to the Permit [NMED 2010]) to ensure that treatment residuals are not hazardous waste. This is usually conducted using the appropriate analytical method from the most recent version of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)* (EPA 1986) as indicated in Table 3-3. All sampling of waste streams is conducted to be representative of the waste and to follow the methods presented in Permit Section 2.4.2, *Sampling and Analysis for Hazardous Wastes* (NMED 2010).

Additionally, analysis of the treatment residue will be used to verify the characterization of the treated explosives waste stream that generated the residue. If analysis of the residue identifies constituents not identified in the waste characterization documentation, those constituents shall be included on the waste profile form for the waste stream prior to acceptance at the OB unit in the future. Most treatment residues generated by the OB treatment process are characterized as nonhazardous wastes; however, all treatment residues (both nonhazardous and hazardous) are shipped off-site for disposal.

Because the TA-16-388 Flash Pad may be used to treat hazardous debris that exhibits a reactive characteristic that may also be mixed with "toxicity characteristic debris" or a "debris contaminated with listed waste" (see 40 CFR § 268.45(b)), the alternative treatment standards outlined in Table 1 at 40 CFR § 268.45 must be met prior to land disposal of the waste (see 40 CFR § 270.13(n)). Any hazardous debris treated at the TA-16-388 Flash Pad that will be land disposed will be separated from treatment residues using simple physical or mechanical means as necessary. If further treatment of the hazardous debris waste is required to meet waste-specific treatment standards for organic compounds, the additional treatment will be conducted at a permitted off-site treatment facility prior to land disposal.

3.2.3 Waste Characterization Review and Verification Frequencies

Initial characterization of waste accepted for treatment at the TA-16-388 Flash Pad is reviewed or repeated to verify that the characterization is accurate and up to date, in accordance with the requirements in Permit Section 2.4.7, *Waste Characterization Review* (NMED 2010), as described within this section. Waste verification is described above, in Section 3.2.2.

Waste characterization documentation is evaluated annually for each of the wastes treated at the TA-16-388 Flash Pad. Waste is recharacterized any time there is a change in the waste-generating processes, or when a waste is received at the TA-16-388 Flash Pad that does not match the pre-approved waste characterization documentation and treatment acceptance documentation.

Post-treatment analysis is conducted to demonstrate treatment effectiveness as well as to determine a proper disposition path for any residue (ash) generated as a result of OB treatment operations. Additional information on treatment residues and treatment effectiveness determinations can be found in Section 3.2.2.1, Treatment Residues, and Section 4.3, Effectiveness of Treatment.

3.3 SECURITY AND ACCESS CONTROL AT THE OB UNIT

The following section describes the security features in place at the TA-16-388 Flash Pad, in accordance with the requirements of 40 CFR §§ 270.14(b)(4), 270.14(b)(19)(viii), and 40 CFR § 264.14.

Security is of paramount importance to safe and successful operations at the TA-16-388 Flash Pad. Security measures taken to control entry and prevent mishap include 24-hour controlled entry stations manned by LANL security personnel, industrial fences to prevent access by livestock and other wildlife, and warning signs.

Collectively, the security procedures and the security features discussed below prevent the unknowing entry of unauthorized persons within the hazard zone of the TA-16-388 Flash Pad at the TA-16 Burn Ground during OB treatment, in accordance with the requirements of 40 CFR § 264.14(b)(2).

3.3.1 Security and Access Control at the TA-16-388 Flash Pad

The TA-16-388 Flash Pad is located within a secured area at which security is maintained through both administratively controlled and physical barriers. Access into the security area can only be gained through controlled entry stations by persons possessing an appropriate security clearance and site-specific training (Figure 3-5). Entry into the secured area is controlled via an entry station that is manned by LANL security personnel or by badge readers 24 hours per day. In addition, entry into the TA-16 Burn Ground is through an industrial fence with access granted through an access control station or a locked access gate. To gain access to the area, visitors must check in at the access control station located in TA-16-969 to be added to the site-specific badge reader system. Unescorted access to the TA-16 Burn Ground is granted only to persons possessing appropriate security clearance and meeting site-specific training requirements. A chain-link fence and brick retaining wall surrounds the TA-16-388 Flash Pad (Figure 3-6). An entry gate is located directly in front of the loading area. This gate is kept closed when loading and unloading operations are not being conducted at the unit. Fences are inspected on a regular basis by security personnel, and repairs are made as necessary.

Warning signs are posted at the entrance to the TA-16-388 Flash Pad and can be seen by personnel approaching the unit. The legend on the signs indicates "Danger Explosives Area." Signs reading "Unauthorized Personnel Keep Out" or an equivalent warning are posted on gates on interior access roads in the vicinity of the TA-16 Burn Ground. All warning signs are legible from a distance of at least 25 feet and are written in English and Spanish.

Prior to operations at the OB unit, unauthorized personnel are cleared from the area and the gate located at the TA-16-388 Flash Pad is closed to reduce the possibility of entry into this area. Additional gates are located along the access roads in the vicinity of the TA-16-388 Flash Pad are also closed to further reduce the possibility of entry into this area during actual OB treatment operations. Personnel at the TA-16-389 control building notify access control at the beginning and end of the OB treatment event. Access control can contact the OB operator to stop the operation should a breach of security occur. In accordance with 40 CFR § 270.14(b)(19)(viii), the location of access controls (fence, gates) at the TA-16-388 Flash Pad are shown on Figure 3-6. The locations of additional industrial and security fences in the TA-16 region are shown on Figure 3-5.

3.4 INSPECTION

In accordance with the requirements of 40 CFR §§ 264.15 and 265.377(a)(3), the TA-16-388 Flash Pad will be inspected so that deficiencies may be found and corrective measures implemented in order to minimize problems due to equipment breakdown or personnel unpreparedness.

The TA-16-388 Flash Pad will be inspected daily when the unit is in use (i.e., when wastes are managed at the unit) and at least weekly when not in use. Inspection parameters are specified in Attachment E (*Inspection Plan*) of the Permit (NMED 2010). Inspection records will be documented on the Inspection Record Form (IRF) or an equivalent form of documentation and maintained by Facility personnel. The IRF and instructions for completing the IRF are included in the *Inspection Plan*, Attachment E of the Permit (NMED 2010).

3.4.1 Additions to Inspection Plan Necessary for the OB Unit

In accordance with 40 CFR §§ 264.15(b) and 264.602, the OB unit is inspected according to the schedule provided below (see Attachment D) and as required by 40 CFR § 270.14(b)(5). Inspection frequencies are adequate based on the deterioration rates of equipment/systems and the probability of harm to human health or the environment if failure of the equipment/systems occurs, or any operator error goes undetected between inspections. Additions to the *Inspection Plan* include text associated with the inspection of the treatment unit. The IRF included within the Permit already includes specific parameters for the OB unit and instructions associated with those parameters.

3.4.1.1 On Day of Treatment

Inspections will be conducted every day of operation (i.e., every day that OB treatment occurs). For inspections conducted on the day of treatment at the TA-16-388 Flash Pad, the following items will be addressed, as appropriate:

1. General IRF information (Items 1-7)
2. (Un)loading area
3. Open burning unit area

3.4.1.2 Weekly

The following items will be inspected at least weekly regardless of whether treatment was conducted during that week. Weekly inspections will address the following items, as appropriate:

1. General IRF information (Items 1-7)
2. Communications equipment
3. Warning signs
4. Security
5. Work surfaces/floors/roads
6. Spill/fire equipment
7. Eyewashes/safety showers
8. Wind sock
9. (Un)loading area
10. Run-on/off control
11. Open burning unit area

3.4.2 Actions Resulting from Inspection

If the Permittees discover any defects, deterioration, operator errors, discharges, or potential hazards during an inspection, the procedures included within Section E.1.2 of the *Inspection Plan*, Attachment E of the Permit (NMED 2010), will be followed. Appropriate corrective measures will be completed and any action taken in response to an inspection will be noted on the IRF or IRF documentation.

3.5 PREPAREDNESS AND PREVENTION

The following sections present how operations at the TA-16-388 Flash Pad comply with the preparedness and prevention requirements of 40 CFR Part 264, Subpart C. Health and safety procedures followed by site personnel during routine operations are described in Section 3.6, Hazards Prevention.

3.5.1 Required Equipment

In accordance with the requirements of 40 CFR § 264.32, the TA-16-388 Flash Pad is equipped with adequate emergency equipment, which includes internal and external communication equipment, alarm systems, fire extinguishers, and fire control and decontamination equipment. Emergency equipment specific to the TA-16-388 Flash Pad is discussed in the following paragraphs and is outlined in Section 3.5.2, Emergency Equipment at the TA-16-388 Flash Pad. These items will be added to Attachment D, *Contingency Plan*, of the Permit (NMED 2010), as appropriate. LANL-wide emergency equipment available for use at any of the LANL hazardous waste management units is presented in Attachment D, *Contingency Plan*, of the Permit (NMED 2010).

A fire alarm pull station is located at the TA-16-1508 High Explosives Wastewater Treatment Facility. This pull station can be accessed by personnel working at the unit. Upon activation of the fire alarm system, an audible alarm sounds to alert personnel of emergency conditions. Manual pull stations alert the Emergency Operations Center, who then contacts the Los Alamos

County Consolidated Dispatch Center, who in turn contacts the Los Alamos Fire Department (LAFD) and the Duty Emergency Manager.

Conventional telephones and two-way radios are available during treatment operations at the TA-16-388 Flash Pad to provide adequate communication and to summon external emergency assistance, if necessary. Telephones located in the TA-16-389 control building may be used in an emergency to communicate the location and nature of hazardous conditions to personnel in the area.

Fire extinguishers are located in the TA-16-389 control building. In addition, each vehicle used to transport explosives (including explosives waste and explosives-contaminated waste) is equipped with a fire extinguisher. Depending on the size of the fire and the fuel source, fire extinguishers may be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel.

A water spigot located at the TA-16-388 Flash Pad and three fire hydrants located in the immediate vicinity of the TA-16-388 Flash Pad provide permanent sources of water. Additionally, arrangements can be made with the LAFD to provide water tanker trucks to the site for use in an emergency. The fire hydrants and the water tanker trucks are capable of supplying water at adequate volume and pressure for use in fire-suppression activities to meet the requirements of 40 CFR § 264.32(d). Procedures are in place that describe when and how fire department assistance is to be used.

Spill control equipment in the form of portable berms to contain spills is available in an all-weather cabinet near the center of the TA-16 Burn Ground. For the purpose of decontamination, eyewash stations are located in the tank-truck garage adjacent to the TA-16-389 control building and in the TA-16-1508 High Explosives Wastewater Treatment Facility. A portable eyewash station is available in the immediate area of the TA-16-388 Flash Pad, when required.

MSDSs, which provide useful exposure information, are available at the group office and at access control. MSDSs and first aid kits are also located in the TA-16-389 control building at the TA-16 Burn Ground.

3.5.2 Emergency Equipment at the TA-16-388 Flash Pad

The following sections list the equipment located at the TA-16-388 Flash Pad in case of an emergency.

3.5.2.1 Fire Control Equipment

ABC and/or BC rated fire extinguishers are located at or in:

- Tank-truck garage (TA-16-1507)
- Control Building (TA-16-389)
- High Explosives Wastewater Treatment Facility (TA-16-1508)
- Each of the vehicles used to transport explosives

Description of General Capabilities:

The fire extinguishers may be used by any employee in the event of a small fire. For larger fires the Los Alamos Fire Department is alerted. LANL workers are trained not to fight a fire involving explosives.

Three fire hydrants are located in the vicinity of the unit and a water spigot is located at the TA-16-388 Flash Pad.

Description of General Capabilities:

The fire hydrants will supply water at adequate volume and pressure to satisfy the requirement of 40 CFR § 264.32.

3.5.2.2 Spill Control Equipment

Portable berms to contain spills are stored in an all-weather cabinet near the center of the TA-16 Burn Ground, at TA-16-386, and next to the TA-16-389 control building.

Description of General Capabilities:

Spill control equipment is available for use at the OB unit in the event of a small spill.

3.5.2.3 Communication Equipment

Telephones are located inside the TA-16-389 control building, at TA-16-1508, and at the railroad gate at the entrance to the TA-16 Burn Ground.

Personnel working at the TA-16 Burn Ground are assigned a site-specific pager for emergencies and lightning warnings.

Personnel working at the site have access to two-way radios.

Description of General Capabilities:

Telephones for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the use of two-way radios and pagers.

A fire alarm pull station is located at TA-16-1508.

Description of General Capabilities:

Manually-operated fire alarms may be activated by any employee in the event of a fire to notify the Emergency Operations Center. If fire danger level is “High”, Los Alamos Fire Department presence may be required on-site during the burn.

3.5.2.4 Decontamination Equipment

Eyewash stations are located in the tank-truck garage and in TA-16-1508. A portable eyewash is available in the immediate area of TA-16-388, when workers will be handling liquids or dusty materials.

Description of General Capabilities:

Eyewashes may be used by personnel who receive an accidental chemical splash to the eyes. Specific MSDSs can be obtained prior to working with hazardous waste to determine if the application of water is indicated for decontamination. MSDSs are also maintained to provide information during emergency response.

3.5.2.5 Personal Protective Equipment:

Appropriate personal protective equipment (PPE) will be worn, when necessary, to protect from hazards found in the workplace under normal conditions. PPE may include respirators, coveralls, and safety glasses that are available for TA-16 personnel during waste-handling operations.

All vehicles are equipped with first-aid kits.

Description of General Capabilities:

First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations.

3.5.3 Testing and Maintenance of Equipment

In accordance with 40 CFR § 264.33, communications and alarm systems and fire protection and decontamination equipment associated with the OB unit are tested and/or maintained according to the inspection schedule detailed in Attachment E, *Inspection Plan*, of the Permit (NMED 2010). The frequency of inspection is adequate to assure proper operation in the event of an emergency. Repair and replacement of emergency equipment are performed, as needed.

3.5.4 Access to Communications or Alarm System

Whenever OB treatment operations are being conducted at the TA-16-388 Flash Pad, involved personnel have immediate access to an emergency communication device, either directly or through visual or voice contact with another individual, in accordance with 40 CFR § 264.34. In the event of an emergency, communication equipment at the TA-16- Burn Ground allows personnel to contact the operating group management, the Emergency Operations Support Center, and/or the Los Alamos County Consolidated Dispatch Center as described in Attachment D (Contingency Plan) of the Permit. In addition to the communications and alarm systems described in this section, two-way radios and pagers are used at the TA-16-388 Flash Pad to provide an additional means of communication between on-site personnel and/or to contact LANL emergency support personnel.

3.5.5 Space Requirements

In accordance with 40 CFR § 264.35, adequate space is maintained at the TA-16-388 Flash Pad to allow the unobstructed movement of personnel and fire protection, spill control, and decontamination equipment in the event of an emergency.

3.5.6 Support Agreements with Outside Agencies

Information on support agreements with outside agencies, as required by 40 CFR § 264.37, is presented in Section 2.10.5 of the Permit (NMED 2010).

3.6 HAZARDS PREVENTION

Descriptions of the preventive procedures, structures, and equipment at the TA-16-388 Flash Pad are presented below. This information is provided in accordance with the requirements of 40 CFR § 270.14(b)(8)(i-vi). Adherence to the procedures and proper use of the structures and equipment will help to prevent exposure to hazards, prevent undue exposure of personnel to hazardous waste, and prevent releases to the environment.

3.6.1 Waste Handling

At the TA-16-388 Flash Pad, large containers of explosives waste streams are typically handled using mechanical equipment such as a forklift or a hydraulic lift gate. Small containers (e.g., boxes, bags, plastic buckets, and cardboard containers) of waste are handled manually or with a dolly. The use of proper handling equipment, appropriate to a container's size and weight, helps to reduce risk while moving containers at the TA-16-388 Flash Pad. Additionally, personnel involved in waste handling and container handling operations at the unit are trained, qualified, and authorized to handle explosives waste and take additional precautions, as necessary, to ensure that containers are handled safely.

3.6.2 Preventing Hazards in Unloading/Loading

Waste will be transported directly to the TA-16-388 Flash Pad. When loading waste, the cargo compartment of the transport vehicle(s) is checked to ensure that it is clean and contains no loose items such as tools or sharp objects. Waste containers are inspected to ensure that there is no damage or leaking material and that they are properly labeled. For transport, the containers of waste are secured with tie-downs. The load limit for transporting explosives is determined by the capacity of the transport vehicle(s). Wastes are transported to the TA-16 Burn Ground by appropriately trained and authorized personnel in a vehicle designed to transport explosives. The waste is unloaded from the vehicle and placed within the unloading area by qualified explosives handlers. A visual examination is conducted after unloading to ensure that containers are not damaged or leaking and that no explosive material remains in the transport vehicle.

3.6.3 Control of Run-on/Runoff

Pursuant to the requirements of 40 CFR § 270.14(b)(19)(xi), Figure 3-7 shows surface contours and drainage around the TA-16-388 Flash Pad. Engineering controls are in place at the unit to prevent runoff of waste constituents from the unit to other areas of the facility or to the environment. Existing storm water controls at the TA-16-388 Flash Pad include rock check dams, berms, and swales to prevent dispersion of legacy contamination. Additionally the unit is covered when it is not in use and as soon as allowable after a treatment event.

3.6.4 Preventing Water Supply Contamination

For the reasons discussed within Section 4.2.1, Protection of Groundwater/Vadose Zone, it is not anticipated that there will be any impact to groundwater or other water supplies as a result of treatment operations at the TA-16-388 Flash Pad. The depth to groundwater at the TA-16-388 Flash Pad is approximately 1,200 feet. Geologic units underlying the area include layers of unsaturated volcanic tuff and ash, the moisture content of which is generally low. Because the moisture content is insufficient for moisture migration through the Bandelier Tuff, no impact to groundwater is expected. In addition, all water supply lines are under pressure and are equipped with backflow prevention devices.

3.6.5 Mitigating Effects of Power Outages

Electrical power is supplied to the TA-16-389 control building. Supplied power at this building is used to operate lighting and telephone and alarm systems. Operations at the TA-16-388 Flash Pad would be discontinued temporarily if electrical power was not restored quickly.

3.6.6 Preventing Undue Exposure

Safety shoes, safety glasses, and other personal protective equipment (PPE) required in explosives areas are worn by workers during routine operations at the TA-16-388 Flash Pad. Additional appropriate PPE is available when identified by the Supervisor on the waste treatment form.

3.6.7 Preventing Releases to the Atmosphere

Releases to the atmosphere resulting from treatment activities at the TA-16-388 Flash Pad cannot be prevented. However, assuming a conservative scenario of treatment activities at the unit (as discussed in Section 4.1.1, Operating Requirements), the estimated resulting emissions will not exceed regulatory levels and, therefore, will not adversely affect human health or the environment (see Section 4.2.4, Protection of the Atmosphere).

3.7 IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES

In accordance with 40 CFR § 270.14(b)(9), this section provides a description of the necessary precautions to prevent accidental ignition or reaction of ignitable or reactive wastes treated by OB, as required by 40 CFR § 264.17. LANL relies on pre-job safety briefings, operating procedures, and other formal work documentation for specific safety and handling requirements associated with the treatment of explosives waste streams. This includes, but is not limited to, the segregation of these wastes according to compatibility groups and by the physical nature of the waste (i.e., liquids and solids).

The treatment of these wastes by OB is an appropriate treatment method under RCRA. It is necessary to mitigate the ignitable and/or reactive hazards associated with explosives waste streams and is the preferred waste management practice for health and safety reasons.

When managing ignitable, reactive, or incompatible wastes, the applicable requirements for the management of ignitable, reactive, and incompatible wastes will be met. The TA-16-388 Flash Pad will routinely manage reactive and ignitable hazardous wastes. Containers holding reactive wastes that are staged prior to treatment at the TA-16-388 Flash Pad will be located at least 50 feet from the TA boundary line at all times and will be protected from sources of ignition or reaction per Permit Section 2.8. There are no sources of open flames located near the area when the open burning treatment unit is not in operation, and cutting and welding activities will not be conducted in the vicinity of waste containers. Smoking is not permitted in areas where reactive wastes are managed. Signs indicating "No Smoking" are conspicuously placed at the entrance to the TA-16 Burn Ground, as required by 40 CFR § 264.17(a). Together, these measures meet the requirements of 40 CFR §§ 264.17(a).

As required by 40 CFR § 264.17(b), all waste treated at the TA-16-388 Flash Pad is managed in order to prevent reactions that may:

- generate pressure, unintended extreme heat or fire, explosions, or violent reactions;
- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

- damage the structural integrity of the device or facility; or
- through other like means threaten human health or the environment.

Additional description of the precautions exercised by personnel at the unit to prevent accidental ignition or reaction of wastes is provided in Section 3.6, Hazards Prevention, of this permit modification request. Documentation of waste characterization, waste treatment operations, and residue removal and characterization for all ignitable, reactive, or incompatible wastes is included in the operating record for the TA-16-388 Flash Pad to document compliance with 40 CFR § 264.17(c).

Incompatible wastes, if managed at the TA-16-388 Flash Pad, are segregated to prevent adverse reactions from occurring through commingling of the wastes. In addition, no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste, as required by 40 CFR §§ 264.177(a) and (b), 40 CFR § 270.15(d), and Section 2.8.2 of the Permit. If incompatible wastes are managed at the unit, the requirements of 40 CFR § 264.177(c), will also be met. Only containers made of or lined with materials that will not react with and are otherwise compatible with the waste to be managed will be used at the unit.

3.8 CONTINGENCY PLAN

In accordance with 40 CFR Part 264, Subpart D, “Contingency Plan and Emergency Procedures,” and 40 CFR § 270.14(b)(7), contingency measures applicable to the TA-16-388 Flash Pad are provided in Attachment D, *Contingency Plan*, of the Permit (NMED 2010). Specific information on emergency response resources and release prevention/mitigation at the TA-16-388 Flash Pad is provided below. A copy of the Contingency Plan in Attachment D of the Permit will be maintained at the TA-16-389 control building. Hazardous waste compliance personnel will be primarily responsible for updating the plan. Additions to Attachment D, *Contingency Plan*, of the Permit specific to this unit are proposed within Attachment D of this permit modification request, as required by 40 CFR § 270.14(b)(7).

Figure 3-8 shows the evacuation route and muster area that will be used at the TA-16-388 Flash Pad in the event of an emergency that requires evacuation. A listing of emergency equipment currently available for use at the TA-16-388 Flash Pad is provided in Section 3.5.2, Emergency Equipment at the TA-16-388 Flash Pad. The evacuation route(s), muster area location(s), and emergency equipment are subject to change.

Personnel working at the TA-16-388 Flash Pad have been trained in emergency procedures and spill control, and are responsible for correction of a nonsudden release from the OB unit, if the correction can be performed safely using normal maintenance and management procedures. Personnel from the Emergency Operations Support Center may provide assistance in mitigating releases. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the NMED-HWB.

Contingency or emergency measures are unanticipated "fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste ..." for which a schedule of remedial actions cannot be reasonably ascertained. Any remedial actions carried out under the provisions of the Contingency Plan will be performed as soon as possible to ensure protection of human health and the environment, as described in Attachment D, *Contingency Plan*, of the Permit (NMED

2010). These remedial actions include site cleanup; proper handling of recovered waste, contaminated soil, or contaminated surface water; decontaminating equipment, as needed; replacing or repairing equipment, as needed; and testing to verify successful cleanup.

Personnel conduct regularly scheduled inspections at the TA-16-388 Flash Pad to detect deterioration and/or failure of containment at the unit. If an inspection reveals deterioration or failure, personnel ensure that repairs, maintenance, and/or replacement are performed, as appropriate.

3.9 RECORDKEEPING REQUIREMENTS

In accordance with 40 CFR PART 264, Subpart E, recordkeeping requirements applicable to the TA-16-388 Flash Pad are discussed in the following sections.

3.9.1 Facility Operating Record

Many of the records required under Section 2.12.2, *Facility Operating Record*, of the Permit will be generated and maintained at the Facility in support of LANL Facility requirements. In particular, these items include 1) hazardous waste received and managed, 2) waste analyses and waste acceptance, 3) Contingency Plan incidents, 4) inspection records, 5) monitoring activities, 6) 40 CFR §268.7 notices, 7) personnel training records, and 8) alternate emergency equipment. Personnel at the OB unit will be trained in the implementation of these recordkeeping requirements, and will maintain logbooks or use other documentation formats to meet the recordkeeping requirements in Section 1.12, *Recordkeeping and Reporting*, of the Permit.

3.9.2 Biennial Report

The Facility will provide timely waste management data to cover the OB unit's activities in support of the reporting requirements of Section 2.12.5, *Biennial Report*, of the Permit. This will include a description and the quantity of each hazardous waste the TA-16-388 Flash Pad treated during the calendar years covered by the biennial report and the method of treatment for each hazardous waste.

3.9.3 Unmanifested Waste Report

Waste from off-site sources may be accepted on a limited basis at LANL provided that such waste is properly characterized and manifested and meets the requirements listed in Section 2.2.1 of the Permit. However, acceptance of waste from off-site sources for treatment at the TA-16-388 Flash Pad is forbidden.

3.9.4 Additional Reports

In accordance with the requirements of 40 CFR § 264.77, LANL will report the following to the NMED-HWB:

- Releases and unanticipated fires and explosions that require implementation of the contingency plan, as specified in 40 CFR § 264.56(i);
- Facility closures, as specified in 40 CFR § 264.115; and
- As otherwise required by 40 CFR Part 264, Subparts F, BB, and CC.

3.9.5 Waste Minimization

In accordance with the requirements of 40 CFR § 264.75 and Section 2.9 of the Permit, LANL develops a report outlining annual waste minimization efforts for the Facility. This report is submitted to NMED-HWB prior to December 1 of each year.

3.9.6 Reporting Other Noncompliance

In accordance with the requirements of Permit Section 1.9.13 and 1.9.14, LANL develops an annual report outlining any non-threatening releases from or at a permitted unit and all instances of noncompliance not reported as an anticipated noncompliance. This report is submitted to NMED-HWB prior to December 1 of each year. For the TA-16-388 Flash Pad, only abnormal treatment events would be reported in accordance with Permit Section 1.9.14.

3.10 FACILITY LOCATION INFORMATION

3.10.1 Seismic Standard

The TA-16-388 Flash Pad is exempt from the seismic standards in 40 CFR §§ 270.14(b)(11) and 264.18(a), because the unit existed prior to January 25, 1985, when the State of New Mexico received hazardous waste authorization. Consistent with the criteria provided in 40 CFR §§ 270.14(b)(11)(i) and 264.18(a), the hazardous waste management unit at TA-16 existed prior to the effective date of regulations; thus, the seismic standards are not applicable.

3.10.2 Floodplain Standard

The TA-16-388 Flash Pad is located on a mesa top. In accordance with 40 CFR §§ 270.14(b)(11)(iii through v), the unit at TA-16 is not located within the 100-year floodplain boundary.

In accordance with the requirements of 40 CFR § 270.14(b)(19)(ii), LANL has mapped all 100 year floodplain boundaries within the Facility, as required in "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515" (EPA 1998). A report was published documenting the floodplain mapping procedures (McLin 1992). These maps were revised after the Cerro Grande Fire and a new report was generated (McLin et. al. 2001). The TA-16-388 Flash Pad is located more than 900 linear feet from the nearest 100 year floodplain boundary which is to the north in the bottom of Cañon de Valle. Figure 3-9 of this permit modification request shows that the OB unit is not within the 100-year floodplain.

3.10.3 Archeological Sites

There are no archaeological sites within a 1,200-foot radius of the TA-16-388 Flash Pad. However, there are two archaeological sites within a 1,300-foot radius of the TA-16-388 Flash Pad.

3.11 TOPOGRAPHIC MAPS

Topographic maps and figures are provided in this permit modification request or referenced to meet the requirements of 40 CFR § 270.14(b)(19) and 40 CFR § 270.13(l). The maps clearly show the map scale, the date of preparation, and a north arrow. The maps and figures used to fulfill these regulatory requirements include the following:

- A 100-year floodplain map showing the location of the OB unit is provided as Figure 3-9 of this permit modification request.
- A map showing surface waters, including intermittent streams, near the TA-16-388 Flash Pad is included as Figure 3-10 of this permit modification request.
- Surrounding land uses (e.g., residential, recreational) are depicted on Figures 1 through 3 within Attachment N, *Figures*, of the Permit (NMED 2010).
- Wind roses for TA-6 and TA-49, the location of the closest wind observation towers to TA-16 at LANL, are shown on Figures 3-11 of this permit modification request.
- Maps showing the legal boundaries of LANL (including TA-16) are located in Figures 1 through 3 within Attachment N, *Figures* of the Permit (NMED 2010).
- The access control features nearest the TA-16-388 Flash Pad (i.e., the fence and entry gates) are shown on Figure 3-6 of this permit modification request.
- Maps showing supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the TA-16-388 Flash Pad are included as Figures 3-10 and 3-12 of this permit modification request.
- The locations of buildings and structures, the hazardous waste management units, and the terrain for a distance of at least 1,000 feet beyond the OB unit are all shown on the topographic map included with the Updated Part A Form (Amendment 15.0) in Attachment C of this permit modification request.
- Figures 3-7 and 3-10 include the location of the Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) discharge structure closest to the TA-16-388 Flash Pad. All other NPDES discharge structure locations are included within Map 2 in the *LANL General Part A Permit Application*, Revision 6.0 (LANL 2009a).
- Storm, sanitary, and process sewer systems at LANL are shown on Figure 3-13 of this permit modification request.
- Drainage control features located at the TA-16-388 Flash pad is shown on Figure 3-7 of this permit modification request.
- Natural surface drainages at the TA-16-388 Flash Pad are shown on the topographic map included as Figures 3-7 and 3-10 of this permit modification request.
- Fire stations serving LANL and the County of Los Alamos are shown on Figure 49 within Attachment N, *Figures*, of the Permit (NMED 2010).
- A map showing all existing wells and boreholes within an approximate three-mile radius of TA-16 is included as Figure 3-12 of this permit modification request.

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at LANL and in the vicinity of the OB unit. As provided in 40 CFR § 270.14(b)(19), LANL has submitted the maps to the NMED-HWB at these scales and contour intervals due to the size of the unit, the extent of the LANL Facility, and the topographic relief in the area.

3.12 TRAFFIC PATTERNS

In accordance with the requirements of 40 CFR § 270.14(b)(10), general traffic pattern information, traffic volumes, and traffic control signals for the Facility are provided in Appendix A of the *LANL General Part B Permit Application* (LANL 2003b). Information specific to the OB unit is provided below.

3.12.1 Routes of Travel

The primary traffic routes that may be used to transport hazardous waste to or from the TA-16-388 Flash Pad at TA-16 include Pajarito Road, Trinity Drive (State Road 502), Diamond Drive, West Jemez Road (State Road 501), Anchor Ranch Road, K-Site Road, State Road 4, and East Jemez Road (see Map 1 in the most recent version of the *LANL General Part A Permit Application*, Revision 6.0 (LANL 2009a) and Figure 3-14 of this permit modification request.

3.12.2 Traffic Volumes

Due to the nature of operations at the TA-16-388 Flash Pad, and because the OB unit is located within a secured area, traffic volume in the area of the unit is kept to an absolute minimum to conduct safe OB treatment operations (typically only one to two vehicles per treatment burn). Vehicle types are generally cars, light- and medium-duty trucks, vans, tank trucks, dump trucks, and sometimes forklifts and cranes. At the TA-16 Burn Ground, vehicles may be parked next to the Control Building (TA-16-389), driven on the TA-16 Burn Ground roads, or parked adjacent to the TA-16-388 Flash Pad. During treatment operations, there are no vehicles parked adjacent to the unit for the duration of the OB treatment operation.

3.12.3 Traffic Control Signals

Traffic control signals at the TA-16 Burn Ground include a single stop sign and a posted speed limit. The locations of existing signs at the TA-16 Burn Ground are shown on Figure 3-2 of this permit modification request.

3.12.4 Road Surfacing and Load-Bearing Capacity

Roads within TA-16 are generally two-lane roads with asphaltic-concrete surfaces. Load-bearing capacity for these roads is 32,000 pounds per axle. These roads are typically constructed with a 6-inch-thick base overlain with a 3-inch-thick asphaltic-concrete surface. These roads were designed and constructed to meet the American Association of State Highway and Transportation Officials (AASHTO) specification HS-20 (AASHTO 1996).

3.13 GROUNDWATER MONITORING

Groundwater monitoring information required under 40 CFR §§ 270.14(c) and 264.90(a) is not required for the OB unit, because the TA-16-388 Flash Pad is not a regulated unit as defined by 40 CFR § 264.90(a)(2). Applicable groundwater monitoring information in accordance with 40 CFR § 264.601(a) is provided in Section 4.2.1, Protection of Groundwater/Vadose Zone.

3.14 TRAINING

In accordance with 40 CFR §§ 270.14(b)(12) and 264.16 and Section 2.7 of the Permit (NMED 2010), training requirements for treatment, storage, and disposal facility workers at LANL are addressed in Attachment F, *Personnel Training,* of the Permit.

The training program instituted at the Facility includes a combination of Facility-wide courses, permitted unit-specific training, and on-the-job training (OJT). Facility-wide courses are provided internally or through external vendors and are usually classroom based. Permitted unit-specific training may be developed and delivered for a particular permitted unit, and OJT consists of supervised and documented training focused primarily on procedures performed by individual workers.

All employees at the TA-16-388 Flash Pad who handle hazardous waste at the unit will receive the appropriate level of training within six months of their date of hire or transfer for work. Personnel will not be allowed to work in unsupervised waste handling positions at the OB unit until they have successfully completed the appropriate level of training for their positions and responsibilities as included in Table F-1 of Attachment F, *Personnel Training,* of the Permit (NMED 2010) at a minimum.

Records of Facility-wide training currently sponsored or administered by central training personnel are entered by that group into UTrain, the official Facility training database, and these records document that the required training has been successfully completed by the workers at the TA-16-388 Flash Pad. The training records are retained at LANL in accordance with Section 2.12.2, *Facility Operating Record,* of the Permit (NMED 2010).

3.15 OTHER PERMIT ACTIVITIES

Other types of RCRA permits include, but are not limited to, the following:

- Permits by Rule
- Emergency Permits
- Hazardous Waste Incinerator Permits
- Permits for Land Treatment Demonstrations Using Field Test or Laboratory Analyses
- Interim Permits for Underground Injection Control Program Wells
- Research, Development, and Demonstration Permits
- Permits for Boilers and Industrial Furnaces Burning Hazardous Waste

Currently, none of these permit types are relevant for operations at the OB unit.

3.16 OTHER FEDERAL LAWS

Under 40 CFR §§ 270.3 and 270.14(b)(20), the following federal laws are required to be given consideration when applying for a hazardous waste facility permit. When any of these laws is applicable, its procedures must be followed:

The Wild and Scenic Rivers Act (16 United States Code [USC] 1273 et seq.). This act provides for a national wild and scenic rivers system and prohibits construction of any waterway that would have a direct adverse effect on the values for which a wild and scenic river was established.

The National Historic Preservation Act of 1966 (16 USC 470 et seq.). This act establishes a program for the preservation of historic properties throughout the country. The act has provisions that require mitigation of adverse effects to properties listed in or eligible for the National

Register of Historic Places.

The Endangered Species Act of 1973 (16 USC 1531). This act provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The act prohibits any action that would jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

The Coastal Zone Management Act of 1972 (16 USC 1451 et seq.). This act establishes national policy for the management, use, protection, and development of land and water resources of the nation's coastal zones. Section 307(c) of the act and implementing regulations prohibit the EPA from issuing a permit for activity affecting coastal zone land or water without the certification from the applicant that the activity is in compliance with the state Coastal Zone Management Program.

The Fish and Wildlife Coordination Act of 1934, as amended (16 USC 661 et seq.). This act promotes the conservation of wildlife, fish, and game and integrates this conservation with water resource projects. Certain provisions of the act require that permits proposing or authorizing the impoundment, diversion, or other control or modification of any body of water be considered by the appropriate state agency for impacts to wildlife resources.

Because LANL has ongoing programs in support of the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act, consideration was given to these federal laws.

The National Historic Preservation Act is administered by the Advisory Council on Historic Preservation, appointed by the President, and the New Mexico State Historic Preservation Office. Section 106 of the Act requires DOE to consider the effects of its actions on historic properties, and provide the Advisory Council on Historic Preservation with a reasonable opportunity to comment on those actions and the manner in which DOE takes historic properties into account in their decisions. DOE accomplishes this through consultation with the State Historic Preservation Office whenever a project may potentially impact a historic property. At LANL, historic properties include prehistoric and historic archaeological sites, historic Manhattan Project and Cold War-era buildings, and associated artifacts.

For any undertaking on DOE land that may directly or indirectly impact threatened and endangered (T&E) species or their habitat, DOE must consult with the U.S. Fish and Wildlife Service (USFWS), as provided under Section 7 of the Endangered Species Act. Similarly, DOE must consult with the USFWS for projects that would impound, divert, or otherwise control or modify a body of water, as required by the Fish and Wildlife Coordination Act. For Endangered Species Act compliance, LANL may prepare a Biological Assessment to document the presence of T&E species and to evaluate the impacts of a project on a listed species or its habitat. DOE will then request in writing that the USFWS concurs with the DOE findings in the Biological Assessment. In recent years, DOE and LANL have streamlined the consultation process by preparing a T&E Species Habitat Management Plan. This plan fulfills the provisions of the Endangered Species Act that require federal agencies to carry out programs for the conservation of T&E species and their habitat. The USFWS approved this plan in February 1999.

Provisions in the Wild and Scenic Rivers Act and the Coastal Zone Management Act are not applicable to the activities at LANL.

Consideration will be given to Executive Orders, issued by the President, that are relevant to waste management activities at LANL. When any of these Orders is applicable, its provisions will be followed. Requirements for Executive Orders are reserved in 40 CFR § 270.3(f).

Table 3-1

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
Ammonium nitrate (AN)
Hexanitrohexaazaisowurtzitane (CL20)
3,3’-diamino-4,4’-azofurazan (DAAzF)
Diamino-azoxyfurazan (DAAF)
3,3’-azobis (6-amino-1,2,4,5-tetrazine) (DAAT)
3,3’-azobis (6-amino-1,2,4,5-tetrazine) n-oxide (DAATOx)
Diaminotrinitrobenzene (DATB)
Dihydrazino-1,2,4,5-tetrazine (DHT)
Dipentaerythritol hexanitrate (DiPEHN)
Dinitroglycouril (DINGU)
Dinitroxydiethylnitramine (DINA)
Ethylenedinitramine (EDNA)
1,1diamino-2,2dinitrethylene (FOX-7)
1,1-diamino-2,2dinitroethene
Glycidyl Azide Polymer (GAP)
Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX)
Hexanitroazobenzene (HNAB)
Hydrogen Peroxide (Pure compound)
Diaminotetrazine dioxide (TZX)
LAX-112
Nitrocellulose (NC)
Nitroguanidine (NQ)
Picrite
3-nitro-1,2,4-triazole-5-one (NTO)
Pentaerythritoltetranitrate (PETN)
Picric Acid
1,3,5-Trinitrophenol
2,6-Bis(picrylamino)-3,5-dinitropyridine (PYX)
Cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX)
Bis-triaminoguanidinium 3,3’-Dinitroazotriazole (TAGDNAT)
Triaminoguanidine nitrate (TAGN)
Triaminoguanidinium tetranitrobiimidizole (TAGN4BIM)
Triaminoguanidium azotetrazolate (TAGzT)
1,3,5-Triamino-2,4,6-trinitrobenzene (TATB)

Table 3-1 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
1,3,3-Trinitroazetidine (TNAZ)
2,4,6-Trinitrophenylmethylnitramine (Tetryl)
Hexanitrostilbene (HNS)
2,4,6-Trinitrotoluene (TNT)
Trotyl
Tripentaerythritol octanitrate (TriPEON)
Bis (2-fluoro-2,2-dinitroethyl) formal (FEFO)
Isopropylnitrate
Methylnitrate
Nitromethane (NM)
Tetranitromethane
AFX-757
AFX-1209 Type II
AFX-1212
Aluminum/Fomblin oil
Ammonium perchlorate (AP)/Fuel mixture
Ammonium nitrate / fuel oil (ANFO)
Boracitol
Baratol
Calcitol
X-0533
CH-6
Composition A
Composition A-4
Composition A-5
Composition B
Hexolite
Hexotol
Composition B-3
Composition C-3
Composition C-4
CR-1
CR-2

Table 3-1 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
CR-4
CR-5
Cyclotol
Detasheet
Detasheet C
Detasheet D
LX-04
Dinitroazotriazole (DNAT)
EDC-8
EDC-18
EDC-28
EDC-29
EDC-31
EDC-32
EDC-35
EDC-37
EDC-38
EF-96
Fixor
HBX-1
Helix-72
IMX-104
Kine-Pak/Kinestick
LAX-118
LLM-105
LX-07
PBX-9012
X-0211
X-0282
LX-14
LX-15
LX-16
LX-17

Table 3-1 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
LX-18
Octogen
Octol
PAX
PBX-7
PBX 9001
PBX 9007
PBX 9010
PBX 9011
PBX 9205
PBX 9206
Benzotrifuroxan (BTF)
Hydrazinium Mononitrate
Hydrazine nitrate
ABX 116-2
ABX 120-1
DAAF/ Polyisobutylene (PIB)
IMX-101
PBX 9401
PBX 9404
PBX 9405
PBX 9407
PBX 9501
PBX 9502
PBX 9503
PBX 9504
X-0290
X-0351
X-0407
LX-10
PBXN-5
PBXN-7
PBXN-7 Type 1

Table 3-1 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
PBXN-7 Type 2
PBXN-9
PBXN-109
PBXN-110
PBXN-111
PBXN-112
PBXN-113
Pentolite
PLG/UW-1
RFX-1300
RFX-SF78
RFX-SF80
RSI-007
RX-55
Semtex 1A
Semtex 10
Semtex 1H
TAGzT
X-0564
X-0565
TBX01
TBX02
Tritonal
Urea Nitrate
VEX288-2B
RX-61-AH
XTX-8004
X-0106
X-0208
X-0219
X-0233
X-0242
X-0298

Table 3-1 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
X-0309
X-0319
X-0321
X-0401
X-0450
X-0457
X-0526
X-0534
X-0535
X-0541
X-0557
X-0566
X-0567
X-0569
XTX-8003
LX-13
Benite
Black powder - Standard commercial and military grades only; Potassium nitrate 75%
Black powder substitute - Commercial synthetic black powder substitute, sodium or potassium nitrate based, Pyrodex or similar
HARP-1,-2
HELP-1,-2
HPP
M-14
Smokeless Powder- Single, Double, or Triple Base - Propellants containing NC, Nitroglycerine (NG), and NQ in combination with stabilizers, plasticizers, inorganic nitrates, and other modifying agents 2,4-dinitrotoluene (2,4-DNT) may also be present
VTP 25540
High power detonators
Low Energy Electro-Explosive Devices (LEEEDs)- Articles that may contain lead azide and/or lead styphnate
Library and Analytical Standards - Small quantities (generally <1 kg) of energetic materials used as library and/or analytical standards

Table 3-1 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
Un-fused or un-primed munitions - Generally includes metal-lined shaped charges and conventional bombs filled with explosives or propellants
Small-arms ammunition of caliber 20-mm or less - Generally complete commercial products

[a] Additional developmental or novel types/formulations of explosives may be treated by open burning and/or open detonation at the treatment unit in small quantities. Specific compositions for mixtures of explosives are not provided.

[b] Treated includes both open burning and open detonation of hazardous waste. Not all explosives listed are suitable for open burning treatment.

[c] Developmental or novel types/formulations of explosives may be added to the allowed energetic materials list at the discretion of the Los Alamos National Laboratory Explosives Review Committee.

Table 3-2

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	Waste Stream Description	% of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives machining waste	Explosives machining chips, filters, filter solids, and water	80-95	Pentaerythritol tetranitrate (PETN), Cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX), Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX), plastic bonded explosives (PBX's or LX's), 4,4-diamino-3,3-azoxyfurazan (DAAF), 2,4,6-trinitrotoluene (TNT), Comp B, and triamino trinitrobenzene (TATB), Baratol, Cyclotol	Plastic bags	D003 D005 D008 D030	Reactivity Barium Lead 2,4-Dinitrotoluene	NA[5] 100 5.0 0.13
Excess explosives	Large, laboratory sized, or small amounts of excess standard 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.	5-15	HMX, RDX, PETN, TATB, DAAF, (2,6-Bis[picrylamino]-3,5-dinitropyridine (PYX), Nitroguanidine (NQ), Nitrocellulose, PBX's and LX's, Comp B, TNT, Boracitol, Cyclotol, HBX-1, Octol, Pentolite, Tritonal, Baratol	Plastic bags, plastic wrapping, plastic casings, cardboard, paper, paper bags, and/or fiberboard containers. Small potential for aluminum, stainless steel, steel, and/or copper.	D001 D003 D005 D030	Ignitability Reactivity Barium 2,4-Dinitrotoluene	NA[5] NA[5] 100.0 0.13

Table 3-2 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	Waste Stream Description	% of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives-contaminated combustible debris	Explosives-contaminated debris generated in research laboratories and processing operations. Debris can involve filters removed from laboratories or processing bays, or may contain very small amounts of solvent. The most common solvents used are ethanol and acetone.	<1	HMX, RDX, PETN, Cyclotol, Octol, TATB, DAAF, PYX, TNT, PBXs and LXs	Plastic bags, plastic wrapping, weigh boats, gloves, vials, cardboard, paper, paper bags, fiberboard containers, kimwipes, rags, swabs, flasks, watch glasses, tubing, and/or rods. Possible aluminum, stainless steel, steel, and/or copper. When solvents are present, may contain trace amounts of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, or trichloroethylene.	D001 D003 D018 D022 D028 D029 D030 D035 D040 F001 F002 F003 F004 F005	Ignitability Reactivity Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene 2,4- Dinitrotoluene Methyl ethyl ketone Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents	NA[5] NA[5] 0.5 6.0 0.5 0.7 0.13 200.0 0.5 NA[5] NA[5] NA[5] NA[5] NA[5]

Table 3-2 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	Waste Stream Description	% of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives-contaminated solvent waste	Dimethyl sulfoxide (DMSO) containing dissolved explosives.	<1	HMX, RDX, PETN, TATB, DAAF, PBXs and LXs		D003 D030	Reactivity 2,4-Dinitrotoluene	NA[5] 0.13
Explosives-contaminated noncombustible debris	Explosives-contaminated equipment including discarded, noncombustible equipment; debris from firing sites; noncombustible material from decommissioning and demolition activities; and material from explosives processing areas such as carbon or sand from filtering processes.	1-3[6]	HMX, RDX, PETN, TATB, DAAF, PYX, NQ, Nitrocellulose, PBX's, LX's, Comp B, TNT, Boracitol, Cyclotol, HBX-1, Octol, Pentolite, Tritonal, Baratol	Noncombustible material may include glass or metal piping or equipment. Rarely when solvents are present, they may include trace amounts of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, or trichloroethylene.	D003 D018 D022 D028 D029 D030 D035 D040 F001 F002 F003 F004 F005	Reactivity Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Methyl ethyl ketone Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents	NA[5] 0.5 6.0 0.5 0.7 0.13 200.0 0.5 NA[5] NA[5] NA[5] NA[5] NA[5]

[1] Estimated percentage of all waste that will be treated at the unit represented by this waste stream.

Table 3-2 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

[2] Potential explosives do not include all of the possible explosives that may be treated at the unit, only those currently expected to be treated as part of the waste stream.
[3] Potential EPA Hazardous Waste Numbers do not include all of the possible waste numbers that may be treated at the unit, only those currently expected to be treated. A full list of EPA Hazardous Waste Numbers that may be treated at the unit is located within the most recent Part A Application form included as Attachment C of this permit modification request.
[4] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in Title 40 of the Code of Federal Regulations, Part 261, Subpart C. These are represented in milligrams per Liter (mg/L).
[5] Not Applicable
[6] Percentage of waste treated per year cannot be accurately estimated for this waste stream, as generation of the waste is dependent on funding for decommissioning and demolition activities. There may be years during which this waste stream is not generated or treated.

Table 3-3

Summary of Characterization Methods[a] for Explosives Waste and Open Burning Treatment Residue

WASTE DESCRIPTION	PARAMETER[a]	CHARACTERIZATION METHOD	RATIONALE
Explosives machining waste	• Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs)	– Acceptable Knowledge [b] – Field Screening [c]	Determine characteristic for reactivity, the total concentration of metals, and the presence of SVOCs
Excess explosives	• Ignitibility • Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs)	– Acceptable Knowledge [b] – Field Screening [c]	Determine characteristic for ignitibility and reactivity, the total concentration of metals, and the presence of SVOCs
Explosives-contaminated combustible debris	• Ignitability • Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs) • Spent halogenated solvents • Spent nonhalogenated solvents	– Acceptable Knowledge [b] – Field Screening [c]	Determine characteristic for ignitibility and reactivity, the total concentration of metals, and the presence of SVOCs or solvents
Explosives-contaminated solvent waste	• Reactivity • 2,4-Dinitrotoluene	– Acceptable Knowledge [b] – Field Screening [c]	Determine characteristic for reactivity and the presence of SVOCs
Explosives-contaminated noncombustible debris	• Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs) • Spent halogenated solvents • Spent nonhalogenated solvents	– Acceptable Knowledge [b] – Field Screening [c]	Determine characteristic for reactivity and the presence of SVOCs

Table 3-3 (continued)

Summary of Characterization Methods[a] for Explosives Waste and Open Burning Treatment Residue

WASTE DESCRIPTION	PARAMETER[a]	CHARACTERIZATION METHOD	RATIONALE
Residue (ash) generated from treatment	• Ignitibility • Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs)	– Acceptable Knowledge [b] – Sampling and analysis [d]	

[a] Regulations do not specify a particular characterization method for reactivity of explosives waste streams; characterization of explosives waste is based mainly on the properties of the chemicals known or suspected to be in the waste (e.g., process knowledge or acceptable knowledge).

[b] Acceptable knowledge is defined in Section C.3.1.1 of Attachment C (Waste Analysis Plan) of the Los Alamos National Laboratory Hazardous Waste Facility Permit (NMED 2010).

[c] Field screening such as High Explosives Spot Test (Baytos 1991) or DeTech can be used to determine the presence of explosives.

[d] Sampling and analysis is conducted in accordance with Permit Section 2.4.2, Sampling and Analysis for Hazardous Wastes, and Section C.3.1.2 of Attachment C (Waste Analysis Plan) of the Los Alamos National Laboratory Hazardous Waste Facility Permit (NMED 2010).

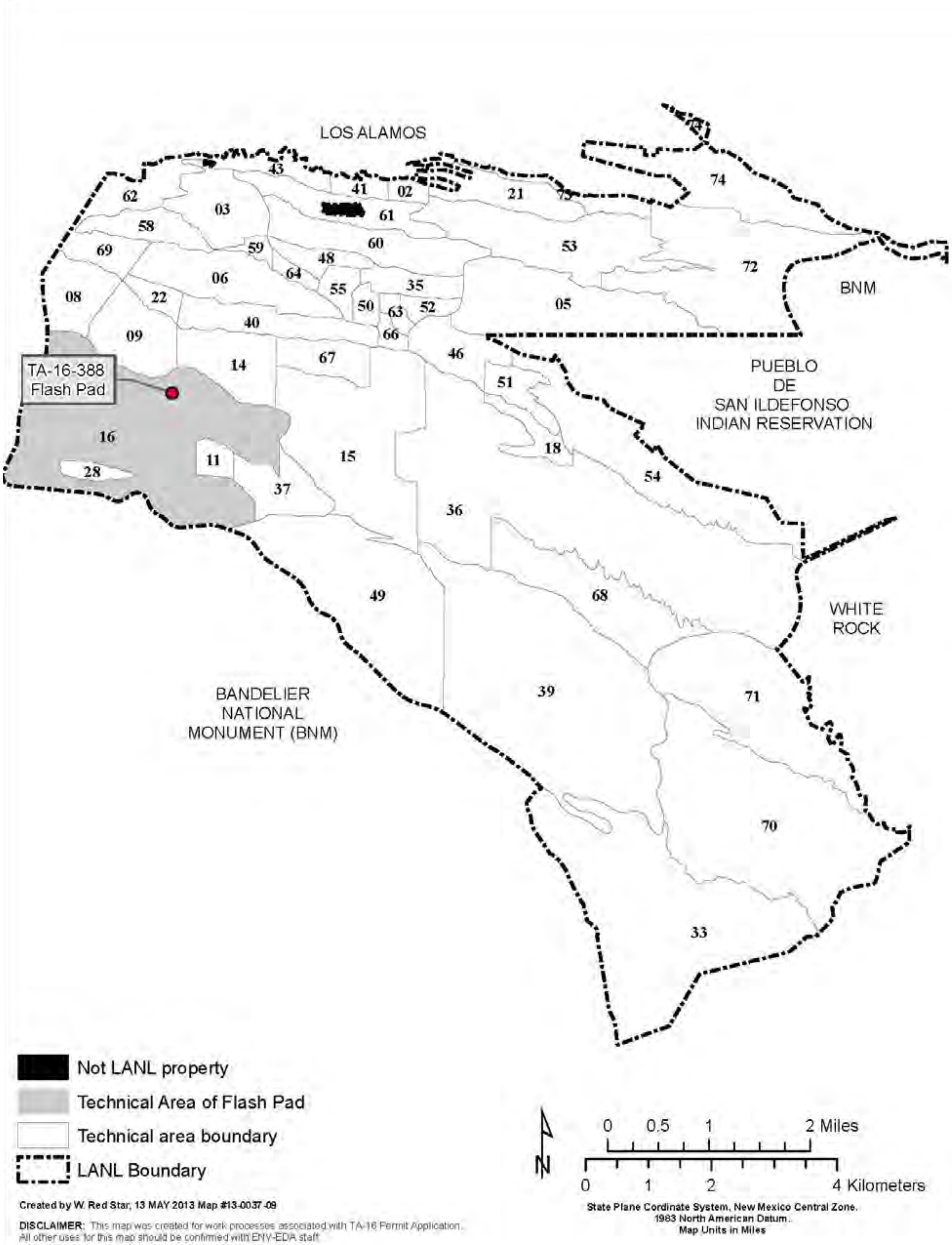


Figure 3-1. Location of Technical Area 16 at Los Alamos National Laboratory

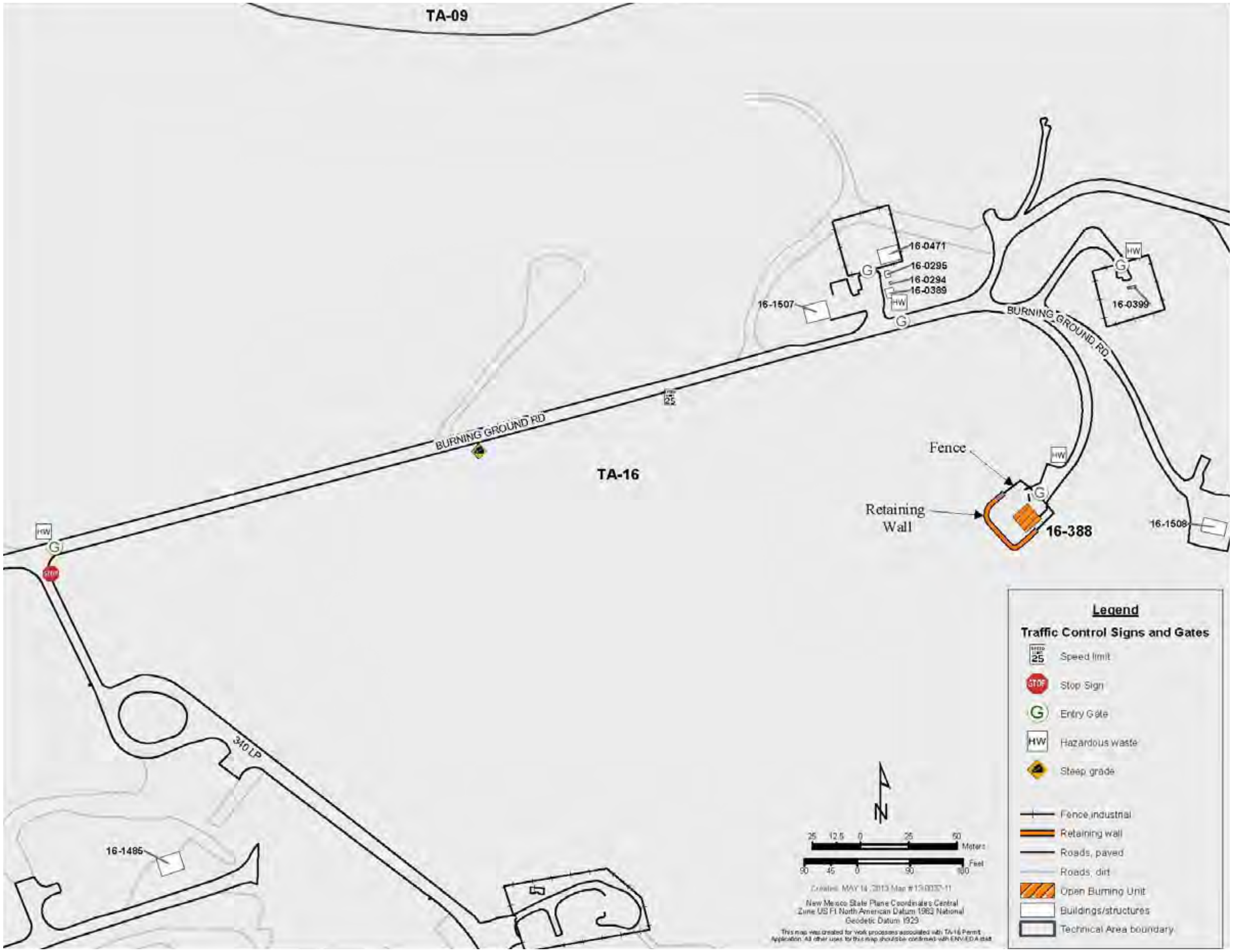


Figure 3-2. Map of TA-16-388 Flash Pad Showing Buildings, Access Roads, and Traffic Control Signs

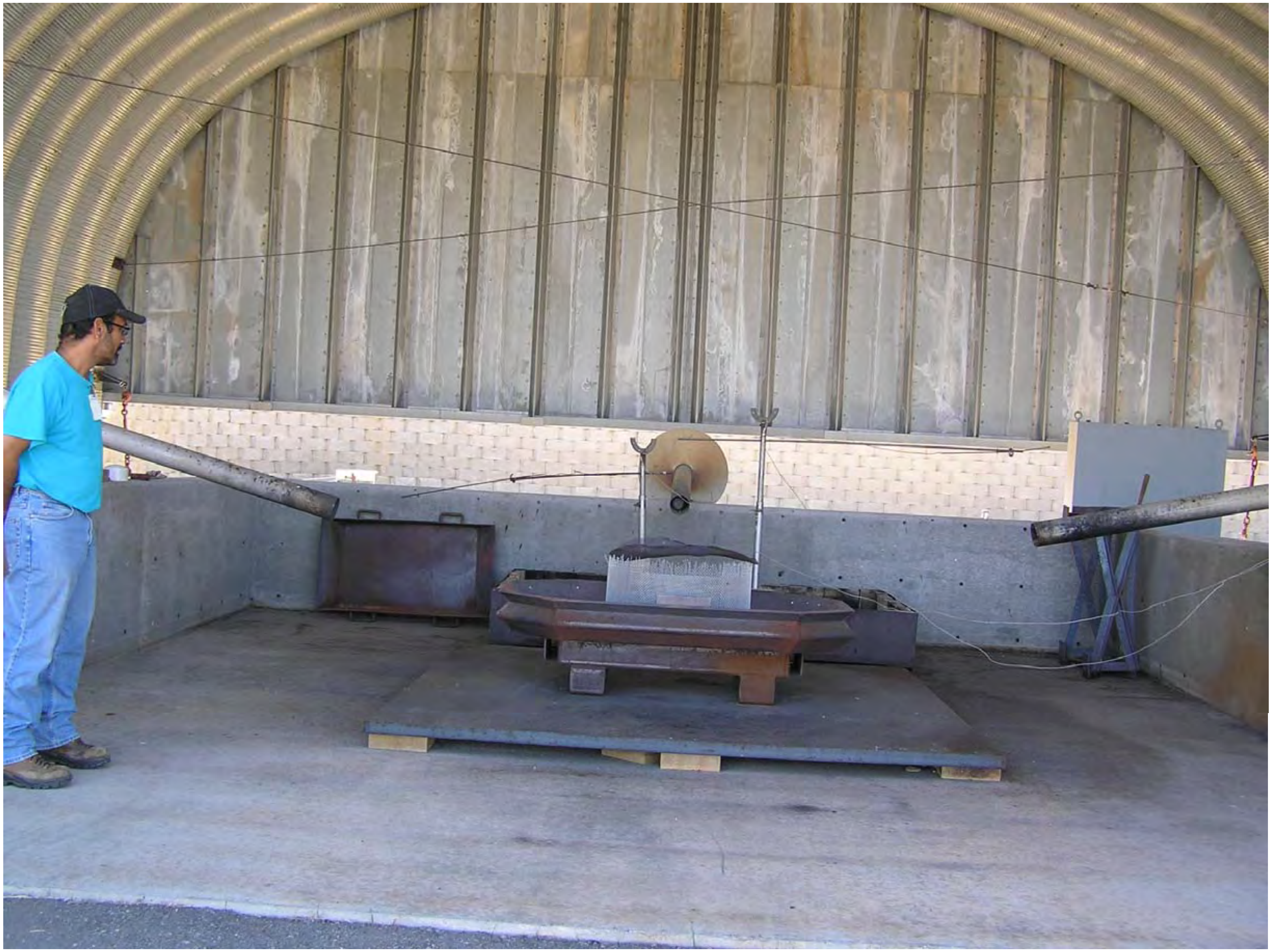


Figure 3-3. Photograph of TA-16-388 Flash Pad

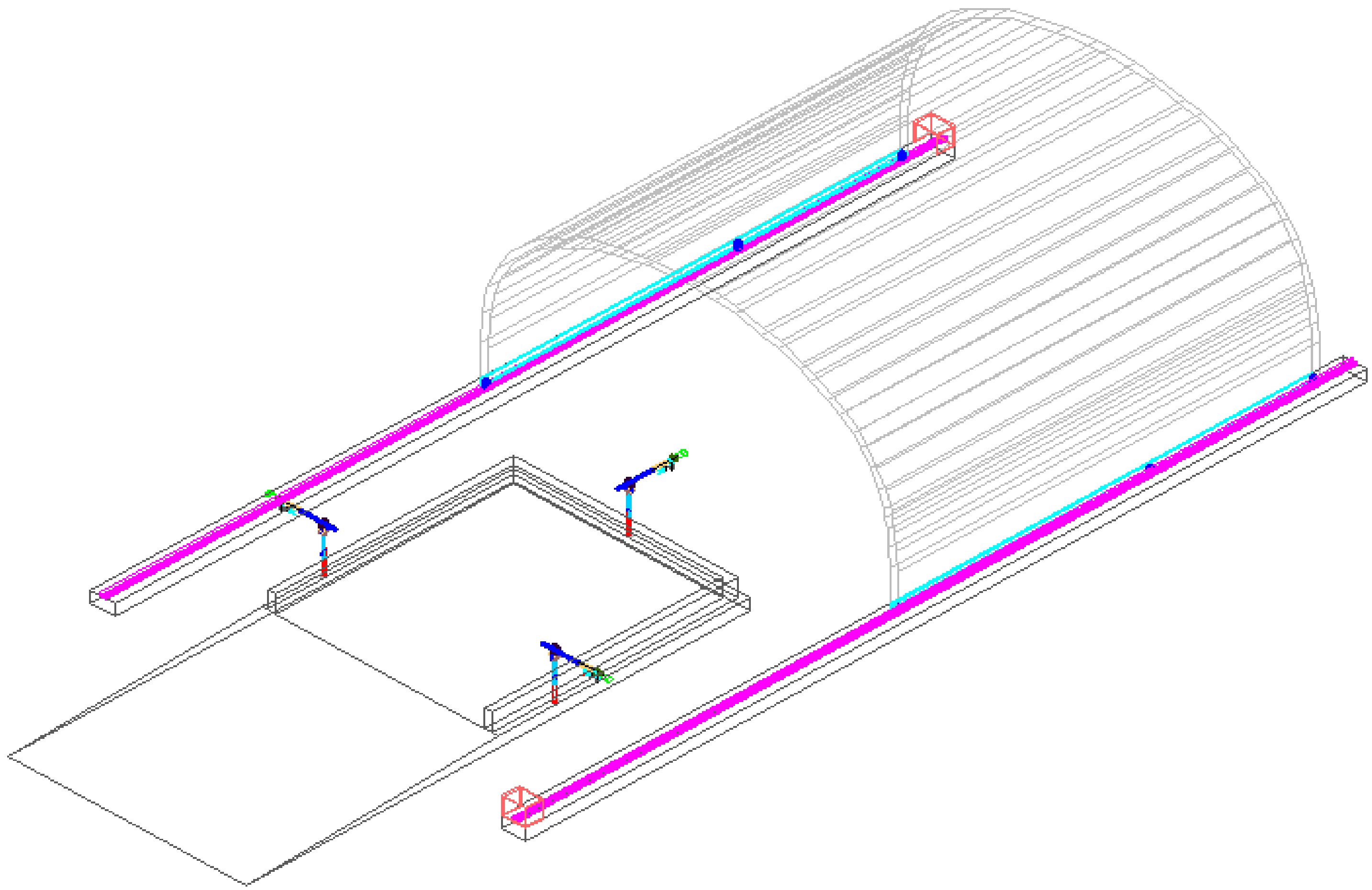
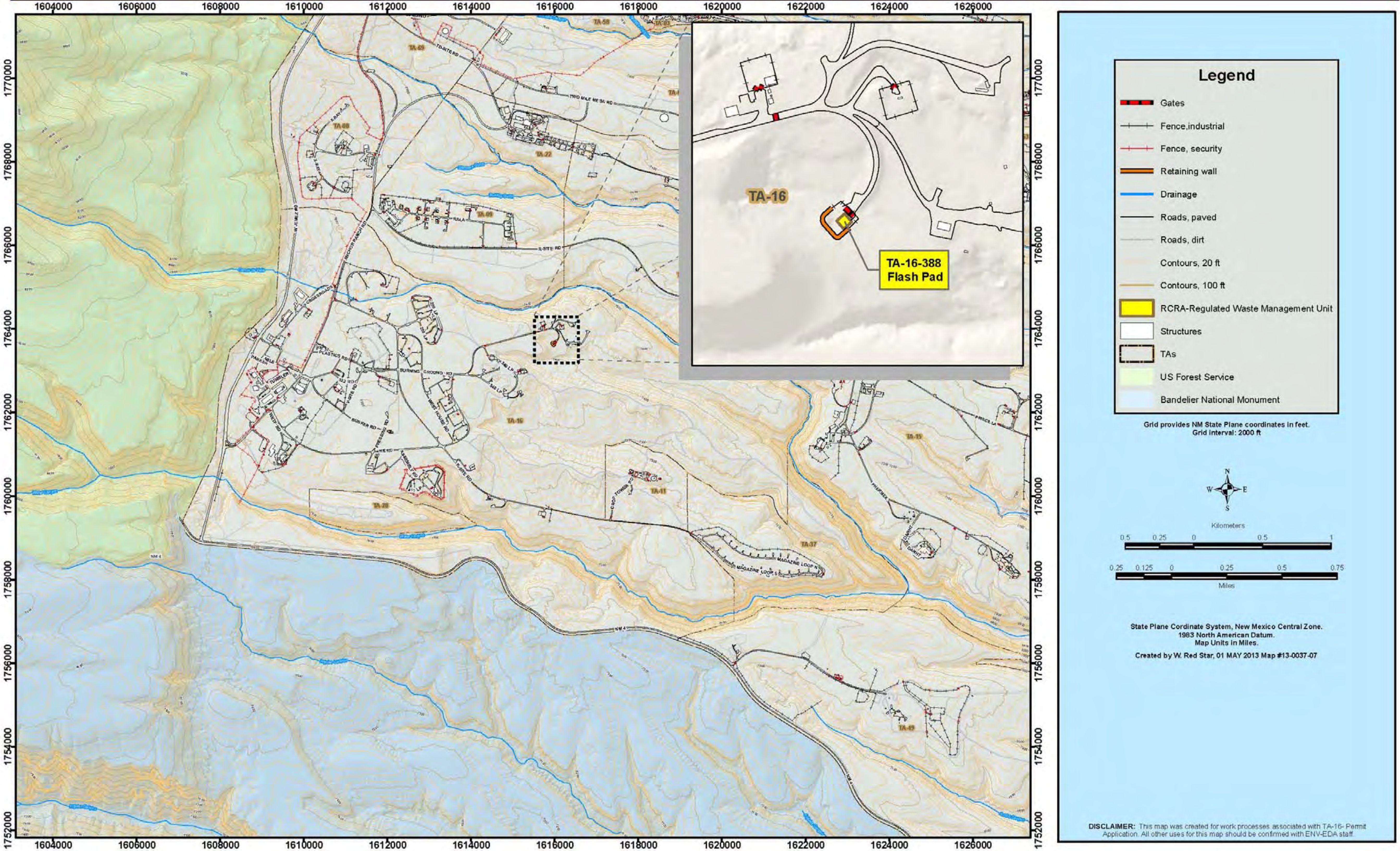


Figure 3-4. Diagram of TA-16-388 Flash Pad

Figure 3-5. Industrial and Security Fences in the Vicinity of the TA-16-388 Flash Pad



[This page has been left intentionally blank.]

Figure 3-6. Map of TA-16-388 Flash Pad Showing Location of Fences and Entry Gates

[This page has been left intentionally blank.]

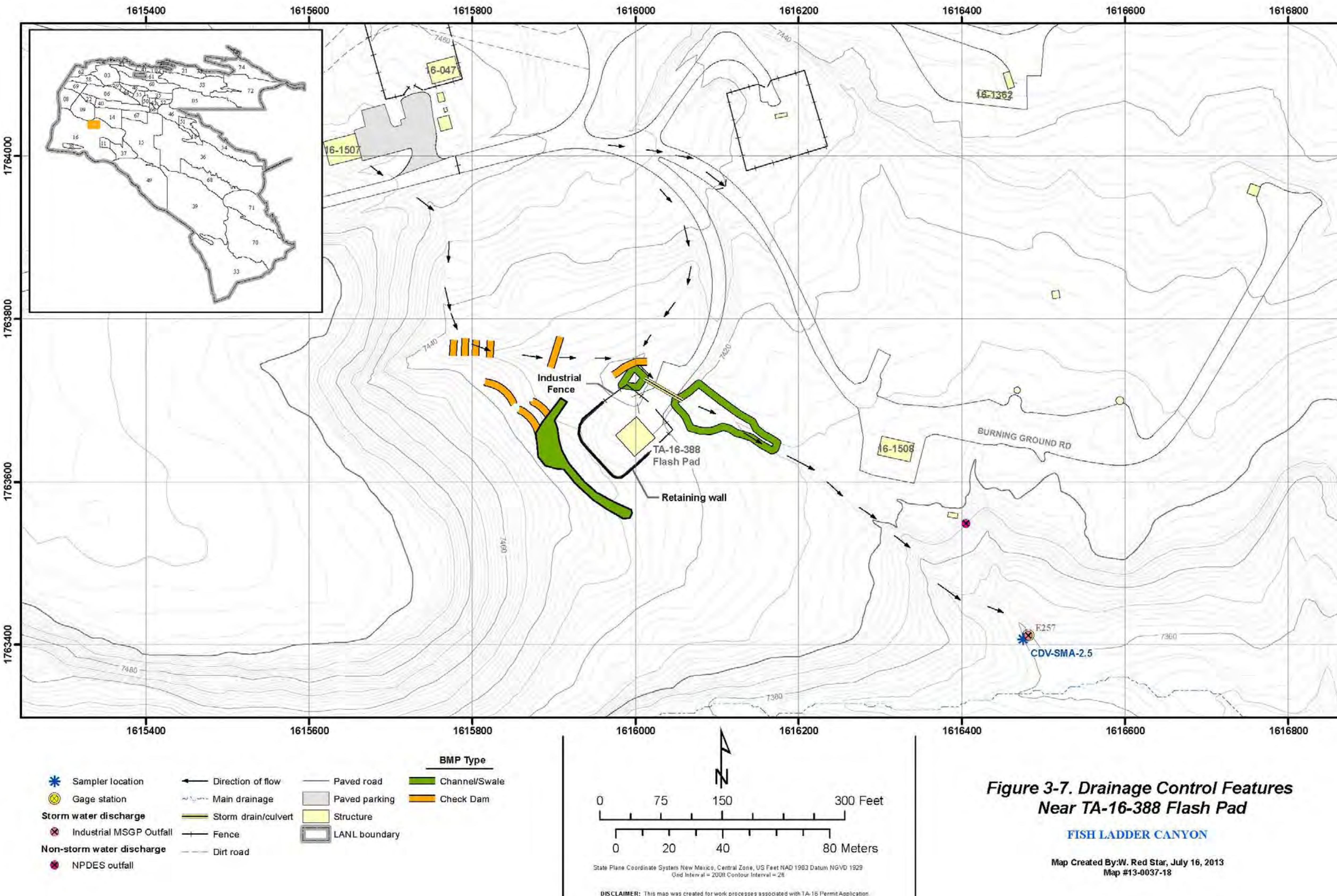


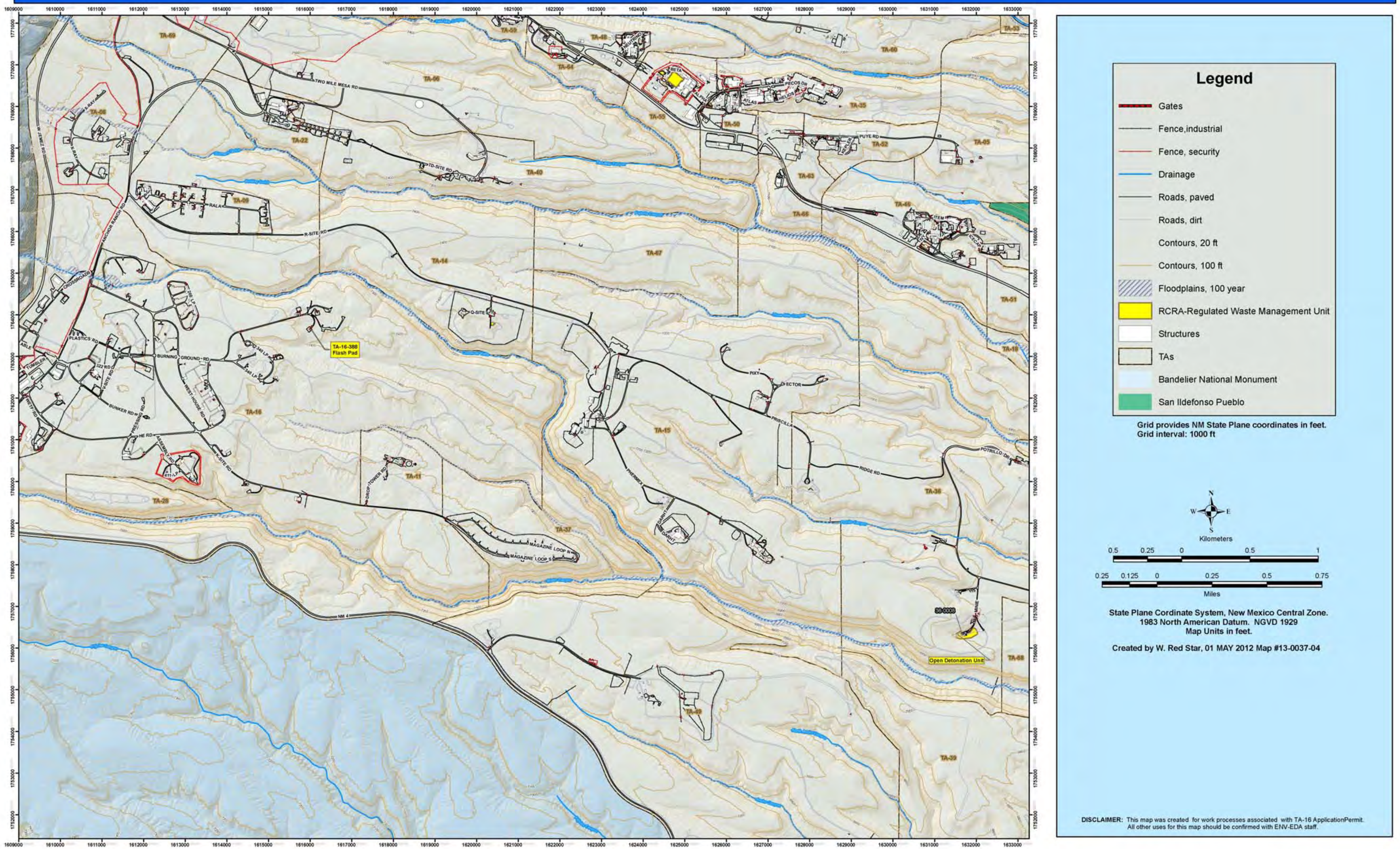
Figure 3-7. Drainage Control Features Near TA-16-388 Flash Pad

[This page has been left intentionally blank.]

Figure 3-8. Map of the TA-16-388 Flash Pad Showing Evacuation Route

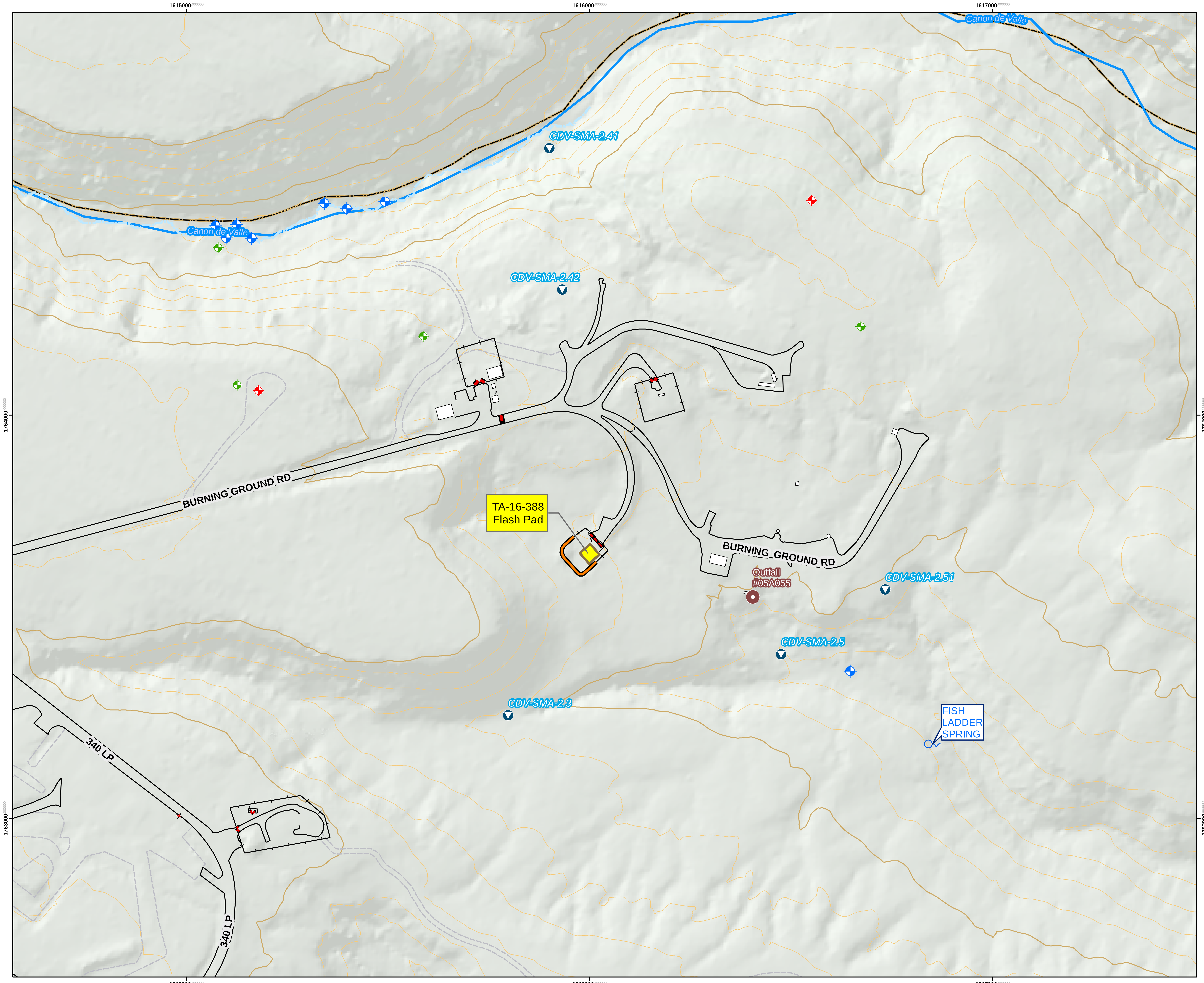
[This page has been left intentionally blank.]

Figure 3-9. Floodplains Map



[This page has been left intentionally blank.]

Figure 3-10. Topographic Map of the Area Surrounding the TA-16-388 Flash Pad



Legend

- Alluvial monitoring well
- Intermediate monitoring well
- Regional monitoring well
- NPDES permitted outfalls
- Site Monitoring Areas (SMAs)
- Springs
- Gates
- Fence, industrial
- Retaining wall
- Streams, perennial
- Drainage
- Roads, dirt
- Roads, paved
- Contours, 20 ft
- Contours, 100 ft
- Structures
- RCRA-Regulated Waste Management Unit
- TAs

Grid provides NM State Plane coordinates in feet.
Grid interval: 1000 ft

N S W E

50 25 0 50 100 150 200 Meters

250 125 0 250 500 Feet

State Plane Cordinate System, New Mexico Central Zone.
1983 North American Datum. NGVD 1929
Map Units in feet.

Created by W. Red Star, 01 MAY 2012 Map #13-0037-03

DISCLAIMER: This map was created for work processes associated with TA-16 ApplicationPermit. All other uses for this map should be confirmed with ENV-EDA staff.

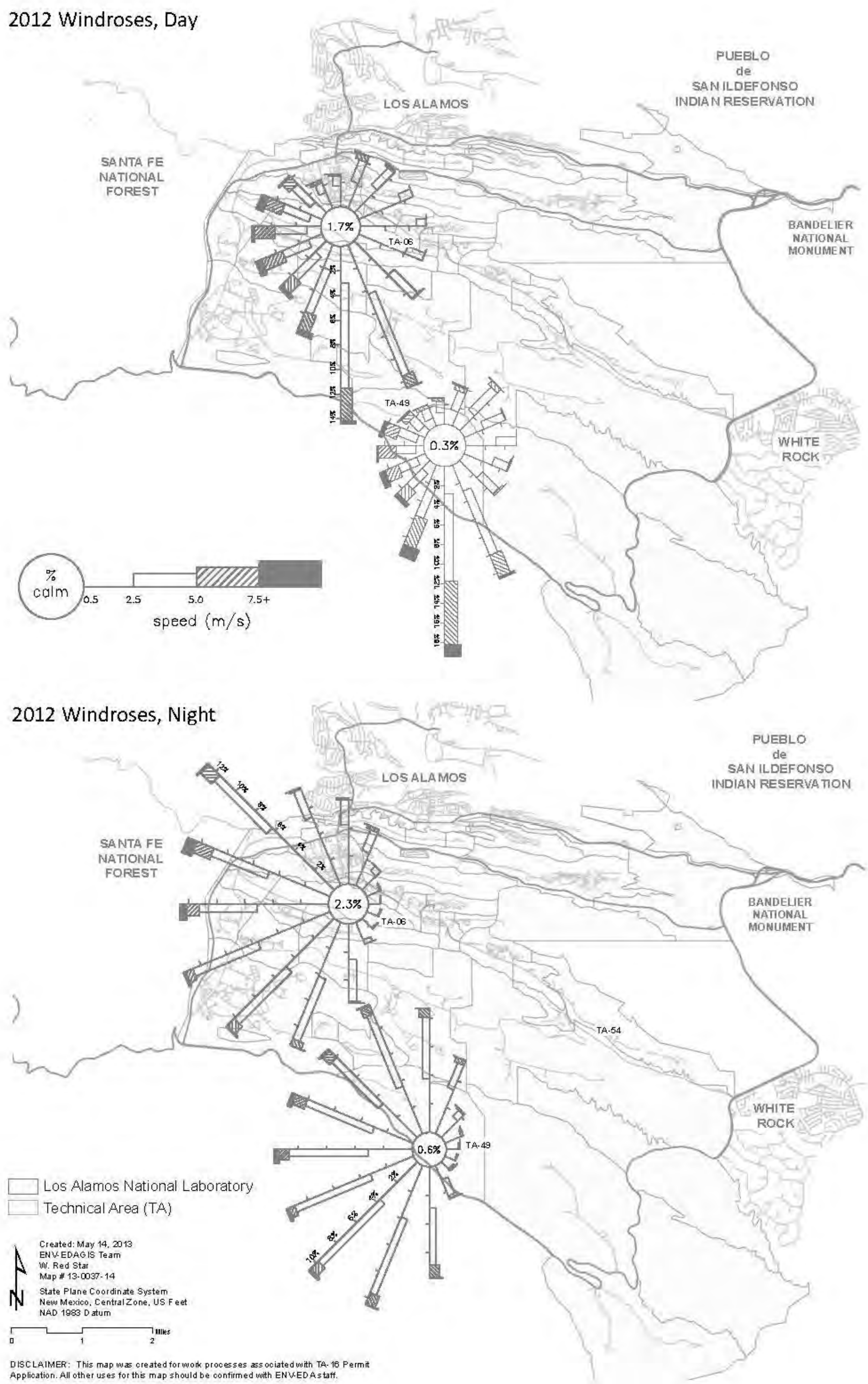


Figure 3-11. Annual Wind Rose Diagrams for Technical Areas 6 and 49 at Los Alamos National Laboratory

[This page has been left intentionally blank.]

Figure 3-12. Alluvial and Regional Monitoring Wells at Los Alamos National Laboratory

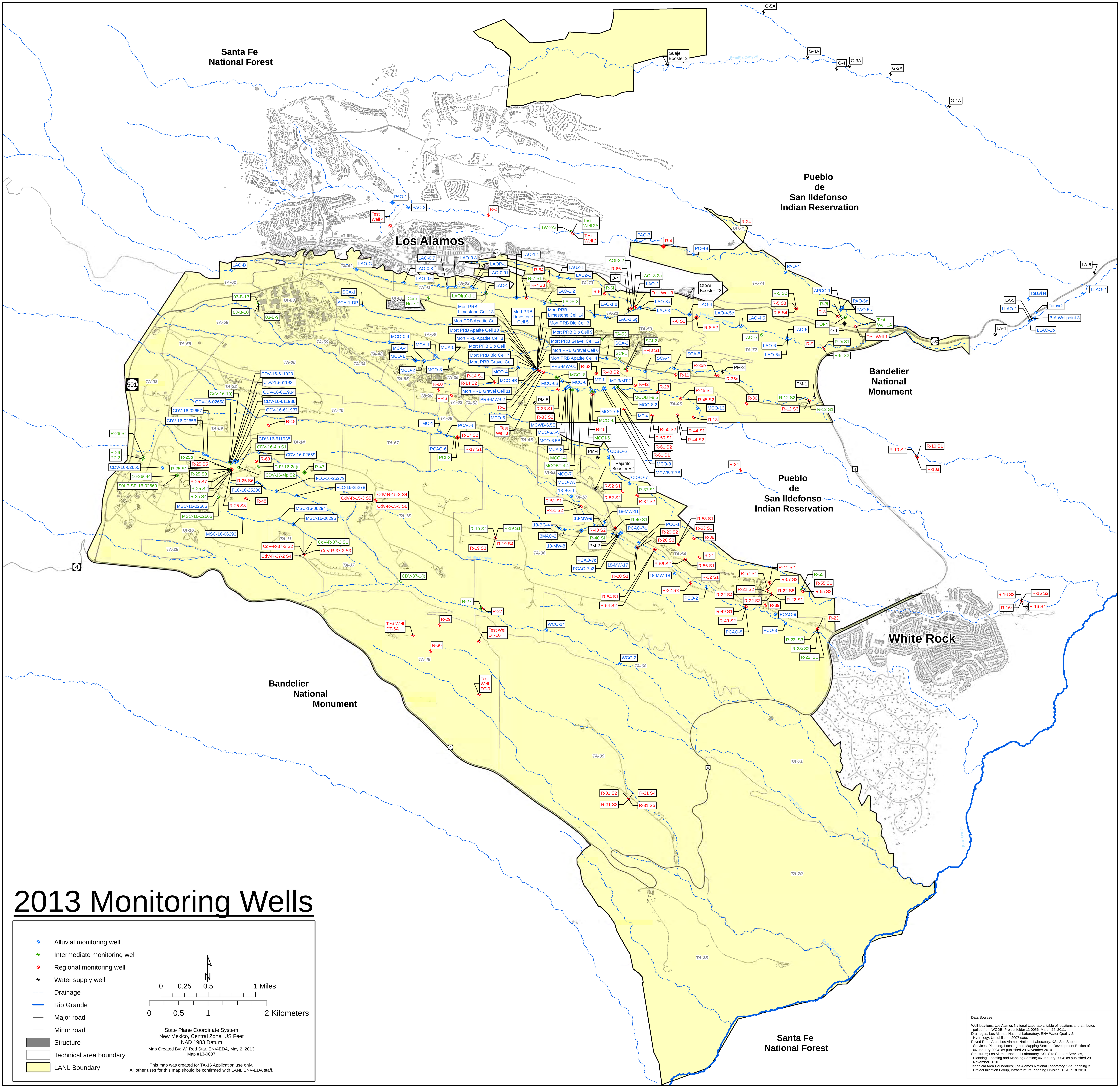
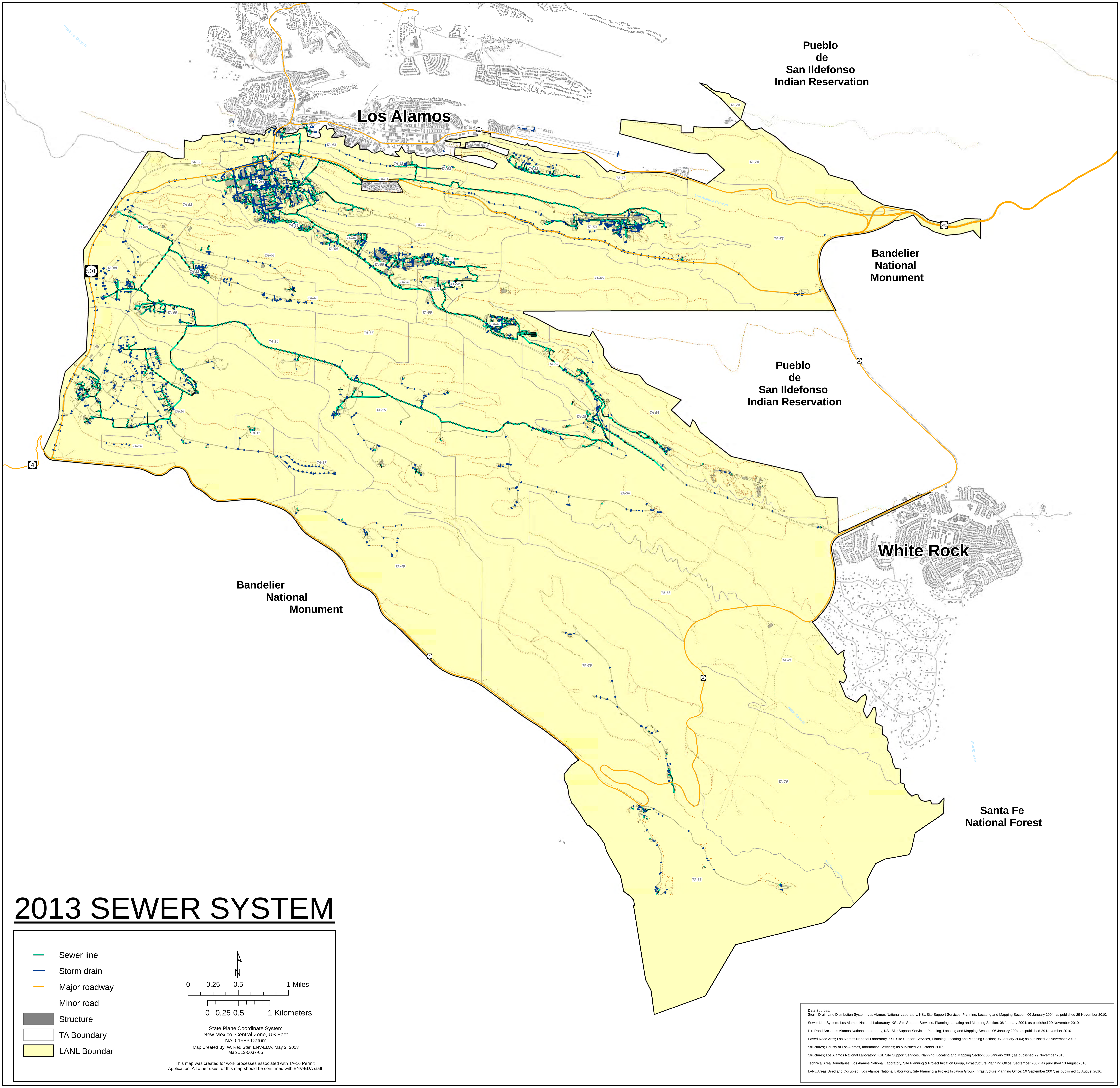


Figure 3-13. Los Alamos National Laboratory Sanitary Sewer and Storm Drain Systems



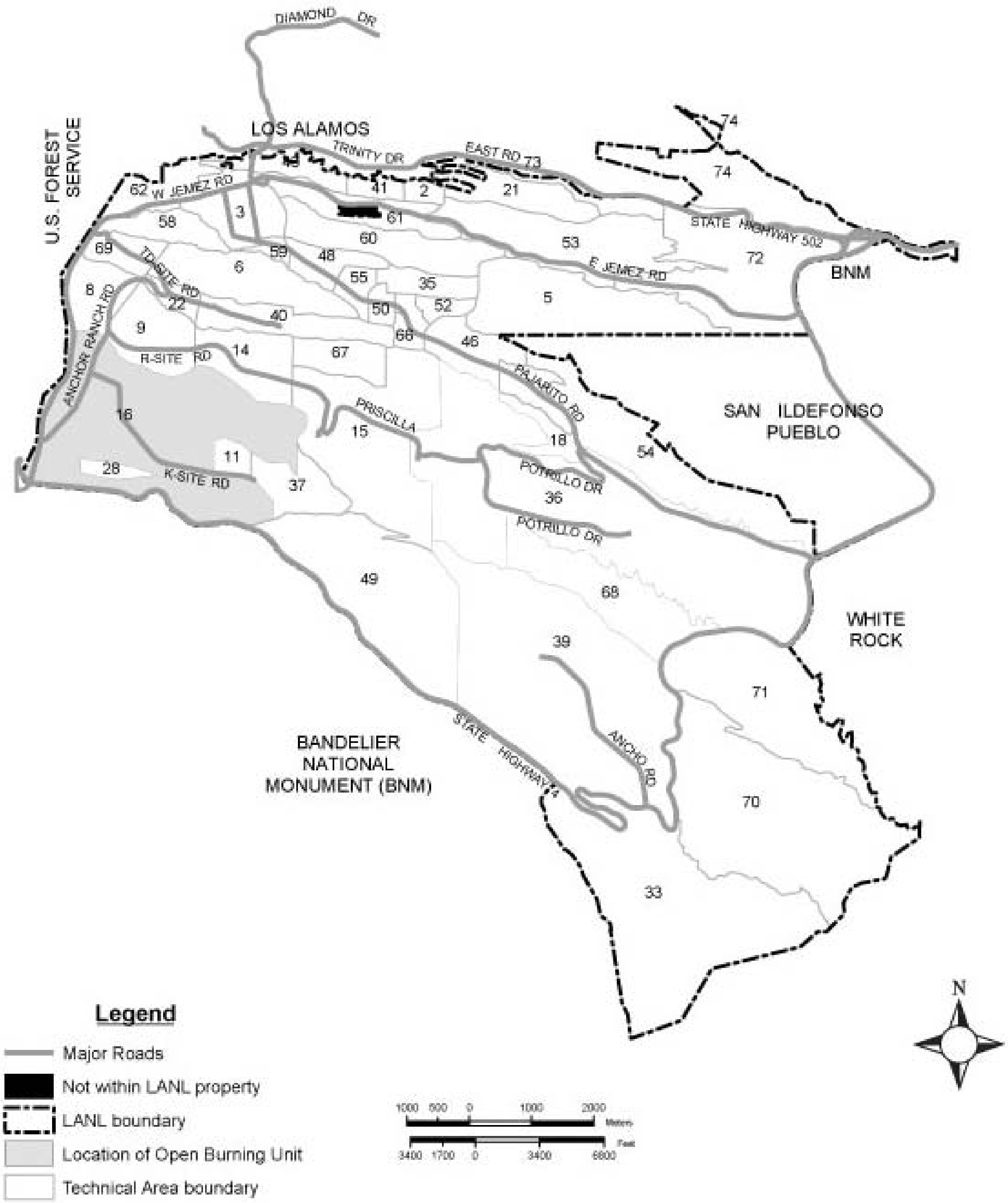


Figure 3-14. Map of Los Alamos National Laboratory Showing Major Roads

[This page has been left intentionally blank.]

4.0 UNIT SPECIFIC STANDARDS

This section of the permit modification request addresses the unit specific information such as specific descriptions of unit operations and facility requirements including facility descriptions, environmental performance standards, and treatment effectiveness, and additional information specific to the OB unit.

4.1 DESCRIPTION OF THE TA-16 FLASH PAD

A physical description of the TA-16-388 Flash Pad was included within Section 3.2, Waste Characterization and Acceptance. The following discussion generally addresses operational activities and controls for waste treatment operations at the TA-16-388 Flash Pad.

4.1.1 Operating Requirements

The TA-16-388 Flash Pad is used for thermal treatment (via open burning) of hazardous waste that exhibits the characteristic of reactivity in accordance with 40 CFR Part 265, Subpart P. Treatment of waste at the TA-16-388 Flash Pad is conducted using a non-continuous (batch) thermal process where a discrete quantity of waste is treated through a complete thermal cycle, in accordance with the requirements specified in 40 CFR § 265.373. Treatment is accomplished using propane burners to supply heat and fuel to dry the explosives, if necessary, and destroy the explosives contamination to make the waste residuals more amenable to disposal. All treatment operations are conducted on the pad, using a steel tray that may be lined with firebrick, or on a steel platform. Prior to waste treatment operations, the area is cleared of all but authorized Burn Ground personnel and the gate in front of the TA-16-388 Flash Pad is closed to prevent entry until after the treatment is complete.

OB waste treatment operations only occur during the daylight hours (i.e., from one hour after sunrise to one hour before sunset) to ensure that the entire burn can be observed by the TA-16 Burn Ground Operator. Treatment events are monitored in accordance with 40 CFR § 265.377, as applicable, to ensure that waste treatment is progressing as expected and that propane burners are operating correctly. Monitoring is performed through a closed-feed camera system or a periscope located at the TA-16-389 control building.

Based on the unit's maximum 200-pound treatment capacity at the TA-16-388 Flash Pad, a minimum required distance of 1,250 ft will be maintained between the perimeter of the burn and the nearest non-LANL property, as required in 40 CFR § 265.382. The closest property not owned by the Permittees is at a distance greater than one mile (5,280 feet) from the TA-16 Burn Ground. Additionally, the TA-16-388 Flash Pad is limited to an annual treatment capacity of 6,000 lbs per year.

As part of fire safety considerations, grasses and weeds located within a 200-foot radius of the TA-16-388 Flash Pad are kept trimmed. This minimizes the potential for fire around the unit. Additionally, treatment operations are only conducted within the bounding conditions detailed in the LANL Fire Danger Matrix (http://www.lanl.gov/resources/emergency/fire-danger-matrix.php) maintained by emergency operations personnel at LANL.

Other environmental factors restrict treatment operations at the TA-16-388 Flash Pad. Transportation or treatment of explosives waste at the TA-16-388 Flash Pad may not occur under the following conditions:

- When lightning is detected within a six mile radius of the unit;
- During all precipitation events;
- When roads are icy (applies to transport only);
- When wind speeds are determined to be greater than 20 miles per hour at the TA-16-389 control building.

Risk to human health is the greatest consideration. Should any environmental factors change rapidly and unexpectedly, the waste may remain at the TA-16-388 Flash Pad, under administrative control, until treatment can be safely conducted. Applicable administrative controls include covering the waste if it is safe to do so and prohibiting nonessential personnel from entering the area.

4.1.2 Waste Treatment Process

OB operations are conducted in accordance with this section. The description below discusses how the general and site-specific safety and health hazards associated with working with explosives are assessed and managed. This section describes normal treatment operations at the TA-16-388 Flash Pad.

4.1.2.1 Waste Accumulation

Waste treated at the TA-16-388 Flash Pad is initially accumulated in less-than-90-day accumulation areas or satellite accumulation areas until the day of treatment. Explosives may also be collected directly from explosives storage locations at the Facility on the day of treatment. Safety concerns dictate that waste be burned promptly (within a couple of hours) after arriving at the TA-16 Burn Ground. Therefore, almost all wastes are treated on the same day that they are moved to the TA-16-388 Flash Pad.

4.1.2.2 Waste Transport

Waste to be treated is collected from various areas at the Facility. Prior to treatment of any waste, waste characterization documentation and a request for treatment are received from the waste generator. This information is reviewed for acceptance at the treatment unit by a trained professional familiar with the waste characterization requirements of the waste analysis plan and the site-specific restrictions of the waste treatment unit at the TA-16-388 Flash Pad. When the waste characterization documentation has been approved by the TA-16 Burn Ground Operator, waste acceptance personnel, official explosives safety personnel, and responsible line management, a treatment event(s) is scheduled.

Scheduling of a waste treatment event involves arranging for the transportation of waste from one or more locations to the TA-16-388 Flash Pad. When loading waste, the cargo compartment of the transport vehicle is checked to ensure that it is clean and contains no loose items such as tools or sharp objects. For transport, the containers of waste are inspected for damage or leaking material and secured with tie-downs. The load limit for transporting explosives is determined by the capacity of the transport vehicle(s). Wastes are transported to the Burn Ground by appropriately trained and authorized personnel in vehicles designed to transport explosives. The waste is unloaded from the vehicle and placed within the unloading area by qualified explosives handlers. A visual examination is conducted after unloading to ensure that containers are not damaged or leaking and that no explosive material remains in the transport vehicle.

Explosives-contaminated waste and explosives waste that must be transported on public roads between sites is packaged in compliance with U.S. Department of Transportation requirements. On-site transportation requires that explosives waste be packaged in approved containers, sealed, and labeled appropriately. Waste containers (generally plastic bags, paper-lined cardboard boxes, plywood boxes, or plastic buckets) are then transported from the generator accumulation areas. Exceptions to packaging are made for special items in order to ensure the waste materials are handled and transported safely.

4.1.2.3 Waste Staging

Most of the waste streams treated at the TA-16-388 Flash Pad do not require staging prior to treatment. Waste streams that do not require staging include explosives machining waste, excess explosives, explosives-contaminated combustible debris, and explosives-contaminated solvent waste. The waste stream that may require staging prior to or during the OB treatment process is the explosives-contaminated noncombustible debris waste stream.

The explosives-contaminated noncombustible debris waste stream can consist of large pieces of equipment, debris from firing sites, material from decommissioning and demolition activities, and material from explosives processing areas that must be “flashed” prior to shipment off-site for recycle or disposal. Depending on the size and amount of waste to be flashed, it may take several days to stage the waste on the flash pad. The waste material to be treated may include relatively large metal pieces that involve extensive scheduling of collection and transport resources. They may require equipment such as forklifts or additional procedures for lifting of large pieces, and complicated stacking arrangements on removable steel supports.

Factors that influence waste staging are safety, the degree of difficulty in placing the waste on or removing it from the TA-16-388 Flash Pad, and the potential for influence from environmental factors (e.g., wind speed, fire conditions). Treatment operations can be delayed from a scheduled burn time due to the environmental factors discussed in Section 4.1.1, Operating Requirements. If burning is delayed, a cover is placed over the waste.

4.1.2.4 Pre-Burn Activities

Propane burners are tested for functionality on the day of or the day before treatment operations before the waste is transported to the TA-16-388 Flash Pad. Prior to waste treatment, the area at the TA-16 Burn Ground is swept for unauthorized personnel and large animals. When staging of the waste is not required, the waste is placed in the steel tray or on the steel pallet. Multiple compatible waste streams may be consolidated to create efficiencies in waste treatment. Wastes requiring the use of more fuel may be paired with wastes that require less fuel, so that the least amount of fuel possible is used to effectively and efficiently treat the waste. Wastes that contain combustible materials are placed within a screen cage inside the tray to reduce the potential for residue escape.

4.1.2.5 Open Burning Treatment Operations

After the waste is placed within the burn tray at the TA-16-388 Flash Pad, the roof over the concrete pad is retracted and all access barricades and gates are confirmed in place. All personnel present at the TA-16 Burn Ground are moved to the control building. Additional personnel are not allowed to be present at the TA-16 Burn Ground during treatment operations. Access Control is notified that the burn is about to commence and the propane burners are started. All treatment operations are initiated remotely by qualified personnel from inside the control building and observed on the monitor located in the control building.

During the entire waste treatment operation, either a television camera mounted above the front of the TA-16-388 Flash Pad or a periscope located at the TA-16-389 control building is used for monitoring the operation from inside the control building at TA-16-389. The lockout key for the power that operates the unit is also located in the control building. The lockout key is controlled by the Lead TA-16 Burn Ground Operator at all times.

Most commonly, OB treatment events last approximately 30 minutes. However, treatment is always continued until the TA-16 Burn Ground Operator determines visually that the waste is fully treated. After the propane burners have been shut off, the power to the unit is switched off and the lockout key is locked away. Access control is then notified that the OB treatment event is complete. The barricades in front of the TA-16-388 Flash Pad are left in place for at least an eight hour period after the treatment event is complete. Security access gates in front of building 16-389 and at the entryway to the TA-16 Burn Ground are lifted after treatment operations are completed.

4.1.2.6 Post-Burn Operations

The burn trays must be left uncovered while they cool after each OB treatment event. The metal cover is placed back over the TA-16 Flash Pad eight hours after a treatment event, or earlier if the TA-16 Burn Ground Operator determines that it is safe to do so. Any residue (i.e. ash) that is left from a treatment event is left within the tray for a minimum of 24 hours after treatment. After 24 hours, the ash is removed using a shovel, broom, dustpan, or other tools as necessary. The residue is then placed in a plastic bucket and accumulated until the container is approximately half full. Residues are characterized as described in Section 3.2.2.1, Treatment Residues.

4.2 ENVIRONMENTAL PERFORMANCE STANDARDS

This section addresses the ability of the TA-16-388 Flash Pad operations to meet environmental performance standards that protect groundwater, surface water, soil, and air quality. EPA identified these media as having the greatest chance of becoming exposure pathways for migration of hazardous waste and hazardous waste constituents to potential human and environmental receptors. As required by 40 CFR § 264.601, the Flash Pad is located, designed, constructed, operated, and maintained in a manner that facilitates safe handling and treatment of explosives wastes in order to prevent adverse impacts to human health and the environment.

4.2.1 Protection of Groundwater/Vadose Zone

As required by 40 CFR § 264.601(a), the TA-16-388 Flash Pad is operated in a manner that prevents releases that may have adverse effects to human health or the environment due to migration of waste constituents through the vadose zone to groundwater. Specific items to be considered include:

- The volume and physical and chemical characteristics of the waste in the unit, including its potential for migration through soil, liners, or other containing structures;

- The hydrologic and geologic characteristics of the unit and the surrounding area;
- The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater;
- The quantity and direction of groundwater flow;
- The proximity to and withdrawal rates of current and potential groundwater users;
- The patterns of land use in the region;
- The potential for deposition or migration of waste constituents into subsurface physical structures, and into the root zone of food-chain crops and other vegetation;
- The potential for health risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

The following sections (Sections 4.2.1.1 through 4.2.1.7) provide information on the hydrogeology beneath the TA-16-388 Flash Pad and describe monitoring and reporting conducted in and around the area that can be used to assess the impact of OB operations on groundwater.

4.2.1.1 General Waste and Facility Factors

The characteristics of waste treated at the unit are described within Section 3.2.1, Waste Acceptance, of this permit modification request. The quantities of waste treated per burn and annually are discussed within Section 4.1.1, Operating Requirements. The potential for migration of these wastes through the concrete pad, soil, and liner to the groundwater is low and is discussed in the following sections. Figures that depict legal boundaries of LANL and surrounding land uses (e.g., residential, recreational) are located on Figures 1 through 3 within Attachment N, *Figures*, of the Permit (NMED 2010). Potential human health and environmental risks associated with exposure to waste constituents are discussed within Section 4.2.5, Baseline Assessment of Potential Human-Health and Ecological Risks, and Attachment H of this permit modification request.

4.2.1.2 Hydrogeology in the Vicinity of the TA-16-388 Flash Pad

The TA-16-388 Flash Pad is located in the southwestern portion of the Laboratory in a semiarid, temperate, mountain climate setting. General geologic and hydrologic characteristics of the LANL facility and land use patterns in the Los Alamos area are discussed in Appendix A of the *Los Alamos National Laboratory General Part B Permit Application* (LANL 2003b).

The TA-16 Burn Ground, where the TA-16-388 Flash Pad is located, is situated on a mesa top within TA-16. A hydrologic conceptual model for TA-16, including the area of TA-16 Burn Ground, is presented in the *TA-16 Well Network Evaluation and Recommendations* (LANL 2012b). That document ranks different sources at TA-16 by their potential to impact groundwater. High and moderate ranking sources were characterized by significant hydrologic drivers, i.e. either large outfall volumes released to canyons or ponds located on mesa tops, as well as the release of large inventories or high concentrations. Both of these conditions are considered necessary to impact groundwater. The TA-16 Burn Ground area was ranked as a low-priority source for its potential to impact groundwater, because it lacks both a large contaminant inventory and a large volume of water to provide a hydrologic driving force for contaminant infiltration.

4.2.1.3 Existing Quality of Groundwater

From 1981 to 2010, the average annual precipitation in Los Alamos County was 18.97 inches and the average annual snowfall was 58.7 inches (LANL 2012a). The evaporation rate of free-standing water exceeds the average annual precipitation. Infiltration is limited and generally occurs in canyons or on mesas at sites that release large volumes of water (LANL 2011a; LANL 2012b). Figure 4-1 and Table 4-1 present the locations of all monitored springs and wells (regional, intermediate, and alluvial) that are pertinent for evaluations of potential impacts from the TA-16-388 Flash Pad. The area covered by this monitoring network includes the TA-16 Burn Ground. Table 4-2 contains monitoring data for contaminants in alluvial, perched-intermediate, and regional groundwater zones near the TA-16 Burn Ground that equal or exceed applicable regulatory limits.

Contaminants are present in springs and groundwater at TA-16. It is believed that the spring contamination resulted from the existence of ponded water on the mesas (e.g., historical and current ditches and ponds) and the presence of fractures as infiltration pathways. Discharges from past explosives-manufacturing activities at TA-16 (high and moderate ranking sources, particularly at the nearby TA-16-260 outfall) are believed to be the dominant sources of the constituents found in deep groundwater (LANL 2011a, LANL 2012b). The wells showing the highest contaminant concentrations are downgradient of higher priority TA-16 sources, and are along infiltration pathways that are not downgradient of the TA-16-388 Flash Pad.

4.2.1.4 Quantity and Direction of Groundwater Flow

The regional aquifer occurs at depths up to approximately 1,150 feet beneath the plateau and is the primary source of water supply for Los Alamos County. This aquifer occurs primarily within the poorly to semi-consolidated basin-fill sediments of the Santa Fe Group. The total thickness of the Santa Fe Group beneath the Pajarito Plateau is poorly defined. The deepest well on the plateau (PM-5), with a depth of 3,110 feet, does not fully penetrate the base of the basin-fill sediments. Estimates of the total thickness of these sediments range from 6,650 feet in the central basin to as much as 9,000 to 10,000 feet in the central and western parts of the basin (Broxton and Vaniman, 2005). Given the average long term water level declines on the order of 1.2 - 1.3 ft/yr, the aquifer should meet projected water demands for hundreds of years.

The only aquifer in the Los Alamos area capable of municipal and industrial water supply is the regional aquifer. The regional water table is approximately 1,200 ft below the TA-16 Burn Ground. PM-5, the nearest water-supply well to the TA-16-388 Flash Pad, is located approximately 16,000 ft (3 mi) to the northeast. Water-supply well PM-4 is located approximately 19,000 ft (3.6 mi) east of the TA-16-388 Flash Pad, and PM-2 is located approximately 21,000 ft (4 mi) southeast of the unit. Upper levels of the regional aquifer on the Pajarito Plateau are predominantly under phreatic (unconfined) conditions (LANL 2011a).

4.2.1.5 Current and Potential Groundwater Users

The deep portion of the regional aquifer is predominantly under confined conditions, and it is the portion of the regional aquifer influenced by Pajarito Plateau municipal supply pumping (note: neither the alluvial or perched groundwater systems are influenced by municipal water supply pumping). At TA-16, water-supply pumping does not cause any obvious water-level responses in either shallow or deep aquifer screens for those regional aquifer wells near the TA-16-388 Flash Pad (Figure 4-1) (LANL 2011a). As a result, potential contaminant migration would likely follow the ambient water-table gradients rather than diverting toward the pumping water supply wells, based on hydraulic data, and capture of potential contaminants near the water table by municipal supply wells is unlikely. Based on water table maps, the regional groundwater flow direction in the vicinity of the TA-16 Burn Ground is expected to range from east-northeast to east-southeast (Figure 4-1). Because the TA-16-388 Flash Pad has a low likelihood of impacting groundwater beneath TA-16, impact at the water-supply wells is even less likely.

4.2.1.6 Monitoring and Reporting

LANL has established a groundwater monitoring network to assess the quality of groundwater in the Los Alamos area. The monitoring network includes monitoring wells, water-supply wells, surface-water sampling stations, and springs located both inside and outside the LANL boundary. Three groundwater zones (alluvial, perched-intermediate, and regional groundwater) are monitored as part of the monitoring network. Sample locations, analytical suites, and sampling schedules for the monitoring network are identified in the LANL *Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012-September 2013* (IFGMP) (LANL 2012c). This document is updated annually with approval by NMED-HWB in accordance with the March 1, 2005 (as modified in 2008 and 2012) Compliance Order on Consent, herein after referred to as the Consent Order (New Mexico 2005). Figure 3-12 shows the locations of groundwater monitoring wells and springs that are pertinent for evaluating potential impacts of the TA-16-388 Flash Pad. These monitoring points provide perspectives that include potential impacts from sources of potential groundwater contamination upgradient of the TA-16-388 Flash Pad.

A summary of the data from 2000 to present for locations both upgradient and downgradient of the TA-16 Burn Ground is provided in Table 4-2. The table shows the frequency of detections above the listed regulatory standards for constituents potentially related to operations at the TA-16-388 Flash Pad. A key confounding factor in the assessment is that these same constituents are common to other sources at TA-16, many of which have substantially higher amounts of contamination and water associated with releases to the environment. Table 4-2, therefore includes monitoring locations that are upgradient to reflect local baseline conditions relative to the TA-16 Burn Ground. The sampling results are also published in periodic groundwater monitoring reports submitted to the NMED-HWB and in the Facility's annual environmental reports.

4.2.1.7 Assessment of Potential Health Risks

The data in Table 4-2 indicate that for key constituents such as RDX and barium, higher concentrations are found upgradient of the TA-16 Burn Ground and are certainly associated with other sources, particularly the TA-16-260 outfall. Additionally, the higher contaminant concentrations are measured at wells located along infiltration pathways that are not downgradient of the TA-16-388 Flash Pad and can be attributed to other sources at TA-16. Therefore, the TA-16-388 Flash Pad is likely not a contributor to the contamination within the groundwater below TA-16.

4.2.2 Protection of Surface Water/Wetlands

As required by 40 CFR §264.601(b), the TA-16-388 Flash Pad is operated in a manner that prevents any releases that may have adverse effects on human health or the environment due to migration of hazardous waste constituents in surface waters or wetlands. There are no permanent surface water bodies within the confines of the Flash Pad and the unit operations will not utilize water. However, as discussed above, surface water runoff from the Flash Pad has the potential to flow and impact Fishladder Canyon which, in turn, is a tributary to Cañon de Valle. As used in this section, "surface waters" includes storm water runoff and snowmelt runoff that can create sheet flow across the site. In addition, there is a wetland located approximately 1500 ft away from the TA-16-388 Flash Pad.

The following factors were considered in the surface water analysis discussed below:

- The volume and physical and chemical characteristics of the waste in the unit;
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing migration;
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;
- The patterns of precipitation in the region;
- The quantity, quality, and direction of groundwater flow;
- The proximity of the unit to surface waters;
- The current and potential uses of nearby surface waters and any water quality standards established for those surface waters;
- The existing quality of surface waters and surface soils, including other sources of contamination and their cumulative impact on surface waters and surface soils;
- The patterns of land use in the region;
- The potential for health risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

4.2.2.1 General Waste and Facility Factors

The characteristics of waste treated at the unit are described within Section 3.2.1, Security and Access Control at the OB Unit. The quantities of waste treated per burn and annually are discussed within Section 4.1.1, Operating Requirements, of this request. The potential for migration of these wastes to surface water is low and is presented throughout the following sections. Figures that depict legal boundaries of LANL and surrounding land uses (e.g., residential, recreational) are located on Figures 1 through 3 within Attachment N, *Figures*, of the Permit (NMED 2010). Precipitation is discussed within Section 4.2.1.3, Existing Quality of Groundwater. The quantity, quality, and direction of groundwater flow are discussed in Section 4.2.1.4, Quantity and Direction of Groundwater Flow. Potential human health and environmental risks associated with exposure to waste constituents is discussed within Section 4.2.5, Baseline Assessment of Potential Human-Health and Ecological Risks.

4.2.2.2 Hydrologic Assessment and Surface Water Flow

TA-16 is located in the southwestern portion of the Laboratory and occupies portions of the Water Canyon, Cañon de Valle, and S-Site Canyon watersheds. The TA-16-388 Flash Pad is located on the mesa top in the northeastern corner of TA-16 which lies within the Cañon de Valle watershed. This watershed extends east-southeast across the Laboratory from TA-16 to its confluence with Water Canyon at the boundary between TA-15 and TA-37. Surface water in TA-16 consists of storm water runoff, snowmelt runoff, and perennial spring flow that drains in small drainages or by sheet flow into Cañon de Valle. Surface water in Cañon de Valle to the north of the TA-16 Burn Ground is perennial from Burning Ground Spring to a stream gage (E256) below Material Disposal Area (MDA) P, which is a solid waste management unit (SWMU) on the northern portion of the mesa top. From the southern portion of the TA-16 Burn Ground, where the TA-16-388 Flash Pad is located, intermittent surface water occurs from natural and anthropogenic sources from gage station (E257) to the Cañon de Valle confluence with Water Canyon.

Surface water runoff from the TA-16-388 Flash Pad flows southwest to a small tributary to Fishladder Canyon which, in turn, is a tributary to Cañon de Valle. Fishladder Canyon is located between the main channel of Cañon de Valle and S-Site Canyon with a drainage length of approximately 3.5 km (2.2 mi) and a drainage area of approximately 1.2 km^2 (0.4 mi^2). Surface water in the vicinity of the TA-16 Burn Grounds consists of storm water and snowmelt runoff that may flow by small drainages or sheet flow into Fishladder Canyon. Fishladder Seep is located in a hanging valley approximately 800 ft southeast of the Burning Ground. Alluvial groundwater occasionally discharges at Fishladder Seep, although the prevalence of surface flow in Fishladder Seep has decreased significantly in recent years.

The US Army Corps of Engineers has identified and delineated a small wetland in this area (COE 2005); Wetland 16-1 is approximately 70 ft long and 20 ft wide with an area of 0.03 acres. The wetland is more than 1500 ft away from the TA-16-388 Flash Pad and is unlikely to be impacted by activities at the OB unit.

Surface water within the Cañon de Valle watershed has been impacted by two recent severe forest fires (LANL 2011a). In May 2000, the Cerro Grande fire burned the headwaters of Cañon de Valle and Water Canyon west of the Laboratory, and also burned a large part of the Water Canyon watershed within the Laboratory, including areas in TA-08, TA-09, TA-11, TA-14, TA-15, TA-16, TA-28, and TA-37. Various naturally occurring inorganic chemicals (e.g., barium, cobalt, and manganese) and anthropogenic fallout radionuclides (e.g., cesium-137, plutonium-239 and -240, and strontium-90) were concentrated in Cerro Grande ash at levels exceeding that of background sediment before the fire, and the transport of ash has resulted in elevated levels of these analytes in post-fire sediment deposits in some canyons.

In June 2011, the Las Conchas fire burned the headwaters of Cañon de Valle and Water Canyon west of the Laboratory. The upper Cañon de Valle watershed was burned more severely than the upper Water Canyon watershed: 60% of the Cañon de Valle watershed within the burn perimeter was classified as high or moderate severity. Floods in July and August 2011 transported ash from the burn area onto the Laboratory; it is expected that various inorganic chemicals and fallout radionuclides will be elevated in these media similar to the baseline samples collected from post-Cerro Grande fire runoff.

4.2.2.3 Monitoring and Reporting

Protection of surface water is established by implementation of a Clean Water Act (CWA) NPDES storm water individual permit associated with industrial activities from certain SWMUs and Areas of Concern (AOCs) (referred to as the "IP") (NPDES Permit No. NM0030759). The IP initially became effective on April 1, 2009; a subsequent modification became effective on November 1, 2010. The TA-16-388 Flash Pad is regulated under the IP because it is specifically designated as a SMWU (No. 16-010(c)) under the Consent Order (New Mexico 2005). SWMU No. 16-010(c) is described as a former burn table that was converted to a flash pad/burn tray and is depicted on Figure 6-1.

The LANL IP contains non-numeric technology-based effluent limitations, coupled with a comprehensive, coordinated monitoring program and corrective action where necessary, to minimize pollutants in storm water discharges from sites. LANL is also required to implement site-specific control measures (including best management practices) to address the non-numeric technology-based effluent limits contained in the IP, followed by confirmation monitoring against New Mexico water-quality-criteria-equivalent target action levels (TALs) to determine the effectiveness of the site-specific measures. If TALs are exceeded, corrective actions detailed in the IP are initiated and additional confirmation monitoring is conducted following completion of corrective actions. The IP designates SWMU 16-010(c) as a Moderate Priority Site with a corrective action deadline of October 31, 2015.

Installation of baseline control measures at CDV-SMA-2.5 (Cañon de Valle-Site Monitoring Area-2.5) was completed on December 15, 2010 and certified on January 12, 2011 (LANL 2011b). The active control measures are listed in the 2012 Individual Permit Annual Report (LANL 2013a) and the 2012 update to the Individual Permit Site Discharge Pollution Prevention Plan (LANL 2013b). The control measures include established vegetation, an earthen berm, straw wattles, riprap-lined channels/swales, and rock check dams that function as run-on, runoff, erosion, and/or sediment controls.

The pollutants of concern to be monitored for each site monitoring area (SMA) are specified in Appendix B of the IP (ftp://ftp.nmenv.state.nm.us/www/swqb/NPDES/Permits/NM0030759-LANLStormwater.pdf). At a minimum, all SMAs must be initially monitored for metals, gross alpha radiation, Ra-226 + Ra-228, and cyanide (weak acid dissociable). The storm water monitoring requirement for CDV-SMA-2.5 also includes high explosives and semi-volatile organic compounds (SVOCs). Baseline confirmation monitoring at CDV-SMA-2.5 started in May 2011 at station SS090420, which is collocated with the E257 station (shown on Figure 3-10). Baseline confirmation samples were collected on September 1, 2011 and October 12, 2012. No TAL exceedances were observed; however, the semi-volatile organic compound results were rejected as an outcome of data validation and are not usable for confirmation sampling assessment. A second sample was collected on July 26, 2013 and analyzed for SVOCs. No TAL exceedances were observed, thereby completing baseline confirmation monitoring.

4.2.2.4 Assessment of Potential Health Risks

As described above, there are no potential health risks associated with OB activities that might impact surface waters from the Flash Pad. Further, any risk to surface water from the transport of legacy contamination by storm water at the OB unit is fully regulated and protected through the LANL IP.

4.2.3 Protection of Soil Surface

In order to meet the requirements of 40 CFR § 264.601(b), the TA-16-388 Flash Pad is operated in a manner that minimizes or prevents releases that may have adverse effects to human health or the environment due to migration of waste constituents on the soil surface. This requirement is similar to that for surface water protection, and calls for the prevention of any releases that may have an adverse impact on human health or the environment due to migration of waste constituents. The considerations described above in Sections 4.2.2 and 4.2.2.1 are applicable here.

4.2.3.1 Geologic Assessment

The texture of the soils in Los Alamos County range from very fine clay and sandy loams to gravelly, sandy loams and stony, clay loams. Soil erosion by storm water or winds could potentially transport contaminants from the TA-16-388 Flash Pad to surrounding areas. Natural sediment storage features created by surface water runoff, such as stream bank and bar deposits or drainage channels, have the potential of containing heavy metals or explosives residues redistributed from the TA-16-388 Flash Pad.

Approved procedures for the TA-16-388 Flash Pad have been developed and are followed to limit the amount of contamination that has the potential to enter or remain in the soil after treatment operations. Preventative measures include the remote location of the unit, good housekeeping procedures, operational restrictions that limit transport potential, and the use of sufficient fuel (propane) to ensure complete destruction and effective treatment of the wastes.

4.2.3.2 Monitoring and Reporting

The following paragraphs detail soil monitoring efforts that have been performed at the TA-16-388 Flash Pad, in accordance with the requirements in 40 CFR § 264.602(b). Description of modeling associated with the potential for soil deposition due to modeled air impacts at the TA-16-388 Flash Pad is included in Section 4.2.4.2, Monitoring and Reporting, and included in Attachment G of this permit modification request.

In 2009, 2012, and 2013, soil samples were collected at the TA-16-388 Flash Pad. A summary of the analytical results for the 2012 and 2013 sample collection events and a comparison of those results to the 2009 data are included in Attachment F of this permit modification request. Samples in 2009 were analyzed for metals and dioxins/furans, and the results were included in a previously submitted soil monitoring report (LANL 2009b). Samples collected in 2012 were analyzed for explosives compounds, metals, dioxins/furans, SVOCs, volatile organic compounds (VOCs), and perchlorate. Samples collected in 2013 were analyzed for explosives compounds, metals, dioxins/furans, SVOCs, and perchlorates. All soil monitoring events involved the collection of grab samples at the TA-16 Burn Ground.

A soil monitoring program will be put into place for the area surrounding the OB unit in order to assess the potential for contamination from the ongoing treatment operations at the TA-16-388 Flash Pad and to determine if the potential contamination could adversely affect human health or the environment. Soil sampling activities will be conducted at regular intervals (at years 2, 5, and 8 after permit issuance) and data will be compared to the baseline soil data collected as part of the soil monitoring efforts. Proposed soil monitoring to establish trending at the TA-16-388 Flash Pad is included as part of the proposed changes to the Permit within Attachment D of this permit modification request.

4.2.3.3 Assessment of Potential Health Risks

Concentrations of the chemicals of potential concern were measured within the soil to determine the baseline soil concentration at the TA-16 Burn Ground after more than 60 years of use of multiple (now closed or undergoing closure) units at the site. Potential contamination is primarily limited to the surface (i.e., the first few inches in depth) of the site based on the depositional patterns related to the operations that have been conducted at the site. An assessment of potential health risks for human and ecological receptors is located at Attachment H and discussed in Section 4.2.5, Baseline Assessment and Potential Human-Health and Ecological Risks.

4.2.4 Protection of The Atmosphere

In order to meet the requirements of 40 CFR § 264.601(c), the TA-16-388 Flash Pad is located in a remote area within LANL boundaries and is operated in a manner that prevents any releases of waste constituents to the atmosphere that may have adverse effects to human health or the environment. Specific items considered include:

- The volume and physical and chemical characteristics of the waste in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;
- The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;
- The operating characteristics of the unit;
- The atmospheric, meteorologic, and topographic characteristics of the unit and the surrounding area;
- The existing quality of the air, including other sources of contamination and their cumulative impact on the air;
- The potential for risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

4.2.4.1 Meteorological Assessment and Potential Releases from the TA-16-388 Flash Pad

Surface winds in Los Alamos are light, averaging seven miles per hour. The predominant prevailing wind direction is from the southwest to the northeast. Under normal conditions, resuspension of particulates is limited because of operation requirements and restrictions on environmental conditions. Figure 3-11 shows the wind roses for TA-6 and TA-49—the wind observation towers closest to the TA-16-388 Flash Pad.

Due to the nature of the treatment operation, the TA-16-388 Flash Pad does not utilize air pollution control equipment. Releases from the treatment of waste at the unit are not likely to exceed an exposure duration of 1 hour because of the length of the treatment events followed by dispersion. Various types of explosives mixtures are treated at the TA-16-388 Flash Pad. The regulated pollutants produced as a result of these treatment events are very small quantities of the criteria pollutants (e.g., carbon monoxide, nitrogen oxides, and particulate matter), some metals (e.g., copper), and a small amount of hazardous air pollutants (e.g., hydrogen chloride, acetylene, ethylene, propene, benzene, toluene, etc.). To evaluate all of the items for consideration listed in the previous section, an air modeling analysis and risk screening evaluation were conducted. The modeling report is presented as Attachment G of this permit modification request.

To perform the air modeling analysis, Open Burn/Open Detonation Dispersion Model (OBODM) runs were conducted for the OB unit to determine the maximum 1-hour, 3-hour, 8-hour, 24-hour and annual air pollutant concentrations. The annual air pollutant concentration was used to calculate an estimate of the 10-year soil concentration from pollutant deposition. The model was run for OB treatments occurring anywhere between 8 AM and 5 PM. Additionally, a maximum treatment capacity of 200 pounds per burn was modeled for 6,000 pounds per year. Actual treatment quantities average 52 pounds per burn and the average annual waste treatment quantity is less than 3,000 pounds per year. The modeling was designed to give a conservative, yet still reasonable estimation of potential air quality impacts from current and future operations of the OB treatment of waste at the TA-16-388 Flash Pad.

Airborne effluents were assumed to be transported directly to the potential receptors, using median dispersion factors for the Los Alamos area. Source terms, or the pollutants generated during treatment activities, were estimated using emission factors from published sources as recommended by the EPA. Impacts were evaluated for pollutants generated as a result of treatment and regulated under National and New Mexico Ambient Air Quality Standards. Air quality impact modeling shows that the greatest concentration of waste constituents in the air is located at the TA-16 Burn Ground and the concentration of pollutants decreases over distance.

The results of this analysis indicate that none of the regulated air pollutant concentrations exceed federal or state ambient air quality standards at the LANL site boundary. Also, modeled air concentrations at the TA-16-388 Flash Pad were shown to be below acute and chronic air screening levels published by the EPA and the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency. Additionally, predicted 10-year soil concentrations were less than NMED residential soil screening levels and the minimum LANL ecological screening levels, where available.

4.2.4.2 Monitoring and Reporting

This section discusses atmospheric monitoring efforts that have been performed at the TA-16-388 Flash Pad, in accordance with the requirements of 40 CFR § 264.602. Air monitoring data collected during treatment events at the OB unit is included as Attachment I of this permit modification request. Each of the samples was collected downwind of the OB unit at a distance of 25 feet and 75 feet. Samples collected from five treatment events were analyzed for metals and dioxins/furans. The analysis results were then compared to acute air inhalation exposure concentration screening levels, where screening levels could be identified. The data comparisons indicate the operations monitored did not exceed any appropriate state or federal levels specified for the analytes monitored.

4.2.4.3 Assessment of Potential Health Risks

The air screening analysis (Attachment G) was designed to provide a very conservative air dispersion and deposition analysis for OB waste treatment operations at LANL. Conservative input parameters were used. Emission factors were obtained from available published information on surrogates chosen to represent waste streams treated at LANL, and the quantities of waste assessed were the maximum amounts of waste that could possibly be treated at the OB unit. All potential impacts were calculated to be below identified air and soil screening levels.

Additionally, routine burn ground operations involve treatment quantities that are far less than the quantity assessed through this screening analysis. Based on the air modeling analysis and risk screening assessment, current and future operations at the TA-16-388 Flash Pad 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. The waste treatment operations conducted can be considered protective of human health and the environment.

4.2.5 Baseline Assessment of Potential Human-Health and Ecological Risks

In accordance with the requirements of 40 CFR § 264.601, an evaluation of potential risks to human health and the environment from past and current operations at the TA-16-388 Flash Pad was completed. In an effort to establish a baseline condition for the TA-16-388 Flash Pad, soil data was collected as described within this section as well as Section 4.2.3, Protection of Soil Surface. These data were analyzed to determine whether contamination related to the past and current operations at the TA-16 Burn Ground was present, and to determine whether the contamination might result in adverse impacts to human health and/or the environment. Small mammal data was also collected and analyzed to determine whether contamination levels within the soil affected mammals within the area. Reporting on this data is included in Attachment 3 of Attachment H, Technical Area 16 Burn Ground Human-Health and Ecological Risk Screening Assessment.

As discussed in Section 4.2.3.2, Monitoring and Reporting, soil samples were collected at the TA-16 Burn Ground in 2009, 2012, and 2013. Analyses in 2012 and 2013 were conducted for constituents that may be currently treated at the TA-16-388 Flash Pad, as well as for constituents that are no longer treated at the TA-16 Burn Ground, but historically may have been. The soil sampling summary report is included as Attachment F of this permit modification request.

Using the soil concentrations from the samples collected in 2009, 2012, and 2013 (described in Attachment F), human-health and ecological risk-screening assessments were conducted to determine potential health risks to the workers and ecological receptors. The analysis indicated that not only are exposure point concentrations (maximum detected concentration or the 95% upper confidence limit [UCL] of the mean) at the TA-16 Burn Ground (as well as the TA-16-388 Flash Pad) well below industrial screening levels, they are in fact below or similar to the residential soil screening levels. This is a conservative comparison, as there are no plans to transfer the land to a different owner who could use the land for residential purposes. These assessments are included as Attachment H of this permit modification request. Screening assessments were conducted on potential risks to human and ecological receptors on (1) the TA-16 Burn Ground as a whole and (2) an area limited around the TA-16-388 Flash Pad.

Therefore, the screening assessments indicated no potential unacceptable risks to human health from past and current operations at the TA-16 Burn Ground and at the TA-16-388 Flash Pad under the industrial and residential scenarios (Attachment H). The hazard indices (HIs) for the industrial scenario (both 0.007) were less than the NMED target HI of 1, and the cancer risks for the industrial scenario (both 3×10^{-6}) were less than the NMED target risk level of 1×10^{-5}. For the residential scenario, the HIs (0.1 and 0.09) were less than the NMED target HI of 1 and the cancer risks (both 1×10^{-5}) were equivalent to the NMED target risk level of 1×10^{-5}.

Potential ecological risks at the TA-16 Burn Ground and at the TA-16-388 Flash Pad were also assessed (Attachment H). The HIs using the lowest observed adverse effect level (LOAEL)-

based ecological screening levels and adjusted for population area use were less than 1 for all receptors, except the deer mouse, shrew, and plant. The HIs for the deer mouse were 12 and 11 and the HIs for the shrew were 5 and 4 for the TA-16 Burn Ground and for the TA-16-388 Flash Pad, respectively. In addition, it was noted that the 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD) equivalent concentrations, which was the driver for the elevated deer mouse and shrew HIs, were relatively consistent around the TA-16-388 Flash Pad, except for a small area northeast of the burn unit between Burning Ground Road and the road accessing the burn unit. Additional ecological risk screenings of the small area northeast of the burn unit and the larger area around the TA-16-388 Flash Pad resulted in HIs of 1 or less for all receptors, except the plant. Although the HIs exceeded 1 for the deer mouse and shrew (11 and 4) for the TA-16-388 Flash Pad as a whole, recent field studies found no substantial accumulation of contaminants in small mammals and no adverse impacts to the small mammal population in the vicinity of the unit at TA-16-388 (Attachment H). The plant HI for the TA-16-388 Flash Pad (2) was also above 1, but it is overestimated based on field observations of the plant community at the site and a previous canyon study. These lines of evidence indicate there are no adverse ecological impacts to the plant community at the site. Therefore, no potential unacceptable risks to ecological receptors are present at the TA-16 Burn Ground and at the TA-16-388 Flash Pad due to past and current operations.

4.3 EFFECTIVENESS OF TREATMENT

To address the applicable miscellaneous unit requirements specified in 40 CFR § 270.23(d), a demonstration of treatment effectiveness must be included for the TA-16-388 Flash Pad. As indicated in the U.S. Army Environmental Hygiene Agency (AEHA) guidance document, "RCRA Part B Permit Writer's Guidance Manual for Department of Defense Open Burning/Open Detonation Units" (AEHA 1987), a demonstration of treatment effectiveness can be based on laboratory or field data. For wastes treated by OB, information demonstrating that any residues remaining after burning are not reactive (i.e., as defined by the Resource Conservation and Recovery Act [RCRA]) should be provided. At the TA-16-388 Flash Pad, this is accomplished by testing all residues for explosives. If explosives are present within the residue, it is treated again. Residues that are not reactive are managed in accordance with LANL waste management procedures, characterized in accordance with the LANL *Waste Analysis Plan* (Attachment C of the Permit), and managed in compliance with applicable state, federal, and local requirements.

Additionally, to provide an assessment of the temperatures of OB treatment activities, measurements were collected from various types of burns at the TA-16-388 Flash Pad. Most OB treatment events last approximately 30 minutes. Organizations such as the American Chemistry Council have recommended that waste combustion temperature should be raised to a minimum of 1,400 degrees Fahrenheit (ºF) for 2 seconds in order to achieve complete destruction of complex and persistent toxins such as dioxins and furans and their building blocks (EPA 2010). This temperature is also more than sufficient to ensure that the reactive characteristic (explosives content) within the waste is eliminated. The temperature of the waste being treated on the TA-16-388 Flash Pad has been measured to be sustained at temperatures well in excess of 2,000 ºF in most of the burn runs (see Attachment J for more information). The TA-16 Burn Ground internal operating procedures require that, for all burn events, the waste must continue to be treated until the operator determines visually that the waste is fully treated.

Thermal studies in Attachment J demonstrate that the propane burners on the TA-16-388 Flash Pad are capable of elevating the temperature within the burn cage well in excess of 2,000 ºF in most of the burn runs, in order to achieve complete combustion of complex and persistent toxins such as dioxins and furans and their building blocks. The thermal studies also demonstrate that open burning, as conducted on the TA-16-388 Flash Pad, meets all three major requirements of the American Chemistry Council's "3-T rule" for dioxin destruction: high combustion temperature to maximize waste destruction, adequate combustion time, and high combustion turbulence (American Chemistry Council 2003).

Table 4-1

Pertinent Groundwater Locations for Monitoring the TA-16 Burn Ground Showing Analyte Suites and Sample Frequency

					Analytical Suites										
					Metals	Organics						Radionuclides		Inorganics	Field[h]
Location	Watershed	Rationale for Selection of Location	Surface Water Body or Source Aquifer	Water Level or Flow[a]	Metals (Filtered)[b]	VOCs	SVOCs	Low-MDL VOCs and SVOCs[c]	PCBs	HEXP[d]	Dioxins/Furans	Radionuclides[e]	Low-Level Tritium[f]	General Inorganics[g]	DO, ORP, pH, SC, T, Turb
Canon de Valle below MDA P	Water	Downgradient surface water location for 260 Outfall (E256). Monitors HE and other contaminants in support of surface CME.	Base flow	C	S	S	B[2015i]	X	V[2015]	S	V[2015]	B[2014j]	—[k]	A	S
Bulldog Spring	Pajarito	Monitors HE contamination downgradient of TA-09.	Spring	S	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
Burning Ground Spring	Water	Spring downgradient of TA-16 260 Outfall. Monitors HE and other contaminants in support of surface CME.	Spring	S	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
Martin Spring	Water	Spring located in upper Martin/S-Site Canyon.	Spring	S	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
16-25280	Water	Alluvial well downgradient of Fishladder and Burning Ground.	Alluvial	C	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
CdV-16-02656	Water	Alluvial well location nearest to 260 Outfall drainage/Cañon de Valle confluence. Downgradient of MDA R. Monitors HE and other contaminants in support of surface CME.	Alluvial	C	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
CdV-16-02659	Water	Downgradient alluvial well from 260 Outfall drainage confluence. Monitors HE and other contaminants in support of surface CME.	Alluvial	C	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
CdV-16-611923	Water	Key alluvial well downgradient from TA-16 260 Outfall.	Alluvial	C	S	S	B[2015]	X	V[2015]	S	V[2015]	B[2014]	—	A	S
MSC-16-06295	Water	Alluvial well in S-Site/Martin Canyon downgradient of Martin Spring and several TA-16 SWMU sites.	Alluvial	C	A	A	B[2015]	X	V[2015]	A	V[2015]	B[2014]	—	A	A
16-26644	Water	Intermediate well located at TA-16 southeast and downgradient of the 90 Line Pond.	Intermediate	C	S	S	B[2015]	X	—	S	—	B[2014]	—	A	S
CdV-16-1(i)	Water	Located downgradient of the 260 Outfall [Consolidated Unit 16-021(c)-99].	Intermediate	C	S	S	B[2015]	X	—	S	—	B[2014]	—	A	S

Table 4-1 (continued)

Pertinent Groundwater Locations for Monitoring the TA-16 Burn Ground Showing Analyte Suites and Sample Frequency

					Analytical Suites										
					Metals	Organics						Radionuclides		Inorganics	Field[h]
Location	Watershed	Rationale for Selection of Location	Surface Water Body or Source Aquifer	Water Level or Flow[a]	Metals (Filtered)[b]	VOCs	SVOCs	Low-MDL VOCs and SVOCs[c]	PCBs	HEXP[d]	Dioxins/Furans	Radionuclides[e]	Low-Level Tritium[f]	General Inorganics[g]	DO, ORP, pH, SC, T, Turb
CdV-16-2(i)r	Water	Located downgradient of the 260 Outfall.	Intermediate	C	S	S	B^{2015}	X	—	S	—	B^{2014}	—	A	S
CdV-16-4ip S1	Water	Hydrologic test well installed downgradient of the 260 Outfall to evaluate the hydrologic properties of the deep perched-intermediate aquifer in TA-16. Completed August 23, 2010.	Intermediate	C	S	S	B^{2015}	X	V^{2015}	S	V^{2015}	B^{2014}	—	A	S
CdV-37-1(i)	Water	Located near the confluence of Water Canyon and Cañon de Valle. Monitors groundwater contamination in the perched-intermediate zone downgradient of TA-16.	Intermediate	C	A	A	B^{2015}	X	—	A	—	B^{2014}	B^{2015}	A	A
R-25 S1	Water	Downgradient monitoring location for the 260 Outfall.	Intermediate	C	—	S	—	X	—	S	—	B^{2014}	—	A	S
R-25 S2	Water	Downgradient monitoring location for the 260 Outfall.	Intermediate	C	—	S	—	X	—	S	—	B^{2014}	—	A	S
R-25 S4	Water	Downgradient monitoring location for the 260 Outfall.	Intermediate	C	S	S	—	X	—	S	—	B^{2014}	—	A	S
R-25b	Water	Located immediately west of R-25 on the mesa top in TA-16. Monitors perched-intermediate groundwater for potential contamination associated with effluent from the 260 Outfall. Installed as a replacement for screen 1 in R-25.	Intermediate	C	S	S	B^{2015}	X	—	S	—	B^{2014}	—	S	S
R-26 PZ-2	Water	Piezometer installed near R-26. Provides data for perched-intermediate groundwater upgradient of TA-16.	Intermediate	C	S	S	B^{2015}	X	—	S	—	B^{2014}	—	A	S
R-26 S1	Water	Provides site-specific background data for perched-intermediate groundwater upgradient of TA-16. Background location in GBIR R3. Converted to single-screen well.	Intermediate	C	A	A	B^{2014}	X	—	A	—	B^{2014}	—	A	A
R-47i	Water	Located northeast of the 260 Outfall. Provides data in support of the 260 Outfall CME.	Intermediate	C	A	A	B^{2015}	X	—	A	—	B^{2014}	B^{2015}	A	A
R-18	Pajarito	Monitors for potential contaminants from sources in TA-16.	Regional	C	S	S	B^{2015}	X	—	S	—	B^{2014}	B^{2015}	S	S
R-25 S5	Water	Downgradient monitoring location for the 260 Outfall.	Regional	C	A	A	—	X	—	A	—	B^{2014}	—	A	A

Table 4-1 (continued)

Pertinent Groundwater Locations for Monitoring the TA-16 Burn Ground Showing Analyte Suites and Sample Frequency

					Analytical Suites										
					Metals	Organics						Radionuclides		Inorganics	Field[h]
Location	Watershed	Rationale for Selection of Location	Surface Water Body or Source Aquifer	Water Level or Flow[a]	Metals (Filtered)[b]	VOCs	SVOCs	Low-MDL VOCs and SVOCs[c]	PCBs	HEXP[d]	Dioxins/Furans	Radionuclides[e]	Low-Level Tritium[f]	General Inorganics[g]	DO, ORP, pH, SC, T, Turb
R-25 S6	Water	Downgradient monitoring location for the 260 Outfall.	Regional	C	A	A	—	X	—	A	—	B^{2014}	—	A	A
R-25 S7	Water	Downgradient monitoring location for the 260 Outfall.	Regional	C	A	A	—	X	—	A	—	B^{2014}	—	A	A
R-48	Water	Completed by deepening open borehole CdV-16-3(i). Monitors historical TA-16 sources.	Regional	C	A	A	B^{2015}	X	—	A	—	B^{2014}	B^{2015}	A	A
R-63	Water	Single-screen regional well installed as a replacement for R-25 screen 5. Completed February 9, 2011.	Regional	C	S	S	B^{2014}	X	—	S	—	B^{2014}	B^{2015}	S	S

Notes: Sampling suites and frequencies: C = continuous; Q = quarterly (4 times/yr); S = semiannual (2 times/yr); A = annual (1 time/yr); B = biennial (1 time/2 yr); T = triennial (1 time/3 yr); V = quinquennial (1 time/5 yr); X = sampled once in MY2014. Samples collected for filtered analysis include metals, anions, cations, nitrate plus nitrite, ammonia, total phosphorus, specific conductance, pH, total dissolved solids (TDS), alkalinity, hardness, perchlorate, and isotopic analysis of chromium, nitrogen and oxygen. Samples collected for unfiltered analysis include VOCs, SVOCs, low-MDL VOCs and SVOCs, pesticides, PCBs, high explosive (compounds) (HEXP), dioxins/furans, radionuclides, tritium, total cyanide, total Kjeldahl nitrogen (TKN), total organic carbon (TOC), suspended sediment analysis, and deuterium and oxygen isotopes.

HE = high explosives CME = Corrective Measures Evaluation

[a] Continuous monitoring for groundwater refers to the measurement of groundwater levels by a transducer placed in a well and programmed to collect groundwater-level measurements at highly frequent intervals (e.g., every 60 min daily throughout the year). Continuous stream-flow monitoring refers to the measurement of stream flow by a base-flow stream gage that is programmed to collect stream-flow measurements at highly frequent intervals. Spring discharge is measured during semiannual (S) or annual (A) sampling.

[b] Metals analysis includes 23 metals (Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Pb, Sb, Se, Tl, V, Zn) plus boron, molybdenum, silicon dioxide, strontium, tin, and uranium.

[c] Low-MDL VOCs and SVOCs refer to analyses of 24 VOCs and SVOCs using lower MDLs as discussed in the Laboratory’s letter to NMED, dated April 4, 2013, in its “Response to Approval with Modifications for the 2011 Interim Facility-Wide Groundwater Monitoring Plan, Revision 1” (LANL 2013, 239555). Lower MDLs will be achieved using selected ion monitoring or other methods.

[d] The HEXP analytical suite includes the Consent Order list of the normal SW-846:8330 analytes plus pentaerythritol tetranitrate; triaminotrinitrobenzene; 3,5-dinitroaniline, tri(o-cresyl)phosphate; 2,4-diamino-6-nitrotoluene; and 2,6-diamino-4-nitrotoluene. These additional analytes are analyzed by SW-846:8321A.

[e] The radionuclide suite includes gross alpha, gross beta, and gross gamma; gamma spectroscopy (for cesium-137, cobalt-60, neptunium-237, potassium-40, and sodium-22); americium-241 and strontium-90; and isotopic uranium and isotopic plutonium.

[f] Tritium samples may be submitted for analysis by liquid scintillation if average activities are anticipated to exceed 200 pCi/L. Low-level tritium is analyzed using electrolytic enrichment or direct counting.

[g] General inorganic analysis includes major anions (bromide, chloride, fluoride, sulfate); major cations (calcium, magnesium, sodium, potassium); nitrate plus nitrite (as N); perchlorate; TKN; ammonia; total phosphorus, total cyanide, TOC; TDS; alkalinity; specific conductivity; pH; and hardness. TKN, TOC, and total cyanide are analyzed only in unfiltered samples.

[h] Field parameters include pH, turbidity (Turb), specific conductance (SC), dissolved oxygen (DO), and temperature (T) at all locations. Oxidation-reduction potential (ORP) will be measured if a flow-through cell is used and will not be measured in surface water, spring water, or water collected from Westbay sampling systems unless specified otherwise.

Table 4-1 (continued)

Pertinent Groundwater Locations for Monitoring the TA-16 Burn Ground Showing Analyte Suites and Sample Frequency

[i] 2015 = Samples scheduled to be collected during implementation of MY2015 Interim Plan.

[j] 2014 = Samples scheduled to be collected during implementation of MY2014 Interim Plan.

[k] — = This analytical suite is not scheduled to be collected for this type of water at locations assigned to this monitoring group.

Table 4-2

Groundwater Data At or Above Regulatory Standards in the Vicinity of the Technical Area 16 Burn Ground- 2000 to Present

Location	Screen Start Depth (ft)	Screen End Depth (ft)	Field Prep	Sample Matrix	Field QC Type	Lab Sample Type	Suite	CAS	Analyte	# of Analyses	# of Detects	Units	Lvl	Lvl Type	Min	Avg	Max	# > Std	Notes
All analytes above Regulatory Standards																			
FLC-16-25280	2.6	4.2	F	WG	REG	INIT	Metals	Al	Aluminum	3	3	ug/L	5000	NM GW STD	11900.00	14200.00	16700.00	3	downgradient of OB Unit
Martin Spring	—	—	F	WG	REG	INIT	Metals	Al	Aluminum	66	34	ug/L	5000	NM GW STD	51.00	979.14	5130.00	1	downgradient of OB Unit
Burning Ground Spring	—	—	F	WG	REG	INIT	Metals	As	Arsenic	68	2	ug/L	10	EPA MCL	3.49	16.75	30.00	1	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	REG	INIT	Metals	As	Arsenic	68	2	ug/L	10	EPA MCL	0.50	8.75	17.00	1	upgradient of OB Unit
Martin Spring	—	—	UF	WG	REG	INIT	Metals	As	Arsenic	64	12	ug/L	10	EPA MCL	1.30	5.40	24.00	2	upgradient of OB Unit
Martin Spring	—	—	F	WG	REG	INIT	Metals	As	Arsenic	65	9	ug/L	10	EPA MCL	1.34	4.29	23.00	1	upgradient of OB Unit
Martin Spring	—	—	F	WG	REG	INIT	Metals	B	Boron	60	60	ug/L	750	NM GW STD	570.00	1787.88	2840.00	59	upgradient of OB Unit
Martin Spring	—	—	F	WG	FD	INIT	Metals	B	Boron	5	5	ug/L	750	NM GW STD	1250.00	1486.00	1890.00	5	upgradient of OB Unit
FLC-16-25280	2.6	4.2	F	WG	REG	INIT	Metals	Fe	Iron	3	3	ug/L	1000	NM GW STD	6830.00	8443.33	10600.00	3	downgradient of OB Unit
FLC-16-25280	2.6	4.2	F	W	REG	INIT	Metals	Fe	Iron	1	1	ug/L	1000	NM GW STD	3370.00	3370.00	3370.00	1	downgradient of OB Unit
FLC-16-25280	2.6	4.2	F	W	FD	INIT	Metals	Fe	Iron	1	1	ug/L	1000	NM GW STD	3020.00	3020.00	3020.00	1	downgradient of OB Unit
Martin Spring	—	—	F	WG	REG	INIT	Metals	Fe	Iron	66	36	ug/L	1000	NM GW STD	29.30	476.24	2690.00	5	upgradient of OB Unit
Burning Ground Spring	—	—	F	WG	REG	INIT	Metals	Fe	Iron	70	42	ug/L	1000	NM GW STD	22.30	357.42	1390.00	3	upgradient of OB Unit
Burning Ground Spring	—	—	F	WG	FD	INIT	Metals	Fe	Iron	15	13	ug/L	1000	NM GW STD	14.60	328.82	1250.00	1	upgradient of OB Unit
FLC-16-25280	2.6	4.2	UF	WG	REG	INIT	Metals	Pb	Lead	3	3	ug/L	15	EPA MCL	10.40	13.47	18.60	1	downgradient of OB Unit
CdV-16-2(i)r	850.0	859.7	UF	WG	REG	INIT	Metals	Pb	Lead	12	11	ug/L	15	EPA MCL	0.57	3.13	15.70	1	downgradient of OB Unit
FLC-16-25280	2.6	4.2	F	W	FD	INIT	Metals	Mn	Manganese	1	1	ug/L	200	NM GW STD	330.00	330.00	330.00	1	downgradient of OB Unit
FLC-16-25280	2.6	4.2	F	W	REG	INIT	Metals	Mn	Manganese	1	1	ug/L	200	NM GW STD	329.00	329.00	329.00	1	downgradient of OB Unit

Table 4-2 (continued)

Groundwater Data At or Above Regulatory Standards in the Vicinity of the Technical Area 16 Burn Ground- 2000 to Present

Location	Screen Start Depth (ft)	Screen End Depth (ft)	Field Prep	Sample Matrix	Field QC Type	Lab Sample Type	Suite	CAS	Analyte	# of Analyses	# of Detects	Units	Lvl	Lvl Type	Min	Avg	Max	# > Std	Notes
All analytes above Regulatory Standards																			
Martin Spring	—	—	UF	WG	REG	INIT	Hexp	98-95-3	Nitrobenzene	61	1	ug/L	1.2	EPA TAP SCRN LVL	2.40	2.40	2.40	1	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	REG	RE	Hexp	98-95-3	Nitrobenzene	4	1	ug/L	1.2	EPA TAP SCRN LVL	1.20	1.20	1.20	1	upgradient of OB Unit
Martin Spring	—	—	UF	WG	REG	INIT	Perchlorate	ClO4	Perchlorate	39	14	ug/L	4	Consent Order	0.55	17.49	200.00	10	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	REG	INIT	Perchlorate	ClO4	Perchlorate	42	14	ug/L	4	Consent Order	0.55	4.64	13.20	10	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	FD	INIT	Perchlorate	ClO4	Perchlorate	5	3	ug/L	4	Consent Order	0.51	1.72	4.00	1	upgradient of OB Unit
CDV-16-4ip S1	815.6	879.2	UF	WG	REG	DL	Hexp	121-82-4	RDX	4	4	ug/L	6.1	EPA TAP SCRN LVL	124.00	182.25	265.00	4	upgradient of OB Unit
Martin Spring	—	—	UF	WG	REG	RE	Hexp	121-82-4	RDX	6	6	ug/L	6.1	EPA TAP SCRN LVL	60.00	173.17	340.00	6	upgradient of OB Unit
Martin Spring	—	—	UF	WG	REG	DL	Hexp	121-82-4	RDX	17	15	ug/L	6.1	EPA TAP SCRN LVL	77.80	128.06	187.00	15	upgradient of OB Unit
Martin Spring	—	—	UF	WG	REG	INIT	Hexp	121-82-4	RDX	51	49	ug/L	6.1	EPA TAP SCRN LVL	3.54	126.20	330.00	47	upgradient of OB Unit
Martin Spring	—	—	UF	WG	FD	INIT	Hexp	121-82-4	RDX	2	2	ug/L	6.1	EPA TAP SCRN LVL	111.00	123.00	135.00	2	upgradient of OB Unit
Martin Spring	—	—	UF	WG	FD	DL	Hexp	121-82-4	RDX	3	3	ug/L	6.1	EPA TAP SCRN LVL	79.30	110.43	137.00	3	upgradient of OB Unit
Martin Spring	—	—	F	WG	REG	INIT	Hexp	121-82-4	RDX	8	8	ug/L	6.1	EPA TAP SCRN LVL	5.50	94.69	160.00	7	upgradient of OB Unit
CdV-16-2(i)r	850.0	859.7	UF	WG	FD	DL	Hexp	121-82-4	RDX	6	6	ug/L	6.1	EPA TAP SCRN LVL	51.20	70.35	82.30	6	downgradient of OB Unit
CdV-16-2(i)r	850.0	859.7	UF	WG	REG	DL	Hexp	121-82-4	RDX	10	10	ug/L	6.1	EPA TAP SCRN LVL	52.10	66.71	81.80	10	downgradient of OB Unit
CdV-16-2(i)r	850.0	859.7	UF	WG	REG	RE	Hexp	121-82-4	RDX	1	1	ug/L	6.1	EPA TAP SCRN LVL	61.10	61.10	61.10	1	downgradient of OB Unit
CdV-16-2(i)r	850.0	859.7	UF	WG	FD	RE	Hexp	121-82-4	RDX	1	1	ug/L	6.1	EPA TAP SCRN LVL	60.80	60.80	60.80	1	downgradient of OB Unit
CdV-16-2(i)r	850.0	859.7	UF	WG	REG	INIT	Hexp	121-82-4	RDX	6	5	ug/L	6.1	EPA TAP SCRN LVL	48.40	54.20	67.70	5	downgradient of OB Unit

Table 4-2 (continued)

Groundwater Data At or Above Regulatory Standards in the Vicinity of the Technical Area 16 Burn Ground- 2000 to Present

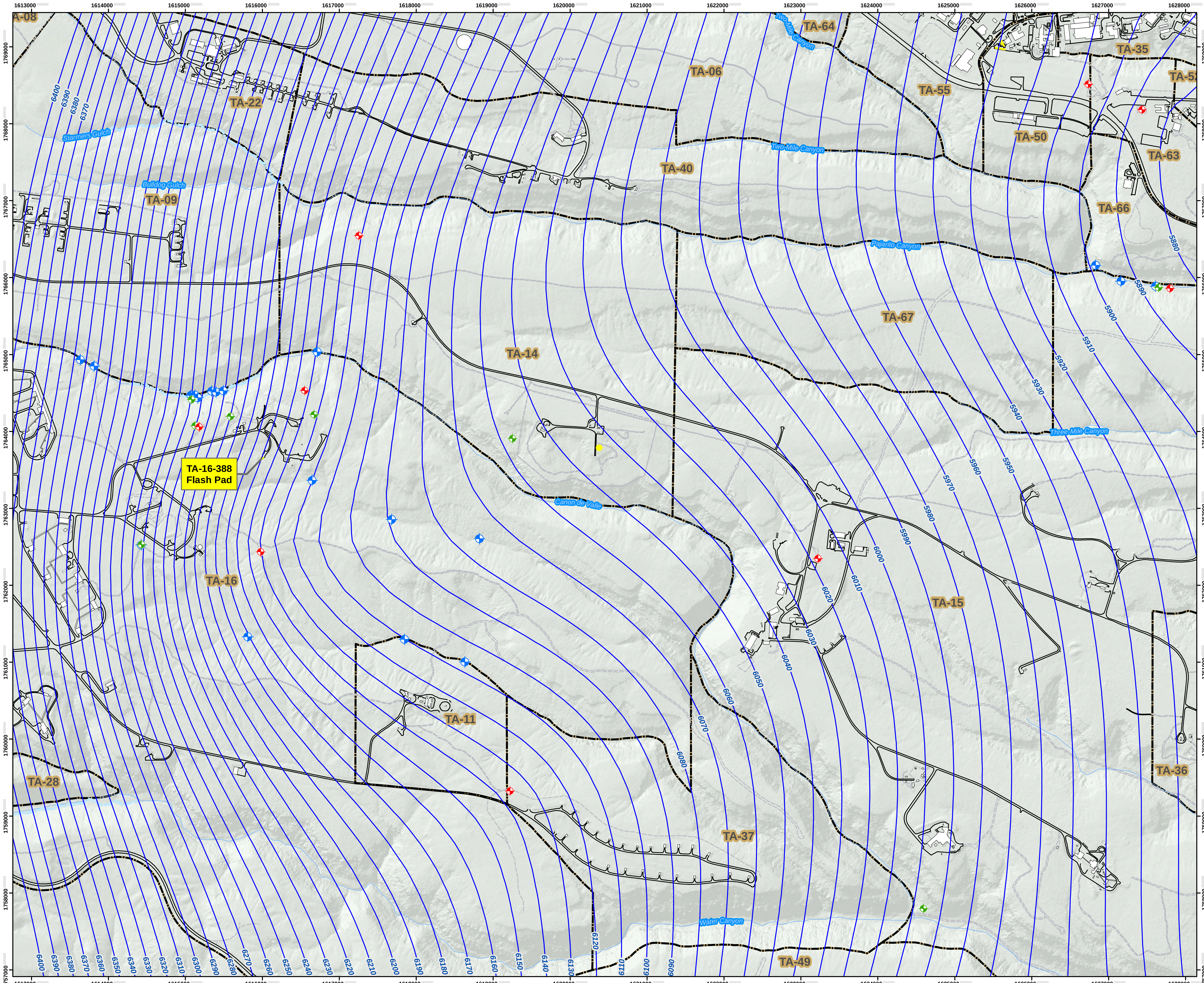
Location	Screen Start Depth (ft)	Screen End Depth (ft)	Field Prep	Sample Matrix	Field QC Type	Lab Sample Type	Suite	CAS	Analyte	# of Analyses	# of Detects	Units	Lvl	Lvl Type	Min	Avg	Max	# > Std	Notes
All analytes above Regulatory Standards																			
CdV-16-2(i)r	850.0	859.7	UF	WG	FD	INIT	Hexp	121-82-4	RDX	5	5	ug/L	6.1	EPA TAP SCRN LVL	43.30	49.76	59.60	5	downgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	FD	DL	Hexp	121-82-4	RDX	5	5	ug/L	6.1	EPA TAP SCRN LVL	22.70	29.02	37.60	5	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	REG	DL	Hexp	121-82-4	RDX	10	10	ug/L	6.1	EPA TAP SCRN LVL	16.30	26.24	38.10	10	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	REG	RE	Hexp	121-82-4	RDX	4	4	ug/L	6.1	EPA TAP SCRN LVL	13.00	21.33	29.30	4	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	REG	INIT	Hexp	121-82-4	RDX	60	57	ug/L	6.1	EPA TAP SCRN LVL	1.20	20.53	100.00	54	upgradient of OB Unit
Burning Ground Spring	—	—	UF	WG	FD	INIT	Hexp	121-82-4	RDX	10	10	ug/L	6.1	EPA TAP SCRN LVL	4.59	19.59	51.30	9	upgradient of OB Unit
Burning Ground Spring	—	—	F	WG	REG	INIT	Hexp	121-82-4	RDX	7	7	ug/L	6.1	EPA TAP SCRN LVL	1.00	15.74	29.20	6	upgradient of OB Unit
FLC-16-25280	2.6	4.2	UF	WG	REG	INIT	Hexp	121-82-4	RDX	3	3	ug/L	6.1	EPA TAP SCRN LVL	2.03	5.09	7.47	1	downgradient of OB Unit
Martin Spring	—	—	UF	WG	REG	INIT	Metals	U	Uranium	35	33	ug/L	30	EPA MCL	0.42	4.74	60.00	1	upgradient of OB Unit

Table 4-2 (continued)

Groundwater Data At or Above Regulatory Standards in the Vicinity of the Technical Area 16 Burn Ground- 2000 to Present

ft = feet
CAS = Chemical Abstract Service number
Lvl = Screening level
Lvl Type = Type of screening level
Min = minimum measured quantity
Avg = average measured quantity
Max = maximum measured quantity
ug/L = micrograms per Liter
OB = open burning
F = filtered
UF = unfiltered
W = water
WG = groundwater
INIT = initial
REG = reanalysis
FD = field duplicate
DL = dilution
NM GW STD = New Mexico Water Quality Control Commission groundwater standard
EPA MCL = U.S. Environmental Protection Agency maximum contaminant level
EPA TAP SCRN LVL = U.S. Environmental Protection Agency regional screening level for tap water
Consent Order = Compliance Order on Consent (New Mexico 2005)

Figure 4-1. Water Table Contours and Sampling Locations Downgradient of the Technical Area 16 Burn Ground



Legend

Intermediate monitoring well

Regional monitoring well

Alluvial monitoring well

Water table elevation

Drainage

Streams, Perennial

Roads, paved

Roads, dirt

Structures

RCRA-Regulated Waste Management Unit

TAs

Grid provides NM State Plane coordinates in feet.
Grid interval: 1000 ft

N
W E
S

Kilometers

0.25 0.125 0 0.25 0.5

0.25 0.125 0 0.25 0.5

Miles

State Plane Cordinate System, New Mexico Central Zone.
1983 North American Datum.
Map Units in Miles.

Created by W. Red Star, 01 MAY 2012 Map #13-0037-02

Data Sources:
***Dirt Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.**
***Paved Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.**
***Structures; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.**
***Resource Conservation and Recovery Act (RCRA) Storage and Treatment Units; Los Alamos National Laboratory; Solid Waste Regulatory Compliance Group; 04 August 2005.**
***Drainages; Los Alamos National Laboratory, Water Quality and RCRA Group; June 03, 2003.**
***Perennial Streams; Los Alamos National Laboratory; Water Quality and RCRA , Los Alamos, New Mexico; April 25, 2006.**
***Technical Area Boundaries; Los Alamos National Laboratory, Site Planning & Project Initiation Group, Infrastructure Planning Office; September 2007;as published 04 December 2008.**
***Sampling Locations; Los Alamos National Laboratory, Waste and Environmental Services Division; as published May 03, 2011 (ER_location_ids_pnt).**
***Water table contours; Los Alamos National Laboratory, Earth and Environmental Sciences Division, Computational Earth Science; unpublished February 03, 2011 from project 10-0121.**

DISCLAIMER: This map was created for work processes associated with TA-16 Permit Application. All other uses for this map should be confirmed with ENV-EDA staff.

5.0 CLOSURE PLAN

The closure plan describes the activities necessary to close the TA-16-388 Flash Pad. The information provided in the closure plan addresses the closure and post closure requirements specified in Permit Part 9; 40 CFR Part 264, Subparts G and X, and 40 CFR § 265.381 for hazardous waste management units operated at LANL under RCRA and the New Mexico Hazardous Waste Act.

The proposed closure plan for the TA-16-388 Flash Pad is included within Attachment D of this permit modification request as a potential addition to Attachment G (Closure Plans) of the Permit. The closure plan includes references to the requirements of Permit Part 9, *Closure*, and information regarding the procedures to meet them. It closely follows the format and content of the current closure plans included in Attachment G of the Permit and other closure plans that have been drafted for similar units. This format includes descriptions of the closure performance standards, schedules, closure procedures (including waste equipment disposition, decontamination and verification procedures), the sampling and analysis plan, waste management, and the closure certification report.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the Permit containing the closure plan, any approved revisions, and closure activity documentation associated with closure will be on file with hazardous waste compliance personnel at LANL and at the DOE Los Alamos Field Office. Prior to closure of the TA-16-388 Flash Pad, the closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans will be submitted to the NMED-HWB for approval prior to implementing closure activities.

5.1 CLOSURE COST ESTIMATES, FINANCIAL ASSURANCE AND LIABILITY REQUIREMENTS

LANL is a federal facility, owned by the DOE. In accordance with 40 CFR §264.140(c), LANL is exempt from the 40 CFR §264 Subpart H requirements to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions. Therefore, these provisions are not included in the closure plan within Attachment D of this permit modification request.

[This page has been left intentionally blank.]

6.0 CORRECTIVE ACTION

The information in this section is being submitted in response to regulatory requirements in 40 CFR §§ 270.14(d), 264.101, and 264.602. This section describes SWMUs located at or near the TA-16 Burn Ground. Because TA-16 at LANL includes a relatively large area and contains numerous SWMUs that would not significantly impact or be impacted by the TA-16 Burn Ground, this section addresses only those SWMUs that are located at or in the immediate vicinity of the Burn Ground, as discussed below.

The information in this section is being submitted in response to regulatory requirements in 40 CFR § 270.14(d). LANL uses the definition of a SWMU presented in the March 1, 2005 the Consent Order (New Mexico 2005). This definition states that SWMUs are "any discernible unit at which solid wastes have been placed at any time, and from which the Department determines there may be a risk of a release of hazardous waste or hazardous constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released; they do not include one-time spills."

6.1 TA-16 BURN GROUND SWMU DESCRIPTIONS

The SWMUs included in this section are the SWMUs are located within the immediate vicinity of the TA-16 Burn Ground and are listed in Table K-1, of Attachment K, *"Listing of SWMUs and AOCs,"* to the Permit. These SWMUs are listed in Table 6-1 and are located on Figure 6-1. The topography around the interim status OB units (TA-16-399 Burn Tray and TA-16-388 Flash Pad) directs runoff towards the Fish Ladder Drainage; therefore, this drainage is the only area that could potentially be impacted by leaks or spills of high explosives waste from the OB units. SWMUs located at or in the immediate vicinity of the TA-16 Burn Ground include the Former Burning Ground Structures [Consolidated Unit 16-010(h)-99] and the Fish Ladder Sump [SWMU No. 16-003(o)]. Investigations to date suggest that releases from the Fish Ladder Sump SWMU have been the major source of contaminants detected in the Fish Ladder Drainage. Other SWMUs associated with the TA-16-340 Complex at the head of Fishladder Canyon are not considered major sources of contaminants detected in the Fish Ladder Drainage and are not included in this section.

Other SWMUs are located in the northern portion of the TA-16 Burn Ground. These SWMUs are associated with Consolidated Unit 16-016(c)-99.

Table 6-1 lists the SWMUs at and in the immediate vicinity of the TA-16 Burn Ground. Figure 6-1 depicts the SWMUs presented within this section as well as the two units that are not covered under the Consent Order (New Mexico 2005), as they are interim status treatment units. These units are the TA-16-388 Flash Pad (SWMU 16-010(c)) that is presented within this permit modification request, and the TA-16-399 Burn Tray (SWMU 16-010(d)) that is no longer used and will undergo RCRA closure under interim status.

Descriptions of the SWMUs listed in Table 6-1 are provided below. These descriptions were compiled from the *Phase II Investigation Report for the TA-16-340 Complex, SWMUs 13-003(a)-99, 16-003(n)-99, 16-003(o), 16-026(j2), and 16-029(f) at TA-16, Revision 1* (LANL 2009c); the *Investigation Work Plan for Cañon de Valle Aggregate Area* (LANL 2006); and the *Voluntary Corrective Action Completion Report for SWMU 16-016(c)-99 at TA-16* (LANL 2003c).

6.1.1 SWMU 16-003(o), High Explosives Sumps and Drainline

SWMU 16-003(0) is the site of six inactive high explosives sumps and the drainline associated with former building 16-340. The sump and drainline received effluent from sink, floor, equipment, and roof drains. Historically, discharge from the building 16-340 sumps was routed to the building 16-340 outfall, which became known as the "fish ladder" because an air stripper installed at the outfall in the late 1980s resembled a fish ladder. This SWMU also includes the fish ladder/air stripper and the soil downgradient of the discharge point of the outfall. Building 16-340 was used for high explosives processes in which constituents of plastic-bonded explosive formulations were mixed and blended. All the sumps were rectangular tanks and were approximately 5 ft long by 3 ft wide by 4 ft deep. The walls and bottoms of each sump were constructed of 6-in.-thick, steel-reinforced concrete and lined with 0.25-in.-thick aluminum. Each sump had a removable 0.25-in.-thick aluminum lid. The sumps were connected to a 10-in. vitrified clay pipe, which discharged to the outfall east of building 16-340. This outfall discharges to Fish Ladder Canyon, which ultimately connects to Cañon de Valle. In the 1980s, the outfall was plumbed to an air stripper designed to eliminate VOCs in the water discharged from the outfall. The sumps were removed when building 16-340 was demolished in 2004–2005. Investigation and remediation of SWMU 16-003(o) under the Consent Order was completed in 2008. No further action is required other than continued monitoring of surface water and alluvial groundwater and inspection and maintenance of storm water controls.

6.1.2 Consolidated Unit 16-010(h)-99

Consolidated Unit 16-010(h)-99 consists of SWMU 16-005(g), SWMU 16-010(h), SWMU 16-010(i), SWMU 16-010(k), SWMU 16-010(l), SWMU 16-010(m), and SWMU 16-010(n).

6.1.2.1 SWMU 16 005(g), Former Filter Bed

SWMU 16-005(g) is a former filter bed (structure 16-393) that was located at the TA-16 Burn Ground. Built in 1951, the sand-filled filter bed received wash-down water from the basket wash facility [structure 16-390; SWMU 16-010(h)] via a trough [structure 16-1135; SWMU16-010(m)] that discharged to perforated piping lining the bottom of the SWMU 16-005(g) filter bed. In 1965, the filter bed was removed and disposed of at TA-54. SWMU 16-005(g) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.2.2 SWMU 16 010(h), Former Basket Wash Facility

SWMU 16-010(h) is the former basket wash facility (structure 16-390) that was located at the TA-16 Burn Ground. Constructed in 1951, the basket wash facility measured 23 ft long x 19 ft wide, with an 11.5-ft square equipment room attached to the northeast side of the building. The basket wash facility was used to clean filters from high explosives sumps throughout TA-16. The wash water was discharged from the facility via four elevated metal troughs [SWMUs 16-010(k-n)] to one filter vessel (structure 16-401) and three filter beds [structures 16-393 and 16-392; SWMUs 16-005(g) and 16-010(i), and structure 16-394]. Operations at building 16-390 ceased in 1966 and the building was removed in 2003. SWMU 16-010(h) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.2.3 SWMU 16 010(i), Former Filter Bed

SWMU 16-010(i) is a former filter bed (structure 16-392) that was located at the TA-16 Burn Ground. Constructed in 1951, the sand-filled filter bed received wash-down water from the basket wash facility [structure 16-390; SWMU 16-010(h)] via a trough [structure 16-1136; SWMU 16-010(n)] that discharged to perforated piping lining the bottom of the SWMU 16-010(i) filter bed. The filter bed was later converted to a burn pad where high explosives- and possibly uranium-contaminated objects were burned. The filter bed/burn pad was removed in 2003. SWMU 16-010(i) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.2.4 SWMU 16 010(k), Former Trough

SWMU 16-010(k) is a former trough (structure 16-1129) that was located at the TA-16 Burn Ground. Constructed in 1961, the trough measured 8-in wide x 8-in deep x approximately 350-ft long [the 1990 SWMU Report (LANL 1990) and the 1993 Remedial Facility Investigation (RFI) Work Plan (LANL 1993) erroneously state that the SWMU 16-010(k) trough was installed in 1951]. The trough was mounted on a 2-in steel pipe elevated above the ground with an attached metal walkway. The trough conveyed wash water from the basket wash facility [structure 16-390; SWMU 16-010(h)] to a filter vessel (structure 16-401). Use of the trough ceased in 1966, and it was removed in 2003. SWMU 16-010(k) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.2.5 SWMU 16-010(l), Former Trough

SWMU 16-010(l) is a former trough (structure 16-1134) that was located at the TA-16 Burn Ground. Constructed in 1956, the trough measured 8-in wide x 8-in deep and was approximately 350 ft long. The trough was mounted on a 2-in steel pipe that was elevated above the ground with an attached metal walkway. The trough conveyed wash-down water from the basket wash facility [structure 16-390; SWMU 16-010(h)] to a filter bed (structure 16-394). Use of the trough ceased in 1966, and it was removed in 2003. SWMU 16-010(l) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.2.6 SWMU 16 010(m), Former Trough

SWMU 16-010(m) is a former trough (structure 16-1135) that was located at the TA-16 Burn Ground. Constructed in 1951, the trough measured 8-in wide x 8-in deep and was approximately 350 ft long. The trough was mounted on a 2-in steel pipe that was elevated above the ground with an attached metal walkway. The trough conveyed wash water from the basket wash facility [structure 16-390; SWMU 16-010(h)] to filter bed 16-393 [SWMU 16-005(g)]. Use of the trough ceased in 1966, and it was removed in 2003. SWMU 16-010(m) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.2.7 SWMU 16 010(n), Former Trough

SWMU 16-010(n) is a former trough (structure 16-1136) that was located at the TA-16 Burn Ground. Constructed in 1951, the trough measured 8-in wide x 8-in deep and was approximately 350 ft long. The trough was mounted on a 2-in steel pipe that was elevated above the ground with an attached metal walkway. The trough conveyed wash-down water from the basket wash facility [structure 16-390; SWMU 16-010(h)] to filter bed 16-392 [SWMU 16-010(i)]. Use of the trough ceased in 1966, and it was removed in 2003. SWMU 16-010(n) is being investigated under the Consent Order as part of the Cañon de Valle Aggregate Area.

6.1.3 Consolidated Unit 16-016(c)-99

Consolidated Unit 16-016(c)-99 consists of SWMUs 16-006(e), 16-010(a), and 16-016(c).

6.1.3.1 SWMU 16-006(e), Septic Tank

SWMU 16-006(e) was an approximately 100-gal. steel septic tank that was part of a septic system constructed in 1963. The septic system included the septic tank, a leach field, an outfall, and associated drain line; the septic system served the control shelter (structure 16-389) at the Burn Ground. The water closet, lavatory, and floor drain in the control shelter discharged to the septic tank. Structure 16-389 generally was occupied only during burning ground operations, which occurred one to two days a week. The overflow outlet from the tank was sealed in 1988, and the contents subsequently were routinely pumped and disposed of through the LANL Sanitary Wastewater Systems Consolidation centralized sanitary treatment plant. The septic tank and drainline were removed in 2002. Investigation and remediation of SWMU 16-006(e) under the Consent Order has been completed and the site received a certificate of completion without controls from NMED in 2006.

6.1.3.2 SWMU 16-010(a), Flash Pad

SWMU 16-010(a), also known as Flash Pad 16-386, is a former high explosives flash pad that was constructed in 1951 and is located approximately 150 ft southwest of Flash Pad 16-387. The base of the pad was soil, and the pad was situated within a 100 x 100-ft area enclosed by an 8-ft-high chain link fence. In 1998, a metal building was installed in the southeast corner of the area. In 1999, as part of the Material Disposal Area (MDA) P closure activities, the area was halved, and the northern section of fence was relocated 50 ft to the south, resulting in an enclosed area of 50 x 100 ft. This allowed heavy truck access through the area to support waste shipments from MDA P site excavation and removal activities. Investigation and remediation of SWMU 16-010(a) under the Consent Order has been completed and the site received a certificate of completion without controls from NMED in 2006.

6.1.3.3 SWMU 16-016(c), Barium Nitrate Pile

SWMU 16-016(c) is a former barium nitrate pile located in the west-central area of Flash Pad 16-386. Barium nitrate was stored in this area in the 1950s and 1960s and the pile was removed by the early 1970s. The footprint of the former barium nitrate pile is about 0.85 acre. Investigation and remediation of SWMU 16-016(c) under the Consent Order has been completed and the site received a certificate of completion without controls from NMED in 2006.

Table 6-1

Solid Waste Management Unit (SWMU) Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description
16-003(o) [a]	Sump	6 high explosives sumps and drainline	Industrial wastewater
16-005(g) [b]	Wastewater Treatment	High explosives sand filter bed	Industrial wastewater
16-010(h) [b]	Wastewater Treatment	Basket wash facility	Industrial wastewater
16-010(i) [b]	Wastewater Treatment	High explosives sand filter bed	Industrial wastewater
16-010(k) [b]	Wastewater Treatment	High explosives wastewater trough	Industrial wastewater
16-010(l) [b]	Wastewater Treatment	High explosives wastewater trough	Industrial wastewater
16-010(m) [b]	Wastewater Treatment	High explosives wastewater trough	Industrial wastewater
16-010(n) [b]	Wastewater Treatment	High explosives wastewater trough	Industrial wastewater
16-006(e) [c]	Septic system	Septic tank	Sanitary wastewater
16-010(a) [c]	Open burn	High explosives waste flash pad	High explosives-contaminated waste
16-016(c) [c]	Storage pile	Barium nitrate pile	Chemical

a Information compiled from: *Phase II Investigation Report for the TA-16-340 Complex, SWMUs 13-003(a)-99, 16-003(n)-99, 16-003(o), 16-026(j2), and 16-029(f) at TA-16, Revision 1 (LANL 2009c).*

b Information compiled from: *Investigation Work Plan for Cañon de Valle Aggregate Area (LANL 2006).*

c Information compiled from: *Voluntary Corrective Action Completion Report for SWMU 16-016(c)-99 at TA-16 (LANL 2003c).*

[This page has been left intentionally blank.]

Figure 6-1. Solid Waste Management Units (SWMUs) in the Vicinity of the Technical Area 16-388 Open Burning Unit

7.0 REFERENCES

AEHA 1987. *RCRA Part B Permit Writers Guidance Manual for Department of Defense Open Burning/Open Detonation Units*, U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground, Maryland.

AASHTO 1996. *Standard Specifications for Highway Bridges*, 16th Edition, American Association of State Highway and Transportation Officials.

American Chemistry Council 2003. *Dioxin and Waste Combustion: It's Not What You Burn- It's the Way You Burn It!*, American Chemistry Council, Washington, DC 20002. (http://www.dioxinfacts.org/sources_trends/the_way.html). Copyright 1996 to 2013.

Baytos, John F. 1991. *Field Spot-Test Kit for Explosives*. LA-12071-MS. Los Alamos National Laboratory, Los Alamos, New Mexico. February 4, 1991.COE 2005. *Wetlands Delineation Report, Los Alamos National Laboratory*, US Army Corps of Engineers, Albuquerque District. October 2005.

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

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.

LANL 1990. *Solid Waste Management Units Report, Revision 1.0*. LA-UR 90-3400, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL 1993. *RFI Work Plan for Operable Unit 1130*. LA-UR-93-1152, ER2003-0711, Los Alamos National Laboratory, Los Alamos, New Mexico. June 1993.

LANL 2003a. *Los Alamos National Laboratory Technical Area 16 Part B Permit Application, Revision 4.0*. LA-UR-03-3903, Los Alamos National Laboratory, Los Alamos, New Mexico. June 2003.

LANL 2003b. *Los Alamos National Laboratory General Part B Permit Application, Revision 2.0*. LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico. August 2003.

LANL 2003c. *Voluntary Corrective Action (VCA) Completion Report for Solid Waste Management Unit (SWMU) 16-016(c)-99 at Technical Area (TA) – 16.* LA-UR-03-8482. Los Alamos National Laboratory, Los Alamos, New Mexico. November 2003.

LANL 2006. *Investigation Work Plan for Cañon de Valle Aggregate Area*. Los Alamos National Laboratory document, LA-UR-06-4960, ER2006-0224. Los Alamos, New Mexico. September 2006.

LANL 2009a. *Los Alamos National Laboratory General Part A Permit Application, Revision 6.0*. Los Alamos National Laboratory document LA-UR-09-04027, Los Alamos, New Mexico. September 2009.

LANL 2009b. *Transmittal of Technical Area 16 Soil Sampling Report and Standard Operating Procedures*. LA-UR-08-07027 and LA-UR-09-03893, Los Alamos National Laboratory, Los Alamos, New Mexico. Administrative Record number 31731. June 25, 2009.

LANL 2009c. *Phase II Investigation Report for the TA-16-340 Complex, SWMUs 13-003(a)-99, 16-003(n)-99, 16-003(o), 16-026(j2), and 16-029(f) at TA-16, Revision 1*, Los Alamos National Laboratory document LA-UR-09-0309, Los Alamos, New Mexico. January 2009.

LANL 2011a. *Investigation Report for Water Canyon/Cañon de Valle*. Los Alamos National Laboratory document LA-UR-11-5478, EP2011-0227. Los Alamos National Laboratory, Los Alamos, New Mexico. September 2011.

LANL 2011b. *Submittal of Certification of Completion of Baseline Control Measures for 57 Site Monitoring Areas, Dated January 12, 2011*; ENV-RCRA-11-0002, LAUR-11-00114. January 12, 2011.

LANL 2012a. *Los Alamos National Laboratory Environmental Report 2011*. LA-14461-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico. September 2012.

LANL 2012b. *Technical Area 16 Well Network Evaluation and Recommendations.* Los Alamos National Laboratory report LA-UR-12-1082, EP2012-0064, Los Alamos National Laboratory, Los Alamos, New Mexico, March 2012.

LANL 2012c. *Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012-September 2013*. Los Alamos National Laboratory document LA-UR-12-21331, EP2012-0092. Los Alamos National Laboratory, Los Alamos, New Mexico. August 2012.

LANL 2013a. *2012 Storm Water Individual Permit Annual Report, Reporting Period: January 1 – December 31, 2012*. LA-UR-13-20566, EP2013-0030. (March 2013).

LANL 2013b. 2012 *Update to the Site Discharge Pollution Prevention Plan, Revision 1, Volume 4, Water/ Cañon de Valle Watershed*. LA-UR-13-21503, EP2013-0043. (May 1, 2013).

McLin, S.G., M.E. van Eeckhout, and A. Earles 2001. *Mapping 100-Year Floodplain Boundaries Following the Cerro Grande Wildfire*. LA-UR-01-5218, Los Alamos National Laboratory, Los Alamos, New Mexico.

McLin, S. G. 1992. *Determination of 100-Year Floodplain Elevations at Los Alamos National Laboratory*. LA-12195-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.

New Mexico 2005 and all approved modifications. State of New Mexico, *Compliance Order on Consent Proceeding Under the New Mexico Hazardous Waste Act § 74-4-10 and the New Mexico Solid Waste Act § 74-9-36(D).* issued to the United States Department of Energy and the Regents of University of California for the Los Alamos National Laboratory, Los Alamos, New Mexico. Effective March 1, 2005.

New Mexico 2012. *2012-2014 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report*. State of New Mexico Water Quality Control Commission. May 2012.

NMED 2010. *Los Alamos National Laboratory Hazardous Waste Facility Permit*. New Mexico Environment Department, Santa Fe, New Mexico. November 2010 and updates.

NMED-HWB 2013. *Request for Second Extension to Submit Open Burning (OB) Permit*

Modification Request to Add OB Unit TA-16-388 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit EPA ID# NM 0890010515. Correspondence from John E. Kieling to Juan Griego and Michael T. Brandt, Santa Fe, New Mexico. Dated July 26, 2013.

[This page has been left intentionally blank.]

8.0 CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

ACTING WM DL

09/27/2013

Robert L. Dodge
Division Leader
Waste Management Division
Los Alamos National Laboratory
Operator

Date Signed

30 SEPT 2013

Geoffrey L. Beausoleil
Acting Manager, Los Alamos Field Office
National Nuclear Security Administration
U.S. Department of Energy
Owner/Operator

Date Signed

Attachment A

Evidence of Public Notice, Summary of Comments, and Public Comment Response for Public Information Meeting on Open Burning Treatment Unit, June 6, 2013

(Included in LA-UR-13- 27579)

Evidence of Public Notice for 2013 Open Burning Pre-application Meeting

Robertson secures district crown over Taos

Journal
NORTH EDITION
A ZONED PUBLICATION OF ALBUQUERQUE JOURNAL

EDDIE MOORE/JOURNAL

Robertson's Miguel Jauregui, center, gets congratulations after scoring a run in play against Taos in Las Vegas, N.M. Saturday.

Robertson catcher Miguel Jauregui, right, tags out Taos's Matt Sanchez at home plate during play in Las Vegas, N.M. Saturday.

Robertson second baseman Michael Salazar tracks down a hit to throw a runner out in play against Taos Saturday.

■ *Colin Pedro limits the Tigers to five hits in the opener*

BY VINCE KONG
Journal Staff Writer

LAS VEGAS, N.M. — Heading in the final day of the regular season, just one game separated Robertson from second-place Taos in the District 2-3A standing.

So, needing just one win from Saturday's doubleheader, Kenneth Sandoval wasn't taking any chances.

The first-year Robertson coach put his ace, Colin Pedro, on the mound for first contest, with the hopes that his squad wouldn't need a game two to be the decider.

He was right.

But not only did the Cardinals take one, the host squad completed the sweep, taking game one 2-1 and the second 7-5 to capture the district crown at Brandt Field on the campus of New Mexico Highlands.

While Sandoval admitted ... because they were able to work through it. Like I tell the guys, good teams work through (difficulties), while so-so teams let things get away from them. We obviously didn't let it get away, and that's a credit to these guys."

ROBERTSON 2, TAOS 1: In a classic pitchers' duel, Pedro squared off against Taos ace Isaiah Concha.

Both pitchers went the distance — Pedro scattering five hits through seven innings, while Concha yielded just three.

But in the end, the Cardinals' two-run third inning would prove to be enough.

"I knew we had two chances, but I wanted to get the win during my chance to pitch," Pedro said. "I really just focused on keeping my pitches under control. I could have done better, but we still got the win."

Taos mounted a two-out rally in the top of the sixth inning, starting with a two-out single by Concha followed by an RBI triple by Matt Sanchez. But ... sixth. We wanted to see how he would do with that last batter and he sewed it up."

Robertson's two runs in the second inning came on an sacrifice bunt by Mike Salazar, who later scored on a fielder's choice by Nate Archuleta.

Concha, despite yielding just three hits, was saddled with the loss.

"A three-hitter while holding a team to two runs is usually enough," Taos coach Mark Montoya said. "But we only scored a run, which usually isn't enough — and that was our scenario today.

"And in the inning that they scored, (Concha) walked the leadoff hitter — the eight hitter — and the nine hitter laid down a great bunt. Our defense brain cramps and doesn't get the next out — and that's it. They're a good ballclub and made enough plays to win."

ROBERTSON 7, TAOS 5: While runs were scarce in game one, the Cardinals made up for it in the regular-season finale.

Miguel Jauregui led the way at the plate, going 2-for-3 with a triple and two RBIs, while Larry Martinez took care of matter from the mound. The Cardinals left-hander allowed four runs on three hits through five innings for the win. Archuleta pitched in relief after Martinez walked the leadoff batter in the sixth. And the Robertson right-hander recorded the save after tossing two no-hit innings. Taos, however, did score a run in the seventh inning on the Cardinals' sixth error of the contest.

Taos opened the scoring in the first inning, pushing across two runs, including an RBI single by Kiko Martinez. Robertson responded by tying the game in the second, before the squads exchanged runs in the third.

Jauregui then drew a bases-loaded walk in the fourth inning for the go-ahead score, before the squads exchanged runs in the fifth, with the Cardinals leading 5-4. Mike Sandoval then knocked in the eventual game-winner in bottom the sixth — a two-RBI single — to score Jauregui and Micio Allen, who finished the game 2 for 2 with an RBI.

The state seeding meeting is today for next weekend's state tournament.

PRE-SUBMITTAL PUBLIC INFORMATION MEETING
Los Alamos
NNSA
Hazardous Waste Permit Modification
Fuller Lodge • 2132 Central Avenue, Los Alamos, NM
Thursday, June 6, 2013 • 5:30-7:30 p.m.
What is it about? The upcoming permit process for adding an open-burning waste treatment unit at Technical Area 16, called the TA-16-388 Flash Pad.
Why? The purpose of the meeting is to solicit questions from the community and inform the community of proposed hazardous waste management activities at LANL.
If you have questions, please contact us
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS M996, Los Alamos, NM 87545
Phone: 505-667-0216 • envoutreach@lanl.gov
Learn more: Official permit, NMED-Hazardous Waste Bureau:
If you will need special assistance, please contact us at least 72 hours before the meeting so that arrangements can be made

cently of Eugene, Ore. passed away April 9, 2012 of natural causes. He was surrounded by his daughters, son-in-law, and grandchildren.

Glenn was born Oct. 29, 1922

[illegible] Whitney Brunson, Kieran and Mary Brunson, Evan Brunson, and Forrest, Charles, and Solomon Wagner.

A memorial bench has been installed in Glenn's and Lily's memory on the rim of the canyon they loved so well, at Overlook Park in White Rock. Enjoy their view!

[illegible] was well known for his humor, kindness and smile. Among his last words was a recitation of the amusing poem, "James James Morrison Morrison" (Disobedience) by A.A. Milne.

A public memorial service will be held at Quail Run, 3101 Old Pecos Trail, at 11 a.m. on June 8.

The *Los Alamos Monitor*, your community's voice for 50 years. Come to our celebration, noon to 5 p.m. May 18 at Fuller Lodge.

PRE-SUBMITTAL PUBLIC INFORMATION MEETING
Hazardous Waste Permit Modification

Los Alamos

Fuller Lodge
2132 Central Avenue,
Los Alamos, NM
Thursday, June 6, 2013
5:30 p.m. — 7:30 p.m.

If you have questions, please contact us
Los Alamos National Laboratory
Environmental Communication & Public Involvement

What is it about? The upcoming permit process for adding an open-burning waste treatment unit at Technical Area 16, called the TA-16-388 Flash Pad.

Why? The purpose of the meeting is to solicit questions from the community and inform the community of proposed hazardous waste management activities at LANL.

Learn more: Official permit, NMED-Hazardous Waste Bureau: http://www.nmenv.state.nm.us/HWB/lanlperm.htm#FinalPermit

If you will need special assistance, please notify the contact to the left at least 72 hours before the meeting so that arrangements can be made

Jim's ASPHALT PAVING

Asphalt Paving
Commercial
& Residential

• Hot Mix
• Tar & Gravel
• Seal Coating - 40¢ sq. ft.
• Patching/Small Repair - 4.25¢ sq. ft.
• Parking Lots
• Residential Driveways
• Recycle Materials

Call JIM at
505-918-0433
License # 90054

2013 Santa Fe Bandstand

The New Mexican

The 2013 Santa Fe Bandstand free music series on the Santa Fe Plaza will feature 89 performances during an expanded, nine-week schedule this summer.

Here is a complete listing of the diverse performers scheduled to appear in the concert series, brought to you with the help of various local sponsors by Outside In Productions:

Friday, June 21
◆ 6 p.m.: Ivon Ulibarri & Café Mocha, Albuquerque salsa band
◆ 7:15 p.m.: Son Como Son, Albuquerque salsa band

Monday, June 24
◆ 6 p.m.: The Barefoot Movement, folk/bluegrass Americana from Johnson City, Tenn.
◆ 7:15 p.m.: The Dunwells, Indie band from Leeds, England

Tuesday, June 25
◆ 6 p.m.: Shannon McNally, Americana singer-songwriter
◆ 7:15 p.m.: Eliza Gilkyson, Americana singer-songwriter returns to Santa Fe from Austin, Texas

Wednesday, June 26
◆ 6 p.m.: Sorela, Hispanic pop from a pair of Albuquerque sisters
◆ 7:15 p.m.: Sol Fire, Santa Fe Hispanic rock group

Thursday, June 27
◆ 6 p.m.: Todd & The Fox, Indie dance-oriented music written by Todd Lovato on banjo
◆ 7:15 p.m.: John Courage & The Great Plains: Indie band

Monday, July 1
◆ Noon: Eaglestar, folk, Michael Combs with his daughter Beth
◆ 6 p.m.: Strolling Scones, oldies, classic '60s pop and psychedelica

Tuesday, July 2
◆ 6 p.m.: Funktasm with Little Leroy, local funk band.
◆ 7:15 p.m.: Yo Mama's Big Fat Booty Band, funk, from Asheville, N.C.

Monday, July 8
◆ Noon: Polyphony Marimba, Santa Fe-based world-marimba ensemble
◆ 6 p.m.: Simon Blakley & The Honkey Tonk Crew, country
◆ 7:15 p.m.: James "Slim" Hand, country

Tuesday, July 9
◆ 6 p.m.: Cali Shaw, Indie rock, singer-songwriter
◆ 7:15 p.m.: Alex Maryol, Indie/blues/rock, Santa Fe's own

Wednesday, July 10
◆ Noon: T.B.A.
◆ 6 p.m.: Mariachi Aztlan, mariachi
◆ 7:15 p.m.: Severo y Grupo Fuego, Hispanic with cumbia flavor

Thursday, July 11
◆ 6 p.m.: Cloacas, Indie, with elements of folk, Americana, classical and American gothic
◆ Intermission: Sage Harrington, Indie, silly songs on ukulele
◆ 7:30 p.m.: A Hawk and A Hacksaw, Indie/world, fusion of folk styles

Saturday, July 13
◆ 6 p.m.: Suzanne Teng & Mystic Journey (featuring Gilbert Levy), world.
◆ Intermission: Azadeh Dance Company
◆ 7:30 p.m.: Wagogo, world, with strong dose of Zimbabwean mbira, roots music from the islands and New Mexican.

Monday, July 15
◆ Noon: Floozy, Americana, classical, pop, flamenco, rock, folk, soul from an Albuquerque trio
◆ 7:15 p.m.: JQ Whitcomb, jazz, Santa Fe trumpeter and composer

Tuesday, July 16
◆ 6 p.m.: Anthony Leon & The Chain, country/rock
◆ 7:15 p.m.: Hoodoos, rock/blues. Billy Desmond returns from Portland, Ore.

Wednesday, July 17
◆ Noon: Blue Moon Prairie, country trio
• 6 p.m.: Felix y Los Gatos, zydeco band from Albuquerque
◆ 7:15 p.m.: Curley Taylor, zydeco from Sunset, La.

Thursday, July 18
◆ 6 p.m.: The Gregg Daigle Band, Americana, equal parts Duane Allman and Bela Fleck
◆ 7:15 p.m.: The Free Range Ramblers, Americana

Monday, July 22
◆ Noon: Clan Tynker, family circus. Siblings performing whimsical "Old World/Vaudeville" entertainment
◆ 6 p.m.: Ryan Christopher Montano, jazz trumpeter
◆ 7:15 p.m.: Max Baca y Los Texmaniacs, Tex-Mex conjunto

Tuesday, July 23
◆ 6 p.m.: The Mil-Tones, jazz, New Orleans second-line brass band.
◆ 7:15 p.m.: Larry Mitchell, jazz/rock guitarist.

Wednesday, July 24
◆ Noon: The Railyard Reunion Band
◆ 6 p.m. Baile Español, Hispanic children's dance group
◆ 7:15 p.m.: Manzanares, nuevo Latino, led by Abiquiú-born brothers David and Michael Manzanares

Thursday, July 25
◆ 6 p.m.: hONEey house, Indie
◆ 7:15 p.m.: Jay Boy Adams and Zenobia, R&B

Monday, July 29
◆ Noon: Fiddlin' Doc Gonzales, country/Hispanic
◆ 6 p.m.: Lipbone Redding, Indie, noted for his ability to imitate brass instruments
◆ 7:15 p.m.: Round Mountain, Americana duo, brothers Char and Robbie Rothschild

Tuesday, July 30
◆ 6 p.m.: Treemotel, Indie
◆ 7:15 p.m. Jupiter Spiral, Indie, with psych and post-rock influences

Wednesday, July 31
◆ Noon: La Familia Vigil, classic Northern New Mexico, Cipriano Vigil, son Cipriano Jr. and daughter Felicita
◆ 6 p.m.: Mariachi Buenaventura, New Mexico's only all-female mariachi band
◆ 7:15 p.m.: Lumbre del Sol, Santa Fe's Chicano rock band for four decades

Thursday, Aug. 1
◆ 6 p.m.: John Trentacosta & Straight Up, Santa Fe jazz group
◆ 7:30 p.m.: Bert Dalton's Brazil Project, blend of traditional, contemporary and Brazilian jazz

Monday, Aug. 5
◆ Noon: Santa Fe University of Art and Design Contemporary Ensemble
◆ 6 p.m.: Bill Hearne, Santa Fe's flat-pickin' country/folk singer.
◆ 7:15 p.m.: Cathy Faber's Swingin' Country Band, country

Tuesday, Aug. 6
◆ 6 p.m.: The Canyon Road Blues Band, blues/R&B
◆ 7:15 p.m.: Soulstatic, Tony Buford-led funk/R&B

Wednesday, Aug. 7
◆ 6 p.m. Tiho Dimitrov, blues/rock
◆ Intermission: The Candyman's "School of Rock" Band, Santa Fe's future rock stars
◆ 7:15 p.m.: Max Gomez, Indie/folk, from Taos

Thursday, Aug. 8
◆ 6 p.m.: Matthew Andrae, New Mexico classic, from Santa Fe
◆ 7:30 p.m.: Joe West and The Santa Fe Revue, Americana

Friday, Aug. 9
◆ 6 p.m.: Little Bird & The Big Boy Band, country
◆ 7:15 p.m.: The Derailers, Country band from Austin, Texas

Monday, Aug. 12
◆ 6 p.m. Nation Beat, world, Brooklyn-based collective
◆ 7:15 p.m. Nacao Estrela Brilhante, one of Brazil's oldest traditional maracatu groups, from Recife

Tuesday, Aug. 13
◆ 6 p.m.: Nosotros, salsa
◆ 7:15 p.m.: DJ P.A. Trix, live salsa dance party with latest sounds from Cuba

Wednesday, Aug. 14
◆ 6 p.m.: Indigie Femme, Native American
◆ 7:15 p.m.: Robert Mirabal, Taos

Monday, Aug. 19
◆ 6 p.m.: Man No Sober, Indie rock
◆ 7:15 p.m.: The Pleasure Pilots Band, Santa Fe-based R&B/blues band

Tuesday, Aug. 20
◆ 6 p.m.: Broomdust Caravan, juke joint, honky tonk, biker bar rock and roll, from Santa Fe
◆ 7:15 p.m.: Jimmy Stadler, blues/rock, from Taos

Wednesday, Aug. 21
◆ 6 p.m.: Terri Hendrix & Lloyd Maines, Americana, from Texas
◆ 7:15 p.m.: Christina Herr & Wild Frontier, Americana, from Albuquerque

Thursday, Aug. 22
◆ 6 p.m.: Radio La Chamusa, reggae/world, from El Paso
◆ 7:30 p.m.: The Imperial Rooster, Indie/country/rock, gonzo roots music from Española

Friday, Aug. 23
◆ 6 p.m.: Boris McCutcheon, Americana, singer-songwriter plays guitar, harmonica and mandolin
◆ 7:15 p.m.: Jono Manson, gravelly-voiced Americana/rock, from Santa Fe

PRE-SUBMITTAL PUBLIC INFORMATION MEETING
Hazardous Waste Permit Modification
Los Alamos
Fuller Lodge
2132 Central Avenue,
Los Alamos, NM
Thursday, June 6, 2013
5:30 p.m. — 7:30 p.m.

What is it about? The upcoming permit process for adding an open-burning waste treatment unit at Technical Area 16, called the TA-16-388 Flash Pad.
Why? The purpose of the meeting is to solicit questions from the community and inform the community of proposed hazardous waste management activities at LANL.
Learn more: Official permit, NMED-Hazardous Waste Bureau:
If you will need special assistance, please notify the contact to the left at least 72 hours before the meeting so that arrangements can be made


Notice of Pre-submittal Public Meeting
Open Burning Treatment Unit Application
Hazardous Waste Facility Permit
June 6, 2013
Fuller Lodge
2132 Central Ave
Los Alamos, NM
5:30pm - 7:30pm
If you have questions or need special assistance, please contact us at:
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS M996
Los Alamos, NM 87545
505-667-0216
envoutreach@lanl.gov
The Class 3 permit modification requests the addition of a treatment unit to the Hazardous Waste Facility Permit. The meeting will
• Discuss content of permit modification request for the open burning treatment unit at the Technical Area 16 Flash Pad
• Solicit questions and inform attendees of the proposed hazardous waste management activities
• Describe the upcoming review process
NNSA
FULLER LODGE


Los Alamos National Laboratory
Notice of Pre-submittal Public Meeting
Open Burning Treatment Unit Application
Hazardous Waste Facility Permit
June 6, 2013
Fuller Lodge
2132 Central Ave
Los Alamos, NM
5:30pm - 7:30pm
If you have questions or need special assistance, please contact us at:
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS M996
Los Alamos, NM 87545
505-667-0216
envoutreach@lanl.gov
The Class 3 permit modification requests the addition of a treatment unit to the Hazardous Waste Facility Permit.
The meeting will
• Discuss content of permit modification request for the open burning treatment unit at the Technical Area 16 Flash Pad
• Solicit questions and inform attendees of the proposed hazardous waste management activities
• Describe the upcoming review process

KRSN AM 1490 Order Confirmation
OrderID: 0229-005

Frijoles Canyon Trading Company LLC
KRSN AM 1490
3801 Arkansas Ave. Ste. E
Los Alamos, NM, 87544

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS NM 87544

Sponsor:	Los Alamos National Laboratory Communications O
Product:	Los Alamos National Laboratory Communications O
Estimate/PO:	
AccountRep:	Gillian Sutton
BillingCycle:	Calendar Month
InvoiceType:	Detail Notarized Affidavit
Run Dates:	5/31/2013 - 6/6/2013
Items Ordered:	12
Gross Amount:	224.00
Discounts:	0.00
Agency Commission:	0.00
Net Amount:	224.00
+gross reciepts	16.38
Total Amount	240.38

Scheduled Station(s): KRSN AM 1490
Los Alamos National Laboratory Communications Office

Printed 5/31/2013 3:07:00 PM **Page 1**

	Run Dates	Run Weeks	Run Times	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Week Total	Length	Description	Avail Type	Copy ID	Qty	Item Cost	Total Cost
01	6/3/2013 - 6/6/2013	All Weeks	07:00 AM - 09:00 AM	1	1	1	1				4	:60	Spot		20113	4	20.00	80.00
02	6/3/2013 - 6/5/2013	All Weeks	09:00 AM - 07:00 PM	2	2	2					6	:60	Spot		20113	6	18.00	108.00
03	6/6/2013 - 6/6/2013	All Weeks	09:00 AM - 05:00 PM				2				2	:60	Spot		20113	2	18.00	36.00

Calendar Month Projected Billing:

Apr-13	0.00	May-13	0.00	Jun-13	224.00	Q2-2013	224.00

Confirmed Correct; Payment Guaranteed

Accepted for Station1

Company Detail

Company Name	LOS ALAMOS NATIONAL LABORATORY
Address	PO BOX 1663 MSC A190 LOS ALAMOS, NM 87544-0600
Contact Name	MARTIN PACHECO
Phone Number	(505)667-4166
Profit Indicator	P

PS Form 3607R - Mailing Transaction Receipt

Account Holder Account Number	1715652
Account Holder Permit Number	532
Account Holder Permit Type	PI
Account Holder CRID	8897692
Post Office of Permit	ALBUQUERQUE NM 87101-9651
Post Office of Mailing	ALBUQUERQUE NM 87101-9651
Post Office of Permit Cost Center	340147-0115
Post Office of Mailing Cost Center	340147-0115
Mailing Agent Name	SOUTHWEST MAIL CENTER
Mailing Agent CRID	4171331
Mail Owner Name	
Mail Owner CRID	
JOB ID	
Customer Reference ID	
CAPS Transaction Number	N/A
Class of Mail	Standard Mail
Processing Category	Letters
Postage Statement ID	161153316
Mailing Group ID	120366142
Mailer's Mailing Date	05/03/2013
Total Pieces	0 pcs.
Weight of a single-piece	0.0135 lbs.
Total Weight	0.0000 lbs.
Total Number of Containers	7
Total Postage (Without Incentive/Fee)	$ 261.70
Total Incentive/Discount	$ 0.00
Fee	$ 0.00
Total Adjusted Postage	$ 261.70
Payment Date and Time	05/03/2013 16:04
Payment Transaction Number	201312318041414M1
Mailer Figures Adjusted?	No
Person authorizing adjustment	
Name	
Phone Number	
Acceptance Site Mailer ID	
Clerk Initials	LAD
Mail Arrival Date and Time	05/03/2013 14:47

1160

Notice of Public Meeting
Open Burning Treatment Unit Application
Los Alamos National Laboratory Hazardous Waste Facility Permit
EPA ID NO. NM0890010515

The Department of Energy (DOE) and the Los Alamos National Security, LLC (LANS) will be holding a public information meeting prior to the submittal of a Class 3 permit modification request to add a treatment unit to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit. The meeting will discuss the permit modification request that will be submitted for the open burning treatment unit at Technical Area (TA) 16, known as the TA-16-388 Flash Pad. The purpose of the meeting is to solicit questions from the community and inform the community of proposed hazardous waste management activities at LANL.

Meeting Information

Date: June 6, 2013

Location: Fuller Lodge, 2132 Central Ave, Los Alamos, NM

Time: 5:30pm - 7:30pm

The meeting will focus on the upcoming permit process for the unit and the general content of the permit modification request. The official permit can be found on the NMED-HWB webpage at: http://www.nmenv.state.nm.us/HWB/lanlperm.html#FinalPermit.

If you will need special assistance to participate in this meeting, please notify the contact below at least 72 hours before the meeting so that arrangements can be made.

If you have questions, please contact us.
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS M996
Los Alamos, NM 87545
Phone: 505-667-0216
envoutreach@lanl.gov

LA-UR-13- 23044

Summary of June 6, 2013 Open Burning Pre-application Public Information Meeting

Hazardous Waste Permit Open Burning Modification

Public Information Meeting

June 6, 2013

UNCLASSIFIED

General Ground Rules

Please …

- Wait until the scheduled time to provide comments or to ask questions
- Identify yourself before speaking
- Keep your questions short
  - remember there may be others waiting to ask questions
- Honor the process by keeping questions and comments civil and by using appropriate language
- Yield the floor if requested by the facilitator
- Help the participants and facilitator ensure that the agenda content and timeframes are met

Agenda

Time	Subject	Speaker
5:30	Meeting agenda and ground rules	Bruce MacAllister
5:35	Purpose of meeting	Mark Haagenstad
5:45	Explosives Research in Support of National Security Protecting the Environment	Mike Stevens
6:15	Anatomy of a Burn	Sandy Powell
6:45	Permit application details	Luciana Vigil-Holterman
7:00	Questions?	
7:30	Close	

Purpose of meeting

June 6, 2013

MARK HAAGENSTAD
WASTE MANAGEMENT DIVISION

Meeting Purpose

- Discuss permit modification request to add an open burning treatment unit the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit
  - Request to add Technical Area (TA) 16-388 Flash Pad due June 28, 2013
- Meeting to solicit questions from the community and inform the community of proposed hazardous waste management activities at LANL
- Generally discuss contents of request, necessity of unit, and how application deficiencies are addressed

| Los Alamos National Laboratory |

NMED requirements for permit modification request

Environment Department Secretary approved the request for Permittees to reapply and stated

> "Applicants shall file a full and complete permit application that adequately addresses all deficiencies previously identified in writing and at the hearing by the HWB at a date determined by the HWB."

- Main deficiencies addressed in the application include:
  - Lack of conclusive risk assessment to determine that there will be no adverse risk to human health and the environment from continued operations
  - Evidence that future operations are protective of human health and the environment
  - Adequate assessment of alternatives to open burning

LANL is applying for an open burning permit

- Currently performed safely under interim status requirements
  - Regulated by the Resource Conservation and Recovery Act (RCRA) and the NM Hazardous Waste Act
- Safely manages and controls hazardous wastes from cradle to grave including:
  - Waste generation
  - Transportation
  - Treatment
  - Storage
  - Disposal
- In New Mexico, the Environment Department (NMED) has been authorized by the Environmental Protection Agency (EPA) to administer and enforce the Act

Helping define the rules under which we operate

| Los Alamos National Laboratory |

Explosives Research in Support of National Security Protecting the Environment

June 6, 2013

MICHAEL F. STEVENS
WEAPONS EXPERIMENTS DIVISION

LANL conducts national security mission research in support of our nuclear deterrent and the war fighter

- The research often involves testing of explosive materials to support:
  - Basic research
  - Certifying safety and operability of the nuclear stockpile
  - Counter-terrorism
  - Detection technology development
  - Improvised Explosive Device (IED) detection and defeat

Protecting troops against improvised explosive devices

LANL Homemade Explosives (HME) Training course

- **LANL has successfully created an HME Situational Awareness Course for Warfighter**
- **The success of that program has led to the development of an advanced HME course curriculum for Explosive Ordnance Disposal Technicians for U. S. war fighters**
- **Course focuses on:**
  - World-wide HME threats
  - Advanced understanding of homemade explosives (HME) focused on:
    - Safety, sensitivity and performance of HME threats
    - Synthesis and manufacturing processes of these explosives
    - Application of HMEs in Improvised Explosive Devices (IEDs) and Improvised Detonators
    - Identification of HME's using hand-held detection equipment

Basic explosives research supports innovation and maintains intellectual competence

- Greening of explosives
  - Lower volumes of solvents generates less synthesis waste
  - Green starting materials
  - Multiple Pollution Prevention Awards
- Explosives formulations
  - New explosives
  - Improvised explosives from household materials
- Explosives for weapons configurations
- Aging of explosives

Los Alamos National Laboratory

We develop detection technologies to keep air travel safe

- Detection techniques are based on:
  - Appearance
  - Smells
  - Sounds
  - Chemical signatures
  - Understanding high-explosive formulations and staying "one step ahead" of terrorist bomb-makers

MagViz – detecting explosives at airports

LANL completes all of our missions responsibly, protecting human health and the environment in the process

- Worker and public safety is paramount
- Protection of human health and the environment is not only a requirement: it is a core value
  - Air
  - Soil
  - Water
  - Wildlife

Why does LANL have to treat waste on-site?

- Transporting certain high explosive waste is dangerous
  - Forbidden for some substances
  - May be more reactive after heat, impact, etc. tests have occurred
  - Aged materials may also have greater reactivity
- Open burning on site is safer than transporting the material on public roads for waste disposition elsewhere
- Analysis of alternatives finds that open burning is the safest for workers and the public

16-388 Flash Pad

- We burn machining waste and occasionally "flash" high explosive-contaminated waste components under interim-status
- We are in the process of closing our 399 burn tray

Anatomy of a Burn

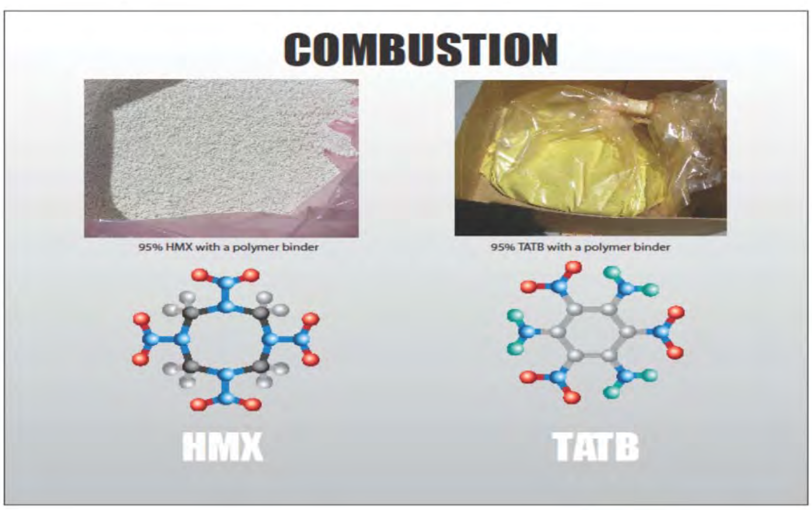
June 6, 2013

SANDRA POWELL
WEAPONS EXPERIMENTS DIVISION

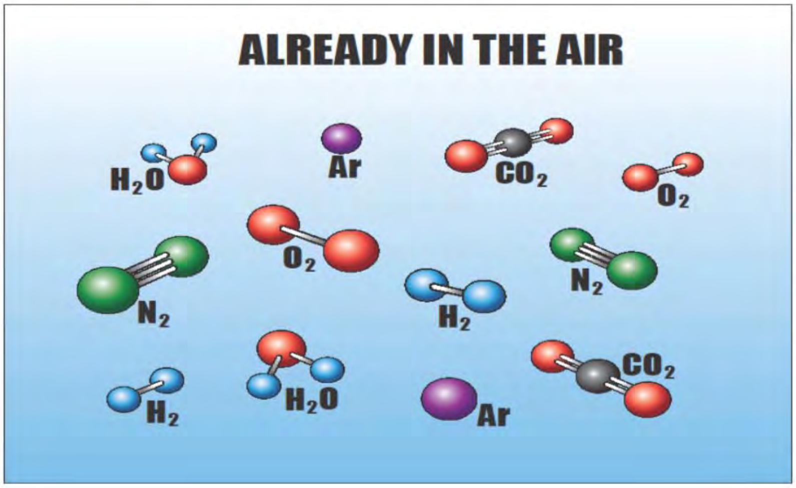
What Open Burning Is Not

- Not Volatilization
- Not Vaporization
- Not Evaporation
- Not Sublimation

What Open Burning IS…



What Open Burning IS…



Basics of Open Burning at LANL

- Who
  - LANL customers in previous discussion
  - no waste is brought to LANL to be treated
- What
  - only materials and equipment that have the potential to detonate
  - meet the waste criteria in permit
  - no radioactive material
  - no detonators, encased or confined explosives
- When
  - once or twice a week in the morning for approximately 30 minutes

Basics of Open Burning at LANL

- Where
  - have reduced number of open burn sites in operation from nine to one
  - currently at a remote location at S-Site, TA-16
- Why
  - safest treatment method for workers and the public (less handling, less transportation, less accumulation, most knowledgeable workers)
  - only allowable treatment for some explosives-contaminated debris
  - extremely efficient (usually no ash residue)

| Los Alamos National Laboratory |

The How of Open Burning

- How the waste is generated

- How the waste is treated

  - Environmental and Safety Considerations
  - 2012 Statistics

How is the Waste Generated?

- Over 80% of waste treated by open burning is generated by the machining of explosives components

Machining coolant water is filtered through a series of filter socks to capture explosives cuttings and is then recirculated

Machining scrap and socks are packaged in approved explosives containers and stored in Hazardous Waste Satellite Storage Areas

How is the Waste Treated?

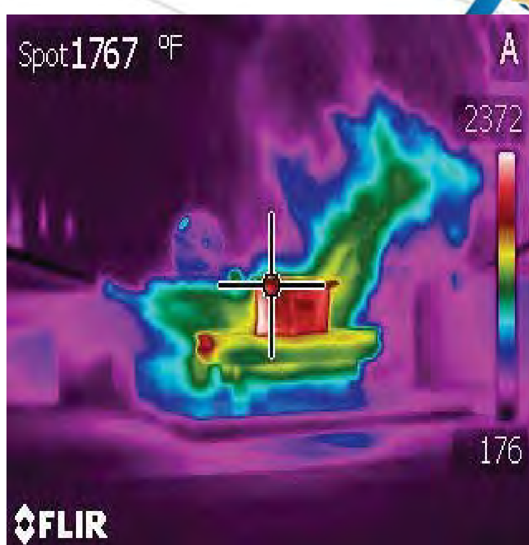
Waste is off-loaded at the TA16-388 Flash Pad and the area cleared of personnel and large wildlife

Waste is carefully placed into a steel wire cage and covered. The high-efficiency propane burners are remotely ignited.

Environmental and Safety Considerations

- Fire hazard matrix (fuel moisture & weather)
- Local wind speed
- Weeds and grasses in area (200’ radius)
- Weekly inspections of equipment and area
- Precipitation (current and anticipated)
- Lightning
- Icy conditions
- Only one burn in a 24-hour period
- Number of burners used
- Mixing of explosives for most efficient burn

- Typical burn is 50#
- About 30 minutes
- Well over 1500°F
- Dioxins/furans destroyed above 1400°F
- Sampling from recent activity shows no measureable dioxin/furan deposition



- Most explosives leave no residue
- Filter socks and binders leave small quantities of non-hazardous ash
- Less than 2 gal/yr
- Collected, tested and sent off-site for disposal

| Los Alamos National Laboratory |

2012 Statistics

- Last year 3,228 pounds of explosives or explosives-contaminated waste were treated
  - 73 lbs of explosives-contaminated carbon
  - ~ 600 lbs water as part of the explosives machining waste
  - 366 lbs of explosives-contaminated filter socks
- 49 burns were performed
- Less than 25 hours of burning for the year

Open Burning of 9502

Video of open burning treatment event at TA-16-388 Flash Pad

Permit Application Details

June 6, 2013

LUCIANA VIGIL-HOLTERMAN
WASTE MANAGEMENT DIVISION

TA-16-388 Flash Pad

- Destroys explosives (reactive) component of waste and renders any residue amenable to handling and disposal
- Modification adds a single unit that treats explosives hazardous waste only
- Requesting permit for decreased maximum treatment capacity
  - 200 pounds per burn
  - 6,000 pounds per year
- Reduced operations to a single unit onsite

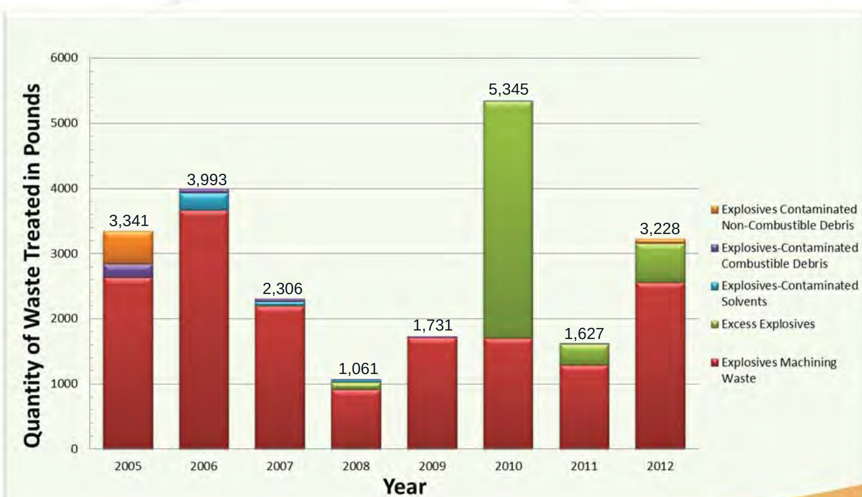
Open Burning vs. Open Detonation

- Open burning and open detonation treat some of the same wastes
  - Generally, excess explosives and explosives-contaminated combustible debris
- Waste streams for open burning treatment processes only
  - Explosives machining waste
  - Explosive-contaminated equipment and D&D debris
  - Explosive-contaminated solvents
  - Explosive-contaminated soils/sand
- Waste streams for open detonation treatment processes only
  - Munitions
  - Detonators
  - Encased explosives
  - Depleted uranium containing

Permit Modification Request Contents

- Description of unit and operations
- Unit-specific waste analysis, inspection requirements, preparedness and prevention, and emergency operations
- Environmental performance standards
  - Baseline assesses current state of the area after more than 60 years of use
  - Assesses potential that future operations contribute to contamination
- Alternatives analysis
  - Analysis of alternative technologies, alternatives to treatment on-site, and waste minimization efforts
- Closure plan
- Part A Form that lists quantity limit for unit and wastes that can be treated
- Suggested Permit changes in redline-strikeout

Waste quantities are carefully assessed and routine waste generation has decreased



Alternatives analysis:
Open burning is the safest and poses the least risk

- Waste streams that require thermal treatment (burning, incineration, flashing, detonation) cannot be eliminated
- Confined burning and incineration
  - Increase the risk to workers
  - Cannot treat all waste streams
  - Are large units that require permits prior to construction
- Transportation risks on open roads are higher than burning on-site
  - Shipping waste to be burned moves the problem elsewhere
  - Not all explosive waste can be shipped

Alliant Techsystems' explosive waste incinerator (EWI)

Lake City Army Ammunition Plant (LCAAP)

Independence, Mo.

El Dorado Engineering, Inc.

Thermal Disposal/ Contained Burn Treatment Unit

Protecting human health and the environment

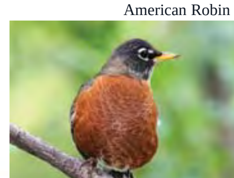
- Once burned, the waste is no longer dangerous and emissions are trace
  - Hydrocarbons, acetylene, ethylene, and particulates are emitted in extremely small quantities
  - Air emissions are too low to be measured offsite
- Study for effects on small mammals and wildlife:
  - no effect on population
- We continue to verify through on-going monitoring programs

Lincoln's Sparrow

Monitoring at the site has concluded that open burning does not adversely effect human health and the environment

Deer mouse

American Robin



Ongoing Monitoring

- Groundwater
  - Covered under the Interim Facility Wide Groundwater Monitoring Program
- Surface Water
  - Covered under the EPA Individual Storm water Permit for LANL
- Suggested monitoring specific to TA-16 Open Burning Unit
  - Soil monitoring at 2, 5, and 8 years after the inclusion of the unit in the Permit

Proposed Treatment Permit Conditions

- Maximum quantity of waste to be treated
  - 6,000 pounds/year
- Maintain controls that minimize run-on and run-off
- Hours of operation
  - 1 hour after sunrise and 1 hour before sunset
  - Only one burn per day
- Weather related restrictions
  - Lightning within six miles
  - Transport on icy roads
  - Red flag conditions
- Safety related controls and maintenance
- Revisit alternative technologies prior to reapplication for Permit

Permit Public Comment Process

- Pre-application meeting
  - Summary of meeting will be included with permit modification request
- After submittal of request, notifications will be sent to the public
  - Newspapers
  - Email
  - Post-card mailing
- 60 day public comment period is started by public notice
- NMED-HWB begins review process for the permit modification request

Attendees at June 6, 2013 Open Burning Pre-application Public Information Meeting

Los Alamos NATIONAL LABORATORY

SIGN IN SHEET

Thursday, June 06, 2013
Hazardous Waste Permit Modification Information Meeting
Fuller Lodge

NAME (please print)	ADDRESS	TELEPHONE NUMBER	E-MAIL	I would like to receive updates on RCRA activities YES	NO
MARK HAAGENSTAD	34 Los Huertas SANTA FE 87506	–	mph@lanl.gov		✓
Scott Kovac	NWNM				
Selena Saucr	728 42nd St.	412-5644	ssaucr@lanl.go		✓
Joni Chiri		667-6691			✓
Steve Yanicak	23 Vista del Fuego	455-1026	sydoeob@gmail.com		✓
Jim Bloch	1405 Luisa St Santa Fe NM	989-9022	jbloch@nmelc.org		✓
Lisa Franaware	1900 Radford El Paso TX	9155265500			✓
Holly Wheeler	4039 Vuelta Colorada Santa Fe 87507	505-690-9013	hollywheelerbowers@yahoo.com		✓

Los Alamos NATIONAL LABORATORY

SIGN IN SHEET

Thursday, June 06, 2013
Hazardous Waste Permit Modification Information Meeting
Fuller Lodge

NAME (please print)	ADDRESS	TELEPHONE NUMBER	E-MAIL	I would like to receive updates on RCRA activities: YES	NO
Marian Naranjo	Rt.5 Box 474 Española, NM 87532	747-4652	Mariann [illegible]windstream.net	✓	
GENE TURNER	104 KJERSTY CT CORRALES, NM 87048				
Dick Powell	P.O. Box 1000 Alcalde, NM 87511	852-0888	powelldsa2a01@yahoo	✓	
Bruce MacAllister	Tesuque, NM 87506	660-7800	bruce@bizexteam.com	✓	
Luciana Vigil Helterman	63609 NBU36 Española NM	5059277776	vigilhelterman@gmail.com	✓	
Ken Laintz	201 Canada Way Los Alamos, NM	5056723507	klaintz@msn.com	✓	
M. Brandt	1975 Camino Redondo Los Alamos NM	505-690 6418	mtbrandt56@msn.com		
Tamy Diaz	PO Box 174 Alcalde, NM 87511	505 9276752	tdiaz@lanl.gov		
David Fink	166 Flora Ct Los Alamos, NM 87544	505 6728077	dfe		

Los Alamos
NATIONAL LABORATORY

SIGN IN SHEET

Thursday, June 06, 2013
Hazardous Waste Permit Modification Information Meeting
Fuller Lodge

NAME (please print)	ADDRESS	TELEPHONE NUMBER	E-MAIL	I would like to receive updates on RCRA activities YES	NO
Tony Grieggs			grieggst@lanl.gov	y	
LORRIE BONDS LOPEZ			lorriel@lanl.gov		✓

Comments Received at June 6, 2013 Open Burning Pre-application Public Information Meeting

Los Alamos
NATIONAL LABORATORY
EST. 1943

Los Alamos National Laboratory
OPEN ~~DETONATION~~ BURN PERMIT MODIFCATION
COMMENT AND QUESTION CARD

IS The Video ON YOUTUBE?

Thanks for Slide 38.

Give us more time to give comments to be considered IN The application.

Please give a little More info before tonights meeting.

(Optional) Name: Scott Kovac Telephone: 505-989-7342 Email: scott@nukewatch.org
Mailing List:
Address City State Zipcode

Visit our website: www.lanl.gov/environment

1 of 4

Los Alamos National Laboratory
OPEN ~~DETONATION~~ BURN PERMIT MODIFCATION

Los Alamos NATIONAL LABORATORY EST. 1943

COMMENT AND QUESTION CARD

- What do furans and dioxins turn into under intense heat? ("destroyed")
- What is the actual content of the ash?
- Where does the ash go?

(Optional) Name: Jon Block Telephone: (505) 989-9022 Ext 22 Email: jblock@nmelc.org
Mailing List: 1405 Luisa St. Santa Fe NM 87505
Address City State Zipcode

New Mexico Env. Law Center

Visit our website: www.lanl.gov/environment

2 of 4

Los Alamos National Laboratory
OPEN ~~DETONATION~~ PERMIT MODIFCATION
BURN

Los Alamos NATIONAL LABORATORY EST. 1943

COMMENT AND QUESTION CARD

Next sampling period should take some grabs - both random & deviated (by wind direction) to see if there are constituents going beyond 400'

(Optional) Name: Jon Block Telephone: (505) 989-9022 Ext 22 Email: ~~[illegible]~~ jblocke@nmelc.org
Mailing List: New Mexico Env. Law Center, 1405 Luisa St, Santa Fe, NM 87505
Address City State Zipcode

Visit our website: www.lanl.gov/environment

Los Alamos National Laboratory
OPEN ~~DETONATION~~ burn PERMIT MODIFCATION

Los Alamos NATIONAL LABORATORY EST. 1943

COMMENT AND QUESTION CARD

In 2010, during the hearing process on the burn permits LANL, CCNS & J HOPE presented evidence through the testimony of an expert, Ralph Hayes, El Dorado Engineering, Salt Lake City, UT on the use of CLOSED BURN FACILITIES which his company designs that are used at DOD sites around the US. Your presentation states that open burning has been fully analyzed and is the safest & most effective way to dispose of this waste. Please provide your cost-benefit and safety analysis.

(Optional) Name: Jon Block Telephone: (505) 989 9022 Email: jblock@nmelc.org
Mailing List: 1405 Luisa St. Santa Fe, NM 87505
Address City State Zipcode

New Mexico Environmental Law Center

Visit our website: www.lanl.gov/environment

11 of 11

Transcription of and Response to Comments Received at June 6, 2013 Open Burning Pre-application Public Information Meeting

Open Burn Pre-Submittal Public Meeting Written Comments - June 6, 2013
Transcription of Handwriting on Four Comment and Question Cards

Below are responses to written comments that were received during a pre-application public information meeting about a Class 3 permit modification request to add an open burning thermal treatment unit at Technical Area 16-388 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit. Comment card transcription is presented in italics and the U.S. Department of Energy and the Los Alamos National Security, LLC (Permittees) response follows:

***Scott Kovac – Nuclear Watch of New Mexico**, [Telephone (505) 989-2342; Email: scott@nukewatch.org]*

Comment: *Is the video on YouTube?*

Response: The video is currently on the LANL YouTube channel at http://www.youtube.com/watch?v=SkTItXeD4PE .

Comment: *Thanks for slide 38.*

Response: In addition to the graph located on slide 38 of the pre-application meeting summary that is included within Attachment A of this permit modification request, a table that lists the quantities treated by open burning at LANL has been provided at Table 2-1 in Attachment E, *Treatment Justification for Open Burning Activities at Los Alamos National Laboratory*. Additional information on the specific waste streams treated at the TA-16-388 Flash Pad is located in Section 3.2.1.1of this permit modification request.

Comment: *Give us more time to give comments to be considered in the application.*

Response: This comment has been noted and will be taken into consideration the next time that a pre-application public information meeting for a new waste management unit is held.

Comment: *Please give a little more info. before tonight's meeting.*

Comment: This comment has been noted and will be taken into consideration the next time that a pre-application public information meeting for a new waste management unit is held. It is possible that more information can be disseminated through the public notice process for the meeting.

***Jon Block – New Mexico Environmental Law Center; Concerned Citizens for Nuclear Safety**, [Telephone (505) 989-9022; Email: jblock@nmelc.org; Mailing List: NMELC, 1405 Luisa St., Santa Fe, NM 87505]*

Comment: *In 2010, during the hearing process on the burn permits LANL, CCNS, and HOPE presented evidence through the testimony of an expert, Ralph Hayes, El Dorado Engineering, Salt Lake City, UT on the use of CLOSED BURN FACILITIES, which his company designs that are used at DoD sites around the US. Your presentation states that open burning has been fully analyzed and is the safest most effective way to dispose of this waste. <u>Please provide your cost benefit and safety analysis.</u>*

Response: Safety principles for the use of the TA-16-388 Flash Pad and an analysis of safety associated with treatment on-site versus off-site waste shipment is included within Attachment E, *Treatment*

Justification for Open Burning Activities at Los Alamos National Laboratory of this permit modification request. The alternatives assessment includes an evaluation of the wastes treated through open burning at the site; the availability of off-site treatment and the safety hazards associated with transport and handling of explosives wastes; and the availability of alternative technologies for on-site treatment and the feasibility, explosives safety hazards, and potential human health and environmental impacts/benefits. Each of the technologies that can treat waste that is currently treated through open burning is included within the assessment. No single alternative technology can treat all of the waste streams that are currently treated through open burning on-site; otherwise, multiple thermal treatment units would still be necessary for on-site treatment of explosives waste and the Permittees would still require an open burning treatment unit. The addition of two additional treatment units at the Facility is not a feasible option compared to the use of the existing treatment processes available on-site. A cost benefit analysis was not conducted as the alternate technology would not replace the current technology and would only add separate treatment units to the existing unit.

Comment: *Next sampling period should take some grabs – both random and directed (by wind direction), to see if there are constituents going beyond 400'.*

Response: The soil grab samples that were collected within 2012 were determined in conjunction with input by NMED-HWB staff. The soil sampling plan was submitted for review and approval in March 2012 (LANL 2012) and an approval with modifications was received from the NMED-HWB in May 2012 (NMED 2012). The sampling plan was designed to encompass sufficient monitoring locations for the site that represented areas of potential deposition from air to soil (predominant wind direction) and areas of potential storm water runoff from the both of the units at TA-16. The request for a permit only includes the TA-16-388 Flash Pad and the unit located to the north, the TA-16-399 Burn Tray will be closed under interim status closure requirements. The furthest soil sample location is approximately 652 feet northeast of the TA-16-388 Flash Pad; however, sample distances range from just a few feet to 652 feet from the source at and around the unit.

Comment: *What do Furans and Dioxins turn into under intense heat? ("destroyed")*

Response: Dioxins and furans are broken down at temperatures above 1400˚F (EPA 2010) and will be decomposed predominantly into gaseous combustion products such as the oxidized compounds of carbon, nitrogen, and water. Minute quantities of diatomic chlorine and hydrogen chloride can also be expected.

Comment: *What is the actual content of the ash?*

Response: Ash generated from the open burning treatment process at the TA-16-388 Flash Pad is sampled and analyzed for hazardous waste constituents prior to being shipped off-site for disposal as a New Mexico Special Waste. Characterization of the waste is conducted in accordance with LANL hazardous waste characterization processes and procedures and in accordance with Attachment C, *Waste Analysis Plan,* of the LANL Hazardous Waste Facility Permit.

The previous two samples of ash were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), explosives, and toxicity characteristic leaching procedure metals. Additionally, the ash disposed of in 2008 was also analyzed for dioxin and furan content although it was not required for waste characterization. Consistently, analyses found small quantities of metals (barium and chromium), explosives (Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [HMX]) and other organic compounds (toluene, acetone, naphthalene, bis[2-ethylhexyl]phthalate, benzene). All of the constituents detected within the ash generated at the

TA-16 Burn Ground are found at quantities below thresholds for hazardous waste characterization. Additionally, within the last several years no listed waste solvents have been treated at the units, therefore, there has been no hazardous waste generated at the TA-16-388 Flash Pad in that time period.

Comment: *Where does the ash go?*

Response: The waste ash generated at the TA-16-388 Flash Pad is currently sent to the Veolia Environmental Services (Veolia ES) Technical Solutions facility in Henderson, Colorado.

References

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.

LANL 2012. Transmittal of Soil Sampling Plan for the Technical Area 16 Open Burning Treatment Units, Los Alamos National Laboratory, EPA ID No. NM0890010515, Document Number LA-UR-12-10412, AR35091. March 2012.

NMED 2012. Soil Sampling Plan for Technical Area 16 Open Burning Treatment Units Los Alamos National Laboratory (LANL), EPA ID #NM0890010515, Document Number AR 35239. May 2012.

Attachment B

Resource Conservation and Recovery Act (RCRA) History for the Technical Area 16 Open Burning Treatment Unit

(Included in LA-UR-13- 27579)

REGULATORY HISTORY OF THE LOS ALAMOS NATIONAL LABORATORY TECHNICAL AREA 16 OPEN BURNING TREATMENT UNITS

INTRODUCTION

Since the 1950s, the Los Alamos National Laboratory (LANL) has conducted treatment of hazardous wastes by open burning (OB) operations at several units at an area known as the Technical Area (TA) 16 Burn Ground. This document discusses the history of the TA-16 Burn Ground and OB operations including (1) an overview of LANL's OB treatment operations at the TA-16 Burn Ground; (2) the required permits for OB operations; and (3) the regulatory history of the OB permit application. As discussed below, OB operations at LANL have changed dramatically over time. Currently, the TA-16-388 Flash Pad is the only OB unit that is operational. All of the other OB treatment units, discussed below, have ceased operations and closed (or are undergoing closure).

I. OVERVIEW OF LANL OPEN BURNING OPERATIONS

A. TA-16 BURN GROUND OPERATIONS

The TA-16 Burn Ground is the location where LANL conducts thermal treatment operations of waste. It is located in a remote site in the southwestern portion of LANL, and situated on a broad mesa bounded on the north by Cañon de Valle and on the south by Water Canyon. Over the years, explosives processing operations, waste water treatment operations, waste disposal operations, and thermal treatment operations were all conducted at the TA-16 Burn Ground. Historically, two types of thermal treatment operations were conducted: incineration and open burning (including "flashing," a type of open burning). Starting in 1951, LANL conducted open burning of excess explosives at seven (7) different OB units. These OB units were in operation prior to the enactment of Subtitle C of Resource Conservation Recovery Act (RCRA) (1976), and the Environmental Protection Agency (EPA) promulgated regulations for hazardous waste management and OB treatment operations.

Over the years, thermal treatment operations have changed and improved significantly, resulting in improved efficiency, safety, and protection of human health and the environment. Additionally, OB operations have been consolidated to a single unit; use of a cleaner and more efficient fuel; and a significant reduction in the volume of hazardous waste that requires thermal treatment through waste minimization efforts.

B. DESCRIPTION OF TA-16 THERMAL TREATMENT UNITS

Following is a brief description of the original seven (7) thermal treatment units[1] located at the TA-16 Burn Ground (Figure 1 shows how these units looked in 1998).

- TA-16-388 Burn Tray (now a Flash Pad), open burning unit
- TA-16-387 Flash Pad, open burning unit
- TA-16-399 Burn Tray, open burning unit
- TA-16-394 Solvent Tray, open burning unit
- TA-16-1409 Industrial Incinerator
- TA-16-401 Filter Vessel, thermal treatment
- A-16-406 Filter Vessel, thermal treatment

The TA-16-388 Flash Pad is discussed in further detail in Section I.C of this document.

<u>Closure Pending</u>

TA-16-399, Burn Tray

A permit was sought previously for the TA-16-399 Burn Tray. It was included in prior permit applications, and in the 2009 and 2010 Draft Permits issued by the Hazardous Waste Bureau of the New Mexico Environment Department (NMED-HWB), as discussed in Section III (*OB Permit Application History*) below. In 2012, LANL determined that the TA-16-399 Burn Tray was no longer needed to support operations, and final treatment operations were conducted at this unit in July 2012. In March 2012, LANL submitted a closure plan for TA-16-399 that is pending review and approval by the NMED-HWB.

<u>Closed Units</u>

TA-16-394, Solvent Tray

The solvent tray was used as a burn pad for explosives-contaminated oil/solvent mixtures. In 1990, the burn pad was converted to oil/solvent burn trays that were ignited remotely. The NMED-HWB approved closure of the TA-16-394 unit in November 2002.

TA-16-401 and TA-16-406, Filter Vessels

These were sand filter vessels used to filter explosives-contaminated wastewater going to the High Explosives Wastewater Treatment Facility. The filtered explosives were then allowed to dry on the surface of the filters, covered, and then burned in place on the sand filters. In September 2005, the NMED-HWB approved closure of the filter vessels.

TA-16-387, Flash Pad

The flash pad was used to flash explosives-contaminated unburnable material prior to disposal. At this unit, wood, scrap lumber, and kerosene were added to the explosives-contaminated unburnable material in order to keep the temperature high enough to remove the

[1] Note that the former TA-16-392 unit is not included in this list, because it ceased operations prior to the passage of RCRA.

explosives contamination. In November 2005, the NMED-HWB approved the closure of the flash pad in conjunction with the closure of Material Disposal Area P (MDA-P).

TA-16-1409, Industrial Incinerator

The industrial incinerator was used for treatment of potentially explosives-contaminated combustible debris such as paper, cardboard boxes, rags, kimwipes, wooden spoons, plastic bags, cotton swabs, and packaging material. The industrial incinerator was permitted in LANL's 1989 Hazardous Waste Facility Permit. Closure was approved by the NMED-HWB in October 2001.

C. CURRENT OPEN BURNING OPERATIONS (TA-16-388 FLASH PAD)

Currently all thermal treatment operations at LANL are conducted at the TA-16-388 Flash Pad, located at the TA-16 Burn Ground. The unit has been in operation since the 1950s and has operated under the interim status requirements of the New Mexico Hazardous Waste Act and RCRA (1976) (as amended) ("RCRA Subtitle C"), found at 40 CFR Part 265, Subpart P since 1980. Interim status is a designation given to hazardous waste management facilities that were in existence prior to 1980. Interim status requirements apply until issuance of a final permit. The TA-16-388 Flash Pad is classified as a "thermal treatment hazardous waste management unit" because it is used for treatment of explosives hazardous wastes; and must meet requirements applicable to "miscellaneous units" under 40 CFR Part 264, Subpart X. The permitting process for the TA-16-388 Flash Pad is discussed below, in Section III.

In the 1950s, the TA-16-388 Flash Pad (then known as the TA-16-388 Burn Tray) and TA-16-399 Burn Tray (discussed above) were used to burn dry explosives waste resulting from breakage, tray rejects, sprues, machining rejects, emptied boxes, and excess melt. The open burning processes at both units used an electronic match to ignite dry waste explosives, added combustible material, and kerosene. The combustible material and kerosene were added to the explosives to aid in the perpetuation of burning. A burn operation typically consisted of placing padding (combustible material) on the tray, removing the explosives to be treated from storage/shipping boxes, and placement of those explosives on the padding. The padding was then dampened with kerosene, electric matches (squibs) were connected to the firing cables, and a train of excelsior saturated with kerosene was run from the squibs to the padding, initiating the burn.

In 1997, LANL began planning and implementation of significant improvements and upgrades at the TA-16-388 Burn Tray. NMED-HWB approved several upgrades as changes during interim status. These upgrades have enabled LANL to minimize the emissions that have the potential to be generated during treatment operations by adding propane fuel (instead of wood fuel), and by adding a cover and containment to the unit. LANL further minimized emissions by eliminating all other operating OB treatment units at the TA-16 Burn Ground and consolidating all explosive waste treatment operations to this one single site.

As part of the upgrades, the TA-16-388 Burn Tray was to converted from a single explosives burn tray to a covered concrete “flash” pad, which consists of a 22-foot (ft) by 22-ft concrete pad set on a secondary containment area. The base of the flash pad is 12 inches thick, and the entire flash pad is lined with a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft from the pad perimeter. Inset one ft from the edge of the concrete pad along the two sides and back is a 3-ft-high, 8-inch-thick, integrally-poured concrete wall. The pad is slanted down toward the back concrete wall, thus providing secondary containment for any spills or run-on/runoff of storm water. The pad also provides secondary containment for any spills and for storm water run-on/runoff. Additionally, the pad was fitted with a retractable steel roof for the purpose of covering the pad when not in use. These upgrades were approved for use in May 1999. Figure 2 is a current photograph of the TA-16-388 Flash Pad.

As a clean alternative fuel to the wood and kerosene, the TA-16-388 Flash Pad was also upgraded with propane burners to ignite and destroy the explosives. The use of the propane burners has significantly reduced air pollutant emissions and smoke from OB treatment operations at the TA-16- Burn Ground by burning at higher temperatures, which has also significantly reduced the generation of ash resulting from burning wood.

As a safety precaution the propane burners are ignited remotely, and every OB treatment operation is watched via a closed-circuit camera system on a video display, or through a periscope within the control building at the TA-16 Burn Ground.

These upgrades at the TA-16-388 Flash Pad have allowed for the capability to treat all of the following waste streams:

- Solid dry explosives in pieces or powders from consolidated turnings, reject parts, and excess explosives;
- Wet/sludge explosives mixed with sand/carbon from the filtration of explosives-contaminated water;
- Wet explosives and cloth filters that have settled out of wastewater from explosives processing facilities;
- Waste oil/solvents that are contaminated with explosives; and
- Explosives contaminated noncombustible debris, including any machinery, equipment, pipes, or ductwork that must be flashed prior to leaving the explosives exclusion area.

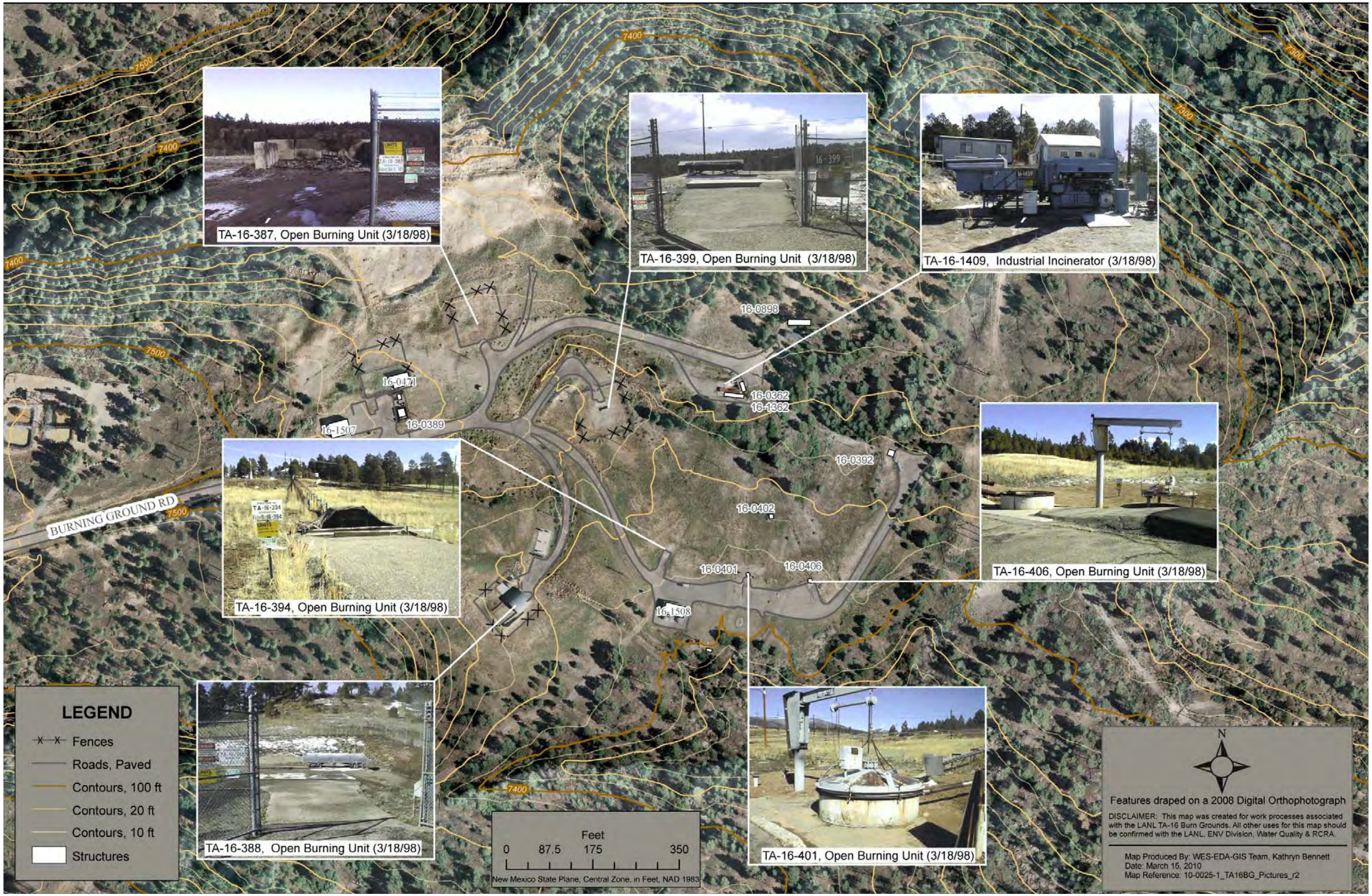


Figure 1. Aerial Photograph of TA-16 Showing Open Burning Units in 1998.

[This page has been left intentionally blank.]

Figure 2. Current Photograph of the TA-16-388 Flash Pad (Note propane burners directed at burn area).

[This page has been left intentionally blank.]

II. REQUIRED PERMITS FOR OPEN BURNING OPERATIONS

Numerous permits have been sought and/or received by LANL that regulate activities, releases, and monitoring at the TA-16 Burn Ground. These permits address air quality, water quality, and interim status requirements imposed by RCRA. The following discussion outlines past permitting actions in the area.

A. Air Quality Permit Summary

Until 2005, TA-16 OB units were required to have an air quality permit under the New Mexico Air Quality Control Regulations. In December 2003, these regulations were changed to defer the OB treatment of hazardous waste to RCRA hazardous waste regulations rather than air quality regulations. The non-RCRA regulated OB activities at TA-16-388 were still permitted under the New Mexico Air Quality Control Regulations from the end of 2003 through January 10, 2006. On March 29, 2005 the Department's Air Quality Bureau issued a New Source Review (NSR) Construction Permit for the non-RCRA OB activities at TA-16-388. This included the burning of equipment removed from buildings containing explosives. The NSR Air Quality Permit authorized the use of an open flame generated from propane burners on a concrete pad to ignite or burn residual explosives material (flashing) from equipment used at LANL. On January 10, 2006, while the NSR permit was under appeal, LANL informed NMED that they would no longer be conducting the types of activities at TA-16-388 Flash Pad authorized by the Air Quality Permit and requested cancellation of the permit. As a result of this cancellation, TA-16-388 is prohibited from burning material that did not have the potential to detonate as required by 40 CFR § 265.382. All other treatment activities (of detonable waste) at TA-16-388 had previously been authorized and were covered by RCRA interim status regulations. In support of the RCRA permit application process, air modeling for the unit has been conducted, as detailed in other parts of this permit modification request.

B. Water Quality Permit Summary

The TA-16-388 Flash Pad is also regulated by the EPA Region 6 under the federal Clean Water Act (CWA) to protect against the potential for adverse impacts to surface waters. In 2009, EPA issued LANL a National Pollutant Discharge Elimination System Permit (NPDES Permit No. NM0030759) which regulates storm water discharges associated with industrial activities from specified solid waste management units (SWMUs) and areas of concern (AOCs) (the "Individual Permit"). The Individual Permit (IP) became effective on April 1, 2009; a subsequent modification became effective on November 1, 2010. Prior to the issuance of the Individual Permit, the TA-388 Flash Pad was regulated by EPA under the Multi-Sector General Permit (MSGP), which expired upon issuance of the IP.

The TA-16-388 Flash Pad is regulated under the LANL Individual Permit (and previously, the MSGP) because it is designated as Solid Waste Management Unit (SWMU) No. 16-010(c) under the Compliance Order on Consent (March 1, 2005). As a SWMU, the contaminated media at the TA-16-388 Flash Pad must meet the requirements, including clean-up standards, of the Consent Order. Under the IP, LANL must comply with non-numeric technology-based effluent limitations, coupled with a comprehensive, coordinated monitoring program and corrective action where necessary, to minimize pollutants in storm water discharges at LANL. The IP requires LANL to implement site-specific control measures (including Best Management Practices or BMPs) to address the non-numeric technology-based effluent limits contained in the IP, followed by confirmation monitoring against New Mexico water-quality criteria-equivalent target action levels (TALs) to determine the effectiveness of the site-specific measures. If TALs are exceeded, corrective actions detailed in the IP are initiated. Additional confirmation monitoring is conducted following completion of corrective actions.

Groundwater in the vicinity of the TA-16-388 Flash Pad is monitored as part of the LANL Interim Facility-Wide Groundwater Monitoring Plan (IFGMP). Under the 2012 IFGMP, surface water and groundwater are monitored downgradient of the TA-16 Burn Ground.

III. OB PERMIT APPLICATION HISTORY

The permitting process for the TA-16-388 Flash Pad has taken several decades. Although the original application was submitted in 1980, the bulk of the application review process commenced in the 1990s and has culminated in the current permit modification request. Following is a summary of the application history and NMED review process. Table 1, below, contains an extensive and detailed list of the correspondence obtained from the NMED-HWB administrative record index and encompasses the RCRA permit history for the TA-16 OB units.[2]

In June 1995, the U.S. Department of Energy (DOE) and the University of California (the predecessor to Los Alamos National Security, LLC (LANS)) ("Permittees") submitted a revised permit application for a container storage unit at TA-16 and six (6) thermal treatment units: TA-16-387 Flash Pad 387, TA-16-388 and 399 Burn Trays, TA-16-394 Solvent Burn Tray, and Filter Vessels TA-16-401 and 406. In 2007 and 2009, NMED-HWB issued Draft Permits that addressed numerous facility-wide issues, and proposed to permit the two remaining treatment at the OB units. However, on February 2, 2010, NMED issued a Notice of Intent to Deny (NOID) the permit application for the TA-16-388 Flash Pad and the TA-16-399 Burn Tray. Following a public hearing, the Secretary of NMED issued a final decision to deny a permit for the OB units on November 30, 2010.

In December 2010, the Permittees requested, and the Secretary of NMED agreed to reconsider the permit for the TA-16 OB Units and to allow for continued use of the units during the re-application process. LANL determined to resubmit a revised application to permit the TA-16-388 Flash Pad, and decided to close TA-16-399 because it was no longer necessary

[2] Note, efforts have been made to include all administrative record entries within Table 1 that are relevant to this permitting activity; however, administrative record entries specific to corrective actions are not applicable and have been omitted from the table.

from an operational standpoint. This revised permit application is required to be submitted on or before September 30, 2013.

A. Permit Application History

Following is an outline of the permit application history:

- In November 1980, the U.S. DOE and the University of California (a predecessor to LANS) submitted a RCRA permit application for the seven (7) existing, operational TA-16 OB treatment units, including the TA-16-388 Flash Pad. Other thermal treatment units that had closed prior to the effective date of regulation were not included in the permit application.
- From 1983 to 1988, LANL submitted Part B permit applications for the seven (7) TA-16 OB treatment units.
- In 1996, LANL submitted revised Part B permit applications for the TA-16 OB units. At the time, the revised applications were intended to facilitate the closure of the TA-16-387 Flash Pad and a former landfill located at the TA-16 Burn Ground known as MDA-P. The operations formerly conducted at the TA-16-387 Flash Pad were moved to the TA-16-388 Burn Tray (now known as the TA-16-388 Flash Pad), and several significant upgrades were implemented as discussed above (Section I.C of this attachment). The TA-16-387 Flash Pad and TA-16-394 Solvent Burn Tray were subsequently closed.[3]
- In 1997, the Permittees requested that the review process for the TA-16 treatment units be joined with the permit renewal process that was to start in the following year (1998), rather than proceed as a separate permit modification process. This request was approved, although additional requests for supplemental information and notices of deficiency (NOD) with regard to the waste management activities at the TA-16 Burn Ground continued to be answered throughout the TA-16-388 Flash Pad upgrade process.
- In May 1999, NMED-HWB approved upgrades to TA-16-388 including the installation of the liner, concrete pad, 3-foot walls, metal cover and railings, and three propane burners, as a change during interim status.
- In 1999, the NMED-HWB requested that the 1996 TA-16 permit application be reformatted to conform to the facility permit renewal strategy agreed to by the NMED and the Permittees.
- In January 2000, the Permittees submitted a reformatted permit application for review and approval by the NMED-HWB. During the review period, NMED-HWB issued several notices of deficiencies and requests for additional information (see Table 1).

[3] NMED approved closure of numerous units during this time frame including the TA-16 Industrial Incinerator (October 2001), TA-16-394 Solvent Tray (November 2002), and the TA-16-387 Flash Pad (November 2005).

- In November 2002, the January 2000 permit application was deemed administratively complete.
- In August 2003, the Permittees submitted a revised permit application incorporating changes to address the NOD process.
- In 2007, NMED-HWB requested that the Permittees conduct air modeling to fulfill the RCRA air pathway assessment requirements as a result of the prior cancellation of the air quality permit. In March of 2007, the Permittees submitted an air modeling protocol document a supplemental assessment of alternatives to open burning. In May 2007, the Permittees responded to an April NOD regarding the air modeling protocol. In June 2007, NMED-HWB procured an additional air pathway screening assessment drafted by TechLaw Inc. An air pathway analysis was submitted to the NMED-HWB in September 2007. In all of the TA-16 RCRA permit applications submitted as part of the OB permit process for TA-16-388, the Permittees stated that compliance with the OB treatment units' air quality permits demonstrated compliance with air quality regulations, as well as meeting the requirements in 40 CFR §264.601(c) to assess impacts to the air from waste treatment operations.
- In 2008, in response to a NOD issued on the air pathway analysis, the Permittees submitted a revised air pathway assessment. At the request of the Permittees in order to properly apply the modeling to the actual operations at the TA-16 open burning treatment units, the air pathway screening assessment was revised and amended again in June 2008 and April 2009, in order to more accurately represent actual TA-16 operations.
- In June 2009, the Permittees collected surface soil samples from the TA-16 Burn Ground in order to address TechLaw Inc. model results which indicated that the TA-16 OB operations had the potential to adversely affect the small mammal population within the area.
- In December 2009, the Permittees submitted a summary report and human-health and ecological risk screening analysis with the results for the soil sample analyses collected at the TA-16 Burn Ground. The analyses demonstrated that there was no adverse risk to human-health or ecological risk to the small mammal population within the area.
- In January 2010, the Permittees revised the summary report and human-health and ecological risk screening analysis to include a lowest-observed effect level (LOEL) analysis (as requested by NMED). The LOEL analysis confirmed that there was no adverse ecological risk to the small mammal population within the area.

B. NMED Draft Permits and Notice of Intent to Deny

On August 27, 2007, NMED issued a draft LANL Hazardous Waste Facility Permit which proposed to authorize storage and treatment units and treatment at the TA-16-388 and TA-16-399 OB units.

As a result of requests for a hearing, NMED conducted permit negotiations on the draft permit with LANL, NMED, members of two local Pueblos, and representatives from local environmental groups. Negotiations occurred over a year (from 2008 to 2009) on numerous complex issues related to the facility-wide permit, which included the OB units. After negotiations, NMED prepared a revised draft permit for public comment on July 6, 2009. The revised draft permit included the TA-16-388 and TA-16-399 OB Units, with conditions for OB activities.

On February 2, 2010, NMED issued a NOID for the TA-16-388 and TA-16-399 OB Units. In May and June 2010, NMED held a public hearing on LANL's revised draft permit and the NOID for the two TA-16 OB Units. The Fact Sheet accompanying the NOID identified the following reasons for denial: (1) the need to fully characterize the low to moderate risk associated with the ecological risk assessment conducted by the Permittees, (2) public opposition to OB, and (3) the need to evaluate alternatives to OB. In November 2010, the Secretary of NMED issued the final LANL Hazardous Waste Facility Permit, which did not include the TA-16 OB Units.

In December 2010, the DOE and LANS petitioned the Secretary of the NMED to reconsider the decision to deny the OB units and allow the Permittees to resubmit an application that addressed the deficiencies identified in the application. On December 21, 2010, the Secretary granted the Permittees' the request.

In December 2012, NMED-HWB requested that the TA-16-388 Flash Pad permit modification request be submitted on or before June 28, 2013; the agency subsequently approved a requests for extension allowing the permit application to be submitted on or before September 30, 2013.

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground

Date on Correspondence	From	To	Location Code	Document ID	Re:
11/19/1980	DOE/Braziel	EPA/Woods	TA 54	11194	Hazardous Waste Permit Application, TA 54
08/11/1982	EPA/Davis	LASL/Crismon	Permit	14814	EPA Completed Processing Of Information Submitted For Part A Permit Application
09/23/1982	DOE/Valencia	EPA/Davis	Permit	14815	Letter regarding conditions of Operation During Interim Status
10/13/1983	DOE/Valencia	EPA/Davis	Permit	14819	Correspondence regarding a revision of RCRA Part A
02/22/1984	EPA/Davis	LANL/Kerr	Permit	14822	Formal Request for Part B Permit Application
04/23/1984	EID/Pache	DOE/Valencia	Permit	14823	Formal notice of joint Part B call-in
05/08/1984	DOE/Valencia	EPA/Whittington	Permit	14824	Regarding a extension Request for the submittal of the Part B Permit Application
05/31/1984	EPA/Davis	DOE/Valencia	Permit	14825	Denial of request of extension dated May 10, 1984 for the Part B Permit Application
08/07/1984	EPA/Davis	DOE/Valencia	Permit	14829	Regarding the MOA for the Part B Permit Application
11/01/1984	DOE/Valencia	NMED	TA 16	5861	EPA Haz Waste Permit Application
04/30/1985	DOE/Valencia	EID/Fort	Permit	14844	Part B Haz Waste Permit Application (volumes 1, 1A & 2)
06/12/1985	DOE/Valencia	EID/Pache	Permit	14849	Revision of Part B Application HSWA Amendment of 1984
06/17/1985	EPA/Olschewsky	EID/Pache	Permit	14850	Regarding Completeness of the Part B Permit Application
08/01/1985	LANL	EID	Permit	14852	RCRA Part B Exposure Info Report
08/21/1985	LANL		Permit	14855	Permitting history and recent compliance history Fact Sheet
08/27/1985	LANL/White	EID/Boyd	Permit	14856	Record of communication: Part B Completeness Review
08/29/1985	EID/Pache	DOE/Valencia	Permit	14857	Regarding Part B Application and Compliance Inspection
09/09/1985	EPA/Olschewsky	EPA/Taylor	Permit	14858	Memo; non complete Part B
09/13/1985	EID/Perkins	LAAO/LANL	Permit	14859	NOD: Review of Part B
09/27/1985	DOE/Valencia	EID/Fort	Permit	14860	NOV: Amendments to 5/85 Part A & B Permit & 8/26/1985 NOV Response
10/10/1985	DOE/Valencia		Permit	14861	Hazardous Waste Permit Application
11/01/1985	LANL	NMED	TA 16	5862	Area P Landfill Closure Plan
11/20/1985	DOE/Valencia	EPA/Rhea	TA 16	5863	Request For Information Regarding Land Disposal Facilities
11/25/1985	DOE/Valencia	EID/Fort	TA 16	5864	Interim Status for Land Disposal Units at Areas L and P were terminated
11/25/1985	DOE/Valencia	EID/Fort	Permit	14866	RCRA Part B Permit Application, Vol. I - Text, Tables & Figures, Vol. II - Appendices (Rev. 1.0)
01/24/1986			TA 16	5865	WX-3 SOP Gen. Rev. 1/24/1986, Ignition, Burning, And Flashing Of Explosives And Explosive-Contaminated Material

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
03/05/1986	EPA/Becker	EID/Pache	Permit	14873	Review of the Incinerator Portion of the Part B Permit Application
03/27/1986	DOE/Valencia	EID/Fort	Permit	14874	DOE Submitted to EID Amendments to the Part B Permit Application
05/29/1986	EPA/Davis	DOE/Valencia	Permit	14880	NOD: Incomplete Part B Permit Application
02/05/1987	EID/Ellvinger	DOE/Valencia	Permit	14909	Permit Application Complete
08/17/1987	DOE/Valencia	EID/Burkhart	Permit	14924	Revised Part A Permit Application
09/09/1987	EID/Burkhart	DOE/Valencia	Permit	14926	Denial: Request to Revise Part A
10/21/1987	DOE/Valencia	EID/Burkhart	Permit	14930	Response to Part A Denial
11/25/1987	DOE/Valenica	EID/Burkhart	Permit	14932	RCRA Part B Permit Application: Vol. I - Text, Tables & Figures (Rev. 4.0)
04/25/1988	Puckett	Perkins	TA 16	5890	Lab Incinerator Status, Plans & Issues
06/16/1988	Michael Horan	EID/Crossman	TA 16	5891	Public Comment Hazardous Waste Incinerator Permit
11/04/1988	DOE/Valencia	EPA/Davis	Permit	14986	Revision to Part B Permit Application
11/08/1988	DOE/Valencia	EID/Crossman	Permit	14988	RCRA Part B Permit Application, Vol. I - Text, Tables & Figures (Rev. 4.1)
11/14/1988	EID/Hamilton	DOE/Valencia	Permit	14990	Recieved Part B Permit Application
03/03/1989	DOE/Valencia	EID/Crossman	TA 16	5902	Proposed Sequence Of RCRA Closures (FY 1989 - FY 1992)
08/18/1989	DOE/Anderson	EID/Hamilton	TA 16	5903	Letter Requesting Information on Incinerators
08/13/1992	Mike Barr	Brad Martin	TA 16	5925	TA 16 Burning Ground History
05/12/1995	DOE/Plum	NMED/Hoditschek	TA 16	5966	RCRA Part B Permit Applications
05/12/1995	DOE/Plum	NMED/Hoditschek	TA 16	5967	Discussion of Several Steps Taken to Contain Contamination From the Operation of the Open Burn Pad at TA 16 MDA P
06/23/1995	LANL/Erickson	DOE/Kirkman	TA 16	5972	RCRA Permit Application for TA 16: Building 88 Container Storage Area and Open Burn Units 387, 388, 399, 394, 401, and 406
06/27/1995	DOE/Kirkman	NMED/Garcia	TA 16	5973	Part B Permit Application: TA 16, Vol. 1 & 2 (Rev. 2.0)
06/30/1995	LANL/Noskin	Distribution	TA 16	5974	Part B Permit Application: TA 16
02/15/1996	DOE/Plum	NMED/Garcia	TA 16	5991	Modify the Request for and Location of Installation for the Propane Burners and Weather Covers Proposed at the TA-16 Open Burn Units, TA 16-387 Flash Pad and TA 16-394 Oil/Solvent Burn Tray

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
04/10/1996	DOE/Kirkman	NMED/Garcia	TA 16	6000	Part B Permit Application: TA 16, Vol. I (Rev. 2.1) - Bldg. 88, Container Storage Area; Flash Pads 387 & 388, Open Burn Units; Burn Pads 388 & 389, Open Burn Units; Burn Trays 388 & 394, Open Burn Units; & Filter Vessels 401 & 406, Open Burn Units
08/27/1996	APCB/Goodyear	DOE/Fong	TA 16	6012	Open Burning - TA 16 Flash Pads
11/25/1996	NMED/Dinwiddie	DOE/Todd	TA 16	6021	NoDet: TA 16 OB/OD Units and Container Storage Unit
11/26/1996	DOE/Plum	NMED/Garcia	TA 16	6022	Disk: TA 16 Replacement Pages
12/17/1996	DOE/Plum	NMED/Garcia	TA 16	6027	Submittal: Permit Modification Fees for TA 16 Open Burn Units
12/18/1996	NMED/Dinwiddie	DOE/Todd	TA 16	6028	Request for Additional Information: TA 16 OB and Container Storage Units
12/27/1996	DOE	NMED	TA 16	6029	Response: Changes to TA 16 Permit Application Table 1-1
05/16/1997	DOE	HRMB	TA 16	6049	Request to Change TA 16 OB Permit Modification to Stand-alone Permits
06/17/1997	DOE/Plum	NMED/Dinwiddie	TA 16	6056	Request for Temporary Authorization for TA 16-388 Open Burn Units
08/29/1997	DOE/Plum	NMED/Dinwiddie	TA 16	6068	Clarification of Request for a Change in Review Status for the TA 16 Permit Application
09/04/1997	NMED/Dinwiddie	LANL/DOE	TA 16	6069	Clarification Request: Change in Review Status for TA 16 Permit Application
09/29/1997	LANL		TA 16	6075	Map: Flash Pad and Burn Tray Mods - Propane/Electrical Pad Location TA 16-388
09/29/1997	LANL		TA 16	6076	Map: Flash Pad and Burn Tray Mods - Propane Piping & Conduit Routing TA 16-388
10/15/1997	DOE/Plum	NMED/Dinwiddie	TA 16	6080	Request for Temporary Authorization: 16-388 Open Burn Units
01/29/1998	LANL/Ellvinger	Concerned Citizen	TA 16	6096	Public Notice: Request for Temporary Authorization to Begin Modifying an Open Burn Pad at TA 16
03/31/1998	NMED/Kelley	LANL/DOE	TA 16	6101	Approval: 16-388 Open Burn Unit Temporary Authorization Request
04/28/1998	LANL/Ellvinger	NMED/Kieling	TA 16	6104	Letter Regarding 16-388 Permit Fees
06/17/1998	NMED/Dinwiddie	LANL/DOE	TA 16	6106	SI: TA 16 Part B Permit Application
06/22/1998	NMED/Dinwiddie	LANL/DOE	TA 16	6107	Permit Fees Request Withdrawal: 16-388
07/22/1998	DOE/Plum	NMED/Dinwiddie	TA 16	6115	Response: TA 16 Part B Application
09/01/1998	DOE/Plum	NMED/Garcia	TA 16	6118	Extension Request: TA 16-388 Temporary Authorization
10/23/1998	NMED/Kelley	LANL/DOE	TA 16	6126	Approval Of A Request For Temporary Authorization Extension Technical Area 16-388 Open Burn Unit

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
12/10/1998	NMED/Garcia	LANL/DOE	TA 16	6137	NOD: TA 16 Part B Application
01/13/1999	DOE/Plum	NMED/Kieling	TA 16	6139	Extension Request: TA 16 NOD
04/12/1999	DOE/Plum	NMED/Dinwiddie	TA 16	6163	Class I Permit Modification Request: TA 16-388
05/12/1999	NMED/Lewis	LANL/DOE	TA 16	6168	Approval: Change Under Interim Status TA 16-388
06/17/1999	NMED/Dinwiddie	LANL/DOE	TA 16	6174	Administrative Completeness, Technical Area (TA) 16 Part B Application
07/29/1999	LANL/Erickson	NMED/Volkerding	TA 16	6180	TA 16 OB Application
08/12/1999	NMED/Volkerding	LANL/Maez	TA 16	6183	Approval: TA 16 OB Application
11/05/1999	NMED/Lewis	LANL/DOE	TA 16	6198	Administrative Completeness Determination; Recission of TA 16
11/08/1999	DOE/Plum	NMED/Kieling	TA 16	6199	Transmittal: TA 16 Incinerator Closure Plan
12/02/1999	LANL/DOE	NMED/Kieling	TA 16	6204	Submittal: Closure Plan TA 16 394 Burn Tray
12/10/1999	NMED/Kieling	LANL/DOE	TA 16	6206	Due Date for Rescinded TA 16 Chapter of Part B Reapplication
01/31/2000	DOE/Gurule	NMED/Kieling	TA 16	6214	Reformat Submittal: TA 16, Part B Permit Renewal Document, Rev. 3.0
04/03/2000	LANL/DOE	NMED/Kieling	TA 16	6226	Transmittal: SI Response for Closure Plan TA 16-387 Flash Pad
04/11/2000	NMED/Kieling	LANL/DOE	TA 16	6228	Notice of Administrative Completeness for TA 16 Industrial Incinerator
04/12/2000	NMED/Abeyta	LANL/Maze	TA 16	6230	Invoice for Notice of Administrative Completeness for TA 16 Industrial Incinerator
04/24/2000	LANL/White	NMED/Kieling	TA 16	6233	Partial Implementation of TA 16 Industrial Incinerator Closure Plan
04/28/2000	NMED/Kieling	LANL/DOE	TA 16	6234	Approval: Proceed w/Closure Plan for TA 16-387 Flash Pad
06/01/2000	LANL	NMED	TA 16	6235	Draft: Hazardous Waste Facility Permit Chapter 5, TA 16 Conditions
06/01/2000	LANL/White	NMED/Kieling	TA 16	6236	Submittal of Fee for TA 16 Incinerator Closure Plan Review
06/21/2000	NMED/Rubio	LANL/Maze	TA 16	6241	Receipt of Check for Notice of Administrative Completeness for TA 16
07/11/2000	LANL/DOE	NMED/Kieling	TA 16	6244	AI: Closure Plan TA 16-394 Burn Tray
08/24/2000	NMED/Kieling	LANL/DOE	TA 16	6252	Determination of Administrative Completeness; Closure Plan TA 16-394 Burn Tray
08/29/2000	NMED/Rubio	LANL/Maze	TA 16	6254	Invoice for Determination of administrative Completeness: Closure Plan for TA 16-394 Burn Tray
09/01/2000	LANL/DOE	NMED	TA 16	6255	Draft: Subject Matter Clarification, TA 16 Part B Permit renewal document, Revision 3.0
10/19/2000	NMED/Lewis	LANL/DOE	TA 16	6262	Approval: TA 16 Industrial Incinerator Closure Plan

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
10/30/2000	NMED/Rubio	LANL/Maze	TA 16	6264	Invoice for Determination of Technical Adequacy: Closure Plan for TA 16-394 Burn Tray - 2nd Invoice
10/31/2000	NMED/Kieling	LANL/DOE	TA 16	6265	Determination of Technical Adequacy: Closure Plan for TA 16-394 Burn Tray
10/31/2000	DOE/Taylor	NMED/Young	TA 16	6266	Request for "No Longer Contained In" Determination for TA 16-394
11/08/2000	LANL/White	NMED/Abeyta	TA 16	6267	Submittal: Fee for TA 16-394 Burn Tray Closure Plan Review
11/09/2000	LANL/Canepa	NMED/Young	TA 16	6268	Clarification to "No Longer Contained In" Request and Supporting Data for the TA 16-394 Burn Tray
11/15/2000	LANL/McInroy	NMED/Bearzi	TA 16	6269	Request for 30-Day Extension for Storage at the TA 16-394
11/16/2000	NMED/Brinkerhoff	LANL/McInroy	TA 16	6270	30-Day Extension Approval - <90-Day Storage, TA 16 394 Burn Tray
11/29/2000	NMED/Young	LANL/Browne	TA 16	6273	Contained-in Determination for Partial Closure Activities at TA 16-394 Burn Tray
12/07/2000	NMED/Rubio	LANL/Maze	TA 16	6274	Receipt of Check for Determination of Technical Adequacy: Closure Plan for TA 16-394 Burn Tray
02/08/2001	LANL/White	NMED/Will	TA 16	6284	Revised Closure Plan for TA 16-394 Burn Tray
02/19/2001	NMED/Lewis	LANL/DOE	TA 16	6286	Approval: Burn Tray Closure Plan
03/12/2001	DOE/Gurule	NMED/Will	TA 16	6288	Submittal: Closure Certification Report for TA 16 Incinerator
10/31/2001	NMED/Kieling	LANL/DOE	TA 16	6320	Approval: TA 16 Closure Certification Report for the Industrial Incinerator
11/30/2001	Steve Yanicak	NMED/Maranville	TA 16	6324	Email: TA 16 Industrial Incinerator Inspection
12/05/2001	NMED/Olson	NMED/Will	TA 16	6325	Memo: Review of TA 16 Burn Tray Closure for TA 16 Permitting
12/24/2001	NMED/Bearzi	LANL/DOE	TA 16	6329	NOD: Technical Review of the 1/31/00, TA 16 Part B Permit Application, Rev. 3.0
01/17/2002	LANL/Bacigalupa	NMED/Will	TA 16	6331	Extension Request: NOD; Technical Review of January 31, 2000, TA 16, Part B Permit Application, Rev. 3.0
01/28/2002	LANL/Ellvinger	NMED/Bearzi	TA 16	6336	NOD Response 12/24/01; Technical Review of the 1/31/00, TA 16 Part B Permit Application, Rev. 3.0
01/29/2002	LANL/DOE	NMED/Will	TA 16	6337	Extension Request Approval: NOD TA 16 Part B Permit Application, Rev. 3.0
02/25/2002	DOE/Vozella	NMED/Will	TA 16	6339	NOD Response: TA 16 Part B Application Revision 3.0, 1/31/2000
04/15/2002	LANL/Vigil-Holterman	NMED/Winn	TA 16	6351	Meterological Input to the CALPUFF Modeling System
05/14/2002	Techlaw/ Dreith	NMED/Bearzi	TA 16	32419	Discussion and Review of Documents Describing the Application of the CALPUFF Air Dispersion Model to the TA 16 Burning

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
					Ground
05/28/2002	Techlaw/Dreith	NMED/Bearzi	TA 16	32420	Discussion and Review of Documents Describing the Application of the CALPUFF Air Dispersion Model to the TA 16 Burning Ground
06/04/2002	NMED/Maranville	File	TA 16	6362	Permit Modification Replacement Pages
06/24/2002	DOE/Vozella	NMED/Bearzi	TA 16	6364	Removal of the TA 16, Bldg. 88 Container Storage Unit from Operational Unit List
07/02/2002	NMED/Bearzi	LANL/DOE	TA 16	6366	2nd NOD: Review of NOD Response; TA 16 Part B Application Rev. 3.0, 1/31/2000
07/12/2002	Techlaw/Dreith	NMED/Will	TA 16	32430	Draft Closure Plan for TA 16 Burn Ground Unit
08/15/2002	DOE/Vozella	NMED/Will	TA 16	6371	Response to 2nd NOD, Review of NOD Response TA 16 Part B Permit Application Rev. 3.0, Jan 31, 2000
08/29/2002	LANL/Bacigalupa	NMED/Winn	TA 16	6373	E-mail: TA 16 Offsite Waste Acceptance
09/27/2002	Techlaw/Dreith	NMED/Will	TA 16	32436	Discussion and Review of Risk Based Analyses Performed in Support of Permitting the TA 16 burn Ground
10/07/2002	LANL/Ellvinger	HRMB/Will	TA 16	6377	Transmittal of TA-16-88 Affidavit
11/08/2002	NMED/Kieling	LANL/Browne	TA 16	6381	Approval of Closure, TA 16-394 Burn Tray
11/13/2002	NMED/Kieling	LANL/DOE	TA 16	6382	Determination of Administrative Completeness and Permit Fee Assessment; Haz Waste Management Permit Applications TA 16 Rev. 3.0, Dated 1/2000; TA 54 Rev. 2.0, Dated 12/2000; TA 55 Rev. 1.0, Dated 1/2002
11/18/2002	Techlaw/Dreith	NMED/Will	TA 16	32443	Discussion and Review of Risk Based Analyses Performed in Support of Permitting the TA 16 Burning Ground
03/26/2003	LANL/Miller	AQB/Volkerding	TA 16	14779	Open Burn Permit for TA 16 Flash Pad
04/03/2003	DOE/Vozella	NMED/Will	TA 16	6405	Transmittal: Closure Plan for TA 16, Closure Plan for TA-10-401 & -406 Sand Filters
04/28/2003	NMED/Bearzi	LANL/DOE	TA 16	6408	NOD: TA 16 Closure Plan for the TA 16-401 and 406 Sand Filters
05/05/2003	NMED/Kieling	Community Relations Office/Anderson	TA 16	6410	TA 16, Bldg. 88 Container Storage Unit Closure
05/28/2003	DOE/Vozella	NMED/Will	TA 16	6415	Response to NOD, Closure Plan for the TA-16-401 and -406 Sand Filters
06/23/2003	NMED/Kieling	LANL/Nanos	TA 16	6417	Approval of Closure of TA-16 Building 88 Container Storage Unit
06/23/2003	NMED/Kieling	LANL/DOE	TA 16	6418	Notice of Administrative Completeness - TA 16 Closure Plan for TA 16-401 and 406 Sand Filters, Rev. 0.0

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
06/26/2003	NMED/Rubio	LANL/Maze	TA 16	6420	Invoice for Notice of Administrative Completeness - TA 16 Closure Plan for TA 16-401 and 406 Sand Filters, Rev. 0.0
08/22/2003	DOE/Erickson	NMED/Martin	TA 16	6437	Part B Permit Renewal Application Submittal, Revision 4
10/06/2003	NMED/Winn	LANL	TA 16	6444	E-mail: Documents for TA 16-401 and -406 Sand Filter Closure
10/17/2003	NMED/Kieling	LANL/DOE	TA 16	6447	Intent to Approve Closure Plan for TA 16-401 and -406 Sand Filters
10/17/2003	NMED/Kieling	File	TA 16	6448	Notice of Public Comment Period and Opportunity to Request a Public Hearing on Closure of two Open Burn Units
10/17/2003	NMED/Kieling	File	TA 16	6449	Press Release: Environment Dept. Seeks Comments on Closure of Two OB Units
01/14/2004	NMED/Kieling	LANL/DOE	TA 16	6466	Closure Plan Approval: TA 16 Closure Plan for the TA 16-401 and 406 Sand Filters March 2003, Rev. 0.0
04/20/2004	LANL/Grieggs	NMED/Will	TA 16	6487	Revised Schedule for TA 16 Closure Plan for the 401 and 406 Sand Filters
05/06/2004	NMED/Kieling	LANL/DOe	TA 16	6490	Approval: Revised Schedule Closure Plan for TA 16-401 and 406 Sand Filters RCRA Interim Status units
11/16/2004	LANL/Grieggs	NMED/Kieling	TA 16	6516	Extension Request: TA 16 Closure Plan for the TA 16-401 and 406 Sand Filters due to Laboratory Stand Down
12/06/2004	NMED/Kieling	LANL/DOE	TA 16	6520	Approval: Time Extension Request for TA 16 Closure Plan for the TA 16-401 and 406 Sand Filters
05/02/2005	LANL/Sherrard	NMED/Winn	TA 16	6538	Email: TA 16 401/406 Sand filters
05/04/2005	LANL/Sherrard	NMED/Cobrain	TA 16	6539	Fax: TA 16 Burning Ground Sand filters Map - SWPPP
05/04/2005	LANL/Sherrard	NMED/Cobrain	TA 16	6540	Email: TA 16 Burning Ground 401/406 Sand filters - SWPPP
05/09/2005	LANL/Sherrard	NMED/Winn	TA 16	6541	Email: Pictures TA 16 401/406 Closure
05/09/2005	NMED/Winn	LANL/Sherrard	TA 16	6542	Email: 401/406 Closure
05/26/2005	DOE/Turner	NMED/Kieling	TA 16	6546	Transmittal: Closure Certification Report for the TA 16-401 and 406 Sand Filters
09/02/2005	LANL/DOE	NMED/Bearzi	TA 16	6566	MDA P Site Closure Certification Report, Rev. 1 (2 vol & disk)
09/06/2005	NMED/Kieling	LANL/DOE	TA 16	6567	Closure Certification Report, TA 16, TA 16-401 & TA 16-406 Sand Filters, Interim Status Container Storage Unit, Revision 0.0
11/10/2005	NMED/Bearzi	LANL/DOE	TA 16	6584	Approval: MDA P Site Closure Certification Report, Revision 1
09/28/2006	DOE/Wilmot	NMED/Kieling	TA 16	6642	Transmittal: Closure Plans

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
10/06/2006	LANL/Martinez	NMED/Allen	General	14332	65311 LANL (Los Alamos National Laboratory), November 1999. "Closure Plan for the TA-16 394 Burn Tray," Los Alamos National Laboratory document LA-UR-99-6216, Los Alamos, New Mexico. (LANL 1999, 65311)
12/01/2006	Techlaw/Dreith	NMED/Cobrain	TA 16	32549	Technical Review of the TA 16 Closure Plan, Dated September 2006
02/23/2007	LANL/Grieggs	NMED/Allen	TA 16	6670	Transmittal: Requested electronic File of the TA 16 Burn Tray Closure Plan, Revision 1.0
02/28/2007	NMED/Bearzi	LANL/DOE	TA 16	6672	Air Dispersion Model for TA 16
03/14/2007	LANL/Grieggs	NMED/Kieling	TA 16	6676	Response to Air Dispersion Model for TA 16 Letter Dated February 28, 2007
03/29/2007	DOE/Turner	NMED/Kieling	TA 16	6679	Transmittal: Protocol for Air Dispersion Modeling at TA 16 and Alternatives Analysis for Open Burning
04/18/2007	NMED/Bearzi	LANL/DOE	TA 16	12707	NOD: Technical Review of the March 29, 2007 Protocol for Air Dispersion Modeling at TA 16
04/19/2007	LANL/Sherrard	NMED/Kay	TA 16	12708	Email: Air Dispersion Model Protocol NOD
04/19/2007	NMED/Kay	LANL/Vigil-Holterman	TA 16	12709	Email: Air Dispersion Model
04/19/2007	LANL/Vigil-Holterman	NMED/Kay	TA 16	12710	Email: Air Dispersion Model
05/15/2007	LANL/Grieggs	NMED/Kieing	TA 16	12714	Extension Request for Submission of Air Dispersion Modeling Report for TA 16
05/29/2007	NMED/Bearzi	LANL/DOE	TA 16	12717	Denial: Response to Extension Request to Submit Air Dispersion Modeling Report for TA 16
05/31/2007	DOE/Turner	NMED/Kieling	TA 16	12718	NOD Response Technical Review of the March 29, 2007 Protocol for Air Dispersion Modeling at TA 16
08/13/2007	Techlaw/Smith	NMED/Kay	TA 16	16959	Email: Air Model Results for Dispersion for 2 examples of OB/OD Permits
09/02/2007	DOE/Turner	NMED/Kieling	TA 16	30189	Transmittal: TA 16 Burn Ground Air Pathway Assessment Report, Revision 0 (enclosed 3 disks)
10/15/2007	Techlaw/Schliesmann-Merkle	NMED/Cobrain	TA 16	32560	Technical Review of TA 16 Burn Ground Air Pathway Assessment Report, Revision 0, Dated 8/2007
06/19/2008	Techlaw/Schliesmann-Merkle	NMED/Cobrain	TA 16	30225	Revised Draft TA 16 Screening Analysis Report
07/22/2008	NMED/Bearzi	LANL/DOE	TA 16	30230	NOD: Technical Review of the September 7, 2007 TA 16 Burn Ground Air Pathway Assessment Report, Revision 0

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
10/14/2008	LANL/Grieggs	NMED/Kieling	TA 16	30245	NOD Response to Technical Review of the September 7, 2007 TA 16 Burn Ground Air Pathway Assessment Report. Revision 0
04/24/2009	Techlaw/Schliesmann-Merkle	NMED/Kay	TA 16	33027	Air Dispersion Modeling and Risk Based Spreadsheet Files, Draft TA 16 Screening analysis Report Including Addendum's 1 & 2
06/25/2009	LANL/Grieggs	NMED/Bearzi	TA 16	31731	Transmittal: TA 16 Soil Sampling Report and SOP
06/29/2009	LANL/Schneider	NMED/Pullen	TA 16	31770	Email: Steve Pullen's Request - Air Monitoring
06/29/2009	AQS/Walton	NMED/Bearzi	TA 16	32503	Evaluation of the Ecological Risk Screening Assessment for Dioxins/Furans for 6 Soil Samples for the OB Treatment Units (TA 16-388 and TA 16-399), June 2009
06/30/2009	AQS/Walton	NMED/Bearzi	TA 16	31763	Evaluation of the Eco Risk Screening assessment for Dioxins/Furans for 5 soil samples for the OB Treatment Units (TA 16-388 & TA 16-399), June 2009
07/02/2009	Techlaw/Smith	NMED/Cobrain	TA 16	31841	Email: TA 16 Furan Results (Extent for 35 LB Burns)
07/02/2009	Techlaw/Smith	NMED/Cobrain	TA 16	31840	Email: TA 16 Furan Results (Extent for 250 LB Burns)
07/22/2009	NMED/Kay	NMED/Cobrain	TA 16	31839	Email: TA 16 Furan Results
12/11/2009	LANL/Grieggs	NMED/Bearzi	TA 16	32309	Transmittal: Human Health and Ecological Screening Assessment for TA 16 Burn Ground
01/08/2010	LANL/Grieggs	NMED/Bearzi	TA 16	32346	Transmittal: Human Health and Ecological Screening Assessment for the TA 16 Burn Ground, Revision 1
01/21/2010	AQS/Walton	NMED/Cobrain	TA 16	32506	Draft Summary of Risk Findings and Fact sheet to Support Intent to Deny Permit application for TA 16 Burn Ground
02/02/2010	NMED	File	TA 16	33110	Fact Sheet; Intent to Deny a Hazardous Waste Facility Permit for the OB of Hazardous Waste at TA 16
02/02/2010	NMED	File	TA 16	33294	Interim Status Closure Plan OB Treatment Unit TA -16-399
02/02/2010	NMED	File	TA 16	33293	Interim Status Closure Plan OB Treatment Unit TA -16-388
12/29/2010	Court of Appeals	File	TA 16	34247	Notice of Appeal for TA 16 OB Units
03/06/2012	LANS/DOE	NMED/Kieling	TA 16	35091	Transmittal: Soil Sampling Plan for TA 16 OB Treatment Units
05/03/2012	LANS/DOE	NMED/Kieling	TA 16	35211	Submittal: Revised Interim Status Closure Plan for the OB Treatment Unit at TA 16-399 Burn Tray
05/15/2012	NMED/Kieling	LANS/DOE	TA 16	35239	Soil Sample Plan for TA 16 OB Treatment Units
09/26/2012	NMED/Kieling	LANS/DOE	TA 16	35495	Closure Plan Disapproval for TA 16-399 OB Unit Area and burn Tray
12/07/2012	NMED/Kieling	LANS/DOE	TA 16	35618	OB Permit modification TA 16, TA-16-388

Table 1. RCRA Permit History[1] for Treatment Units at the Technical Area 16 Burn Ground (continued)

Date on Correspondence	From	To	Location Code	Document ID	Re:
12/11/2012	LANS/DOE	NMED/Kieling	TA 16	35622	NOD Response of Interim Status Closure Plan, OB Treatment Unit TA 16-399 Burn Tray, Revision 1.0
06/25/2013	LANS/DOE	NMED/Kieling	TA 16		Request for Extension to Submit Open Burning Permit Modification Request, Los Alamos National Laboratory (LANL) EPA ID # NM0890010515
06/28/2013	NMED/Kieling	LANS/DOE	TA 16		Request for Extension to Submit Open Burning (OB) Permit Modification Request to Add OB Unit TA-16-388 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID # NM 0890010515
07/23/2013	LANS/DOE	NMED/Kieling	TA 16		Request for Additional Extension to Submit Open Burning Permit Modification Request, Los Alamos National Laboratory (LANL) EPA ID # NM0890010515
07/26/2013	NMED/Kieling	LANS/DOE	TA 16		Request for Second Extension to Submit Open Burning (OB) Permit Modification Request to Add OB Unit TA-16-288 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID# NM 0890010515

[1] The majority of the history contained within this table was obtained from then NMED-HWB LANL Administrative Record Index and has been reproduced here with little correction.

Attachment C

Updated Part A Application Form

(Included in LA-UR-13- 27579)

OMB# 2050-0024; Expires 12/31/2014

SEND COMPLETED FORM TO: The Appropriate State or Regional Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**

1. Reason for Submittal MARK ALL BOX(ES) THAT APPLY	**Reason for Submittal:** ☐ To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location) ☐ To provide a Subsequent Notification (to update site identification information for this location) ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # 14.0) ☐ As a component of the Hazardous Waste Report (If marked, see sub-bullet below) ☐ Site was a TSD facility and/or generator of ≥1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)
2. Site EPA ID Number	**EPA ID Number** N M 0 8 9 0 0 1 0 5 1 5
3. Site Name	**Name:** Los Alamos National Laboratory
4. Site Location Information	**Street Address:** Bikini Atoll Road, SM-30 **City, Town, or Village:** Los Alamos **County:** Los Alamos **State:** New Mexico **Country:** USA **Zip Code:** 87545
5. Site Land Type	☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other
6. NAICS Code(s) for the Site (at least 5-digit codes)	**A.** 9 2 8 1 1 **C.** 5 6 2 2 1 **B.** 5 4 1 7 1 **D.**
7. Site Mailing Address	**Street or P.O. Box:** PO Box 1663 **City, Town, or Village:** Los Alamos **State:** New Mexico **Country:** USA **Zip Code:** 87545
8. Site Contact Person	**First Name:** Geoffrey **MI:** L **Last:** Beausoleil **Title:** Acting Manager, Los Alamos Field Office, Department of Energy, National Nuclear Security Administration **Street or P.O. Box:** 3747 West Jemez Road **City, Town or Village:** Los Alamos **State:** New Mexico **Country:** USA **Zip Code:** 87544 **Email:** geoffrey.beausoleil@nnsa.doe.gov **Phone:** (505) 667-5105 **Ext.:** **Fax:** None
9. Legal Owner and Operator of the Site	**A. Name of Site's Legal Owner:** United States Department of Energy **Date Became Owner:** 01/01/1943 **Owner Type:** ☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other **Street or P.O. Box:** 3747 West Jemez Road **City, Town, or Village:** Los Alamos **Phone:** (505) 667-5105 **State:** New Mexico **Country:** USA **Zip Code:** 87544 **B. Name of Site's Operator:** Los Alamos National Security, LLC **Date Became Operator:** 06/01/2006 **Operator Type:** ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

10. Type of Regulated Waste Activity (at your site)
Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-10.

Y ☑ N ☐ **1. Generator of Hazardous Waste**
If "Yes", mark only one of the following – a, b, or c.

☑ a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs./mo.) or more of hazardous waste; **or** Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs./mo) of acute hazardous waste; **or** Generates, in any calendar month, **or** accumulates at any time, more than 100 kg/mo (220 lbs./mo) of acute hazardous spill cleanup material.

☐ b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs./mo) of non-acute hazardous waste.

☐ c. CESQG: Less than 100 kg/mo (220 lbs./mo) of non-acute hazardous waste.

If "Yes" above, indicate other generator activities in 2-4.

Y ☐ N ☑ **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments section.

Y ☐ N ☑ **3. United States Importer of Hazardous Waste**

Y ☑ N ☐ **4. Mixed Waste (hazardous and radioactive) Generator**

Y ☑ N ☐ **5. Transporter of Hazardous Waste**
If "Yes", mark all that apply.

☑ a. Transporter

☑ b. Transfer Facility (at your site)

Y ☑ N ☐ **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.

Y ☐ N ☑ **7. Recycler of Hazardous Waste**

Y ☐ N ☑ **8. Exempt Boiler and/or Industrial Furnace**
If "Yes", mark all that apply.

☐ a. Small Quantity On-site Burner Exemption

☐ b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ☑ **9. Underground Injection Control**

Y ☑ N ☐ **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

Y ☑ N ☐ **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes", mark all that apply.**

a. Batteries ☑
b. Pesticides ☑
c. Mercury containing equipment ☑
d. Lamps ☑
e. Other (specify) ______________ ☐
f. Other (specify) ______________ ☐
g. Other (specify) ______________ ☐

Y ☐ N ☑ **2. Destination Facility for Universal Waste**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities; Complete all parts 1-4.

Y ☐ N ☑ **1. Used Oil Transporter**
If "Yes", mark all that apply.

☐ a. Transporter

☐ b. Transfer Facility (at your site)

Y ☐ N ☑ **2. Used Oil Processor and/or Re-refiner**
If "Yes", mark all that apply.

☐ a. Processor

☐ b. Re-refiner

Y ☐ N ☑ **3. Off-Specification Used Oil Burner**

Y ☐ N ☑ **4. Used Oil Fuel Marketer**
If "Yes", mark all that apply.

☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner

☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

❖ You can **ONLY** Opt into Subpart K if:

- you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
- you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y ☐ N ☑ 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories **See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

☐ a. College or University

☐ b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university

☐ c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y ☐ N ☑ 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

See Attached						

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

None						

11. Description of Hazardous Wastes

A. Waste Codes for Federally Regulated Hazardous Wastes.

D001	D002	D003	D004	D005	D006	D007
D008	D009	D010	D011	D012	D013	D014
D015	D016	D017	D018	D019	D020	D021
D022	D023	D024	D025	D026	D027	D028
D029	D030	D031	D032	D033	D034	D035
D036	D037	D038	D039	D040	D041	D042
D043	F001	F002	F003	F004	F005	F006
F007	F008	F009	F010	F011	F012	F019
F020	F021	F022	F023	F024	F025	F026
F027	F028	F032	F034	F035	F037	F038
F039	K044	K045	K046	K047	K084	K101
K102	P001	P002	P003	P004	P005	P006
P007	P008	P009	P010	P011	P012	P013
P014	P015	P016	P017	P018	P020	P021
P022	P023	P024	P026	P027	P028	P029
P030	P031	P033	P034	P036	P037	P038
P039	P040	P041	P042	P043	P044	P045
P046	P047	P048	P049	P050	P051	P054
P056	P057	P058	P059	P060	P062	P063
P064	P065	P066	P067	P068	P069	P070
P071	P072	P073	P074	P075	P076	P077
P078	P081	P082	P084	P085	P087	P088
P089	P092	P093	P094	P095	P096	P097
P098	P099	P101	P102	P103	P104	P105
P106	P108	P109	P110	P111	P112	P113
P114	P115	P116	P118	P119	P120	P121
P122	P123	P127	P128	P185	P188	P189
P190	P191	P192	P194	P196	P197	P198
P199	P201	P202	P203	P204	P205	U001
U002	U003	U004	U005	U006	U007	U008
U009	U010	U011	U012	U014	U015	U016
U017	U018	U019	U020	U021	U022	U023
U024	U025	U026	U027	U028	U029	U030
U031	U032	U033	U034	U035	U036	U037
U038	U039	U041	U042	U043	U044	U045
U046	U047	U048	U049	U050	U051	U052
U053	U055	U056	U057	U058	U059	U060
U061	U062	U063	U064	U066	U067	U068
U069	U070	U071	U072	U073	U074	U075

11. Description of Hazardous Wastes
A. Waste Codes for Federally Regulated Hazardous Wastes. (Continued)

U076	U077	U078	U079	U080	U081	U082
U083	U084	U085	U086	U087	U088	U089
U090	U091	U092	U093	U094	U095	U096
U097	U098	U099	U101	U102	U103	U105
U106	U107	U108	U109	U110	U111	U112
U113	U114	U115	U116	U117	U118	U119
U120	U121	U122	U123	U124	U125	U126
U127	U128	U129	U130	U131	U132	U133
U134	U135	U136	U137	U138	U140	U141
U142	U143	U144	U145	U146	U147	U148
U149	U150	U151	U152	U153	U154	U155
U156	U157	U158	U159	U160	U161	U162
U163	U164	U165	U166	U167	U168	U169
U170	U171	U172	U173	U174	U176	U177
U178	U179	U180	U181	U182	U183	U184
U185	U186	U187	U188	U189	U190	U191
U192	U193	U194	U196	U197	U200	U201
U202	U203	U204	U205	U206	U207	U208
U209	U210	U211	U213	U214	U215	U216
U217	U218	U219	U220	U221	U222	U223
U225	U226	U227	U228	U234	U235	U236
U237	U238	U239	U240	U243	U244	U246
U247	U248	U249	U271	U278	U279	U280
U328	U353	U359	U364	U367	U372	U373
U387	U389	U394	U395	U404	U409	U410
U411						

EPA ID Number | N | M | 0 | 8 | 9 | 0 | 0 | 1 | 0 | 5 | 1 | 5 | OMB#: 2050-0024; Expires 12/31/2014

12. Notification of Hazardous Secondary Material (HSM) Activity

Y ☐ N ☑ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes", you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
[signature]	Robert L. Dodge, WM-DO, LANS	09/27/2013
[signature]	Geoffrey L. Beausoleil,	09/30/2013
	Acting Manager, Los Alamos Field Office	

ADDENDUM TO THE SITE IDENTIFICATION FORM:

NOTIFICATION OF HAZARDOUS SECONDARY MATERIAL ACTIVITY

ONLY fill out this form if:

- You are located in a State that allows you to manage excluded hazardous secondary material (HSM) under 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) (or state equivalent). See http://www.epa.gov/epawaste/hazard/dsw/statespf.htm for a list of eligible states; **AND**
- You are or will be managing excluded HSM in compliance with 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) (or state equivalent) **or** you have stopped managing excluded HSM in compliance with the exclusion(s) and do not expect to manage any amount of excluded HSM under the exclusion(s) for at least one year. Do not include any information regarding your hazardous waste activities in this section.

1. Indicate reason for notification. Include dates where requested.

☐ Facility will begin managing excluded HSM as of ____________ (mm/dd/yyyy).

☐ Facility is still managing excluded HSM/re-notifying as required by March 1 of each even-numbered year.

☐ Facility has stopped managing excluded HSM as of ____________ (mm/dd/yyyy) and is notifying as required.

2. Description of excluded HSM activity. Please list the appropriate codes and quantities in **short tons** to describe your excluded HSM activity ONLY (do not include any information regarding your hazardous wastes). Use additional pages if more space is needed.

a. Facility code (answer using codes listed in the Code List section of the instructions)	**b. Waste code(s) for HSM**	**c. Estimated short tons of excluded HSM to be managed annually**	**d. Actual short tons of excluded HSM that was managed during the most recent odd-numbered year**	**e. Land-based unit code** (answer using codes listed in the Code List section of the instructions)

3. Facility has financial assurance pursuant to 40 CFR 261.4(a)(24)(vi). (Financial assurance is required for reclaimers and intermediate facilities managing excluded HSM under 40 CFR 261.4(a)(24) and (25))

Y ☐ N ☐ Does this facility have financial assurance pursuant to 40 CFR 261.4(a)(24)(vi)?

This page intentionally left blank

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact	**First Name:** Geoffrey	**MI:** L	**Last Name:** Beausoleil
	Contact Title: Los Alamos Field Office Manager (Acting)		
	Phone Number: 505-667-5105	**Ext.:**	**Email:** geoffrey.beausoleil@nnsa.doe.gov
2. Facility Permit Contact Mailing Address	**Street or P. O. Box:** 3747 West Jemez Road		
	City, Town, or Village: Los Alamos		
	State: New Mexico		
	Country: USA	**Zip Code:** 87544	
3. Operator Mailing Address and Telephone Number	**Street or P. O. Box:** P.O. Box 1663, MS K499		
	City, Town, or Village: Los Alamos		
	State: New Mexico	**Phone Number:** 505-665-0493	
	Country: USA	**Zip Code:** 87545	
4. Facility Existence Date	**Facility Existence Date (mm/dd/yyyy):** 01/01/1943		

5. Other Environmental Permits

A. Facility Type *(Enter code)*	B. Permit Number	C. Description
See Attached		

6. Nature of Business: The central mission of Los Alamos National Laboratory is the reduction of global nuclear danger supported by research that also contributes to conventional defense, civilian, and industrial needs. This includes programs in nuclear, medium energy, and space physics; hydrodynamics; conventional explosives; chemistry; metallurgy; radiochemistry; space nuclear systems; controlled thermonuclear fusion; laser research; environmental technology; geothermal, solar, and fossil energy research; nuclear safeguards; biomedicine; health and biotechnology; and industrial partnerships.

5. Other Environmental Permits

A. Facility Type *(Enter code)*	**B. Permit Number**													**C. Description**
National Pollutant Discharge Elimination System (NPDES):														
NPDES Construction General Permit:														
N	N	M	R	1	2	A	-	-	-					NPDES Construction General Permit for various individually approved construction projects
Industrial Point Source Permit:														
N	N	M	0	0	2	8	3	5	5					NPDES Industrial Point Source Discharge
NPDES Storm Water Multi-Sector General Permit (MSGP) for Industrial Activities														
N	N	M	R	0	5	G	B	2	1					NPDES MSGP
NPDES Storm Water Individual Permit														
N	N	M	0	0	3	0	7	5	9					NPDES LANL Storm Water Individual Permit
Resource Conservation and Recovery Act (RCRA):														
R	N	M	0	8	9	0	0	1	0	5	1	5		RCRA Hazardous Waste Facility Permit
Groundwater Discharge Plans (GDP):														
E	D	P	-	8	5	7								TA-46 SWWS Plant and TA-3 Sanitary Effluent Reclamation Facility (SERF), Approved July 1992, Discharge Permit Renewal Application, July 2010 (NMED Renewal Pending)
E	D	P	-	1	1	3	2							TA-50 Radioactive Liquid Waste Treatment Facility, Discharge Permit Application, February 2012 (NMED approval pending)
E	D	P	-	1	5	8	9							Twelve (12) Domestic Septic Tank/Leachfield Systems, Discharge Permit Application, June 2010 (NMED approval pending)
E	D	P	-	1	7	9	3							On-Site Treatment and Land Application of Groundwater, Discharge Permit Application, December 2011 (NMED approval pending)
Clean Water Act Section 404 Dredge and Fill Permits with U.S. Army Corps of Engineers														
E	N	W	P	-	0	3								Section 404 Nationwide Permit 3 - Maintenance for various individually approved construction projects including NM Certification (2012)
E	N	W	P	-	0	5								Section 404 Nationwide Permit 5 – Scientific Measurement Devices for various individually approved construction projects including NM Certification (2012)
E	N	W	P	-	1	2								Section 404 Nationwide Permit 12 – Utility Line Activities for various individually approved construction projects including NM Certification (2012)
E	N	W	P	-	1	3								Section 404 Nationwide Permit 13 – Bank Stabilization for various individually approved construction projects including NM Certification (2012)
E	N	W	P	-	1	8								Section 404 Nationwide Permit 18 – Minor Discharges for various individually approved construction projects including NM Certification (2012)
E	N	W	P	-	3	3								Section 404 Nationwide Permit 33 – Temporary Construction, Access and Dewatering for various individually approved construction projects including NM Certification (2012)
E	N	W	P	-	3	8								Section 404 Nationwide Permit 38 – Cleanup of Hazardous and Toxic Waste for various individually approved construction projects including NM Certification (2012)

5. Other Environmental Permits

A. Facility Type *(Enter code)*	**B. Permit Number**	**C. Description**
E	NWP-43	Section 404 Nationwide Permit 43 – Stormwater Management Facilities for various individually approved construction projects including NM Certification (2012)
Air Quality Permits:		
Air Quality Operating Permit (20.2.70 NMAC)		
E	P100-R1-M3	LANL Air Emissions Operating Permit
Air Quality (20.2.72 NMAC)		
E	2195-R59	Various Exemptions
E	2195B-M2	TA-3 Power Plant
E	2195F-R3	TA-33 1600kW Generator
E	GCP3-2195G-R1	TA-60 Asphalt Plant
E	2195H-R1	Data disintegrator
E	2195N-R2	Chemistry and Metallurgy Research Replacement Facility
E	2195P-R1	TA-33 1-225 kW/2-20 kW Diesel Generators
Air Quality (National Emission Standards for Hazardous Air Pollutants) Beryllium Machining:		
E	634-M2	TA-3-141
E	632-R1	TA-35-213
E	108-M1-R7	TA-55-4

7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

A. <u>PROCESS CODE</u> - Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04, and X99), describe the process (including its design capacity) in the space provided in Item 8.

B. <u>PROCESS DESIGN CAPACITY</u>- For each code entered in Item 7.A; enter the capacity of the process.

1. <u>AMOUNT</u> - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.

2. <u>UNIT OF MEASURE</u> - For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.

C. <u>PROCESS TOTAL NUMBER OF UNITS</u> - Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
Disposal		
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure Listed Below
Storage		
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
Treatment		
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
Treatment (Continued)		**(for T81 –T94)**
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, or Refining Furnace	
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day, Metric Tons Per Hour, or Million Btu Per Hour
Miscellaneous (Subpart X)		
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit Measure Listed Below

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	**G**	**Short Tons Per Hour**	**D**	**Cubic Yards**	**Y**
Gallons Per Hour	**E**	**Short Tons Per Day**	**N**	**Cubic Meters**	**C**
Gallons Per Day	**U**	**Metric Tons Per Hour**	**W**	**Acres**	**B**
Liters	**L**	**Metric Tons Per Day**	**S**	**Acre-feet**	**A**
Liters Per Hour	**H**	**Pounds Per Hour**	**J**	**Hectares**	**Q**
Liters Per Day	**V**	**Kilograms Per Hour**	**R**	**Hectare-meter**	**F**
		Million Btu Per Hour	**X**	**Btu Per Hour**	**I**

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
					Technical Area 3								
	1	S	0	1	18,500	G	001						
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	9												
1	**0**												
1	**1**												
1	**2**												
1	**3**												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**						

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
					Technical Area 14								
	1	X	0	1	1,000 50/20	See Lines 2 & 3	002						
	2				Pounds per detonation Gallons per burn/pounds per burn								
	3				Units identified at TA-14-23 is to be closed in accordance with the Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.								
	4												
	5												
	6												
	7												
	8												
	9												
1	**0**												
1	**1**												
1	**2**												
1	**3**												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure		For Official Use Only					
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**						

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**	
Technical Area 16								
	1	X	0	1	1,000 50/200	See Lines 2 & 3	002	
	2				Pounds per burn Gallons per burn/pounds per burn			
	3				Unit identified as TA-16-399 Burn Tray is to be closed in accordance with the Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.			
	4							
	5							
	6							
	7							
	8							
	9							
1	**0**							
1	**1**							
1	**2**							
1	**3**							

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**	

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**	
Technical Area 36								
	1	X	0	1	2,000	See line 2	001	
	2				Pounds per detonation			
	3							
	4							
	5							
	6							
	7							
	8							
	9							
1	**0**							
1	**1**							
1	**2**							
1	**3**							

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**	

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
					Technical Area 39								
	1	X	0	1	2,000	See Lines 2 and 3	002						
	2				1,000 pounds per detonation at each unit								
	3				One unit identified as TA-39-57 is to be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.								
	4												
	5												
	6												
	7												
	8												
	9												
1	**0**												
1	**1**												
1	**2**												
1	**3**												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**						

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY		C. Process Total Number of Units	For Official Use Only					
					(1) Amount (Specify)	(2) Unit of Measure							
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
Technical Area 50													
	1	S	0	1	31,500	G	002						
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	9												
1	**0**												
1	**1**												
1	**2**												
1	**3**												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY		C. Process Total Number of Units	For Official Use Only					
					(1) Amount (Specify)	(2) Unit of Measure							
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**						

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**	
					Technical Area 54, Area L			
	1	S	0	1	407,880	G	001	
	2	D	8	0	1,200	See Line 3	001	
	3				To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is cubic yards.			
	4							
	5							
	6							
	7							
	8							
	9							
1	**0**							
1	**1**							
1	**2**							
1	**3**							

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**	
	1	S	9	9	600	See Line 2	001	
	2				To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is gallons.			

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
					Technical Area 54, Area G								
	1	S	0	1	4,346,590	G	009						
	2	S	0	1	4,950	See Line 4	001						
	3	D	8	0	14	See Line 5	001						
	4				To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is gallons.								
	5				To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is cubic yards.								
	6												
	7												
	8												
	9												
1	**0**												
1	**1**												
1	**2**												
1	**3**												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**						

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**	
Technical Area 54 West								
	1	S	0	1	11,660	G	002	
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
1	**0**							
1	**1**							
1	**2**							
1	**3**							

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**	

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	1	S	0	2	533.788	G	001						
Technical Area 54, Material Disposal Area H													
	1	D	8	0	63	See Line 2	001						
	2				To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is cubic yards.								
	3												
	4												
	5												
	6												
	7												
	8												
	9												
1	0												
1	1												
1	2												
1	3												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	2	T	0	4	100.00	U	001						

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
Technical Area 55													
	1	S	0	1	207,600	G	007						
	2	S	0	2	137	G	001						
	3												
	4												
	5												
	6												
	7												
	8												
	9												
1	**0**												
1	**1**												
1	**2**												
1	**3**												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	**2**	**T**	**0**	**4**	**100.00**	**U**	**001**						
	3	T	0	4	150	G	001						

9. Description of Hazardous Wastes – Enter information in the Sections on Form Page 5

A. EPA HAZARDOUS WASTE NUMBER – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.

2. Enter "000" in the extreme right box of Item 9.D(1).

3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous waste that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.

2. In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.

3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)	D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 3					
1	D001	7,000	P	S01	
2	D002	21,000	P	S01	
3	D003	2,500	P	S01	
4	D004	3,000	P	S01	
5	D005	3,000	P	S01	
6	D006	2,500	P	S01	
7	D007	7,000	P	S01	
8	D008	27,000	P	S01	
9	D009	4,000	P	S01	
10	D010	2,500	P	S01	
11	D011	3,000	P	S01	
12	D012	1,000	P	S01	
13	D018	1,500	P	S01	
14	D019	2,000	P	S01	
15	D021	2,000	P	S01	
16	D022	2,000	P	S01	
17	D023	2,000	P	S01	
18	D024	2,000	P	S01	
19	D025	2,000	P	S01	
20	D026	2,000	P	S01	
21	D027	1,500	P	S01	
22	D028	2,000	P	S01	
23	D029	1,000	P	S01	
24	D030	1,500	P	S01	
25	D032	1,500	P	S01	
26	D033	1,500	P	S01	
27	D034	1,500	P	S01	
28	D035	3,500	P	S01	
29	D036	1,500	P	S01	
30	D037	1,000	P	S01	
31	D038	1,500	P	S01	
32	D039	2,500	P	S01	
33	D040	2,500	P	S01	
34	D042	1,500	P	S01	
35	D043	1,500	P	S01	
36	F001	21,000	P	S01	
37	F002	21,000	P	S01	
38	F003	21,000	P	S01	
39	F004	2,500	P	S01	

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 3 (Continued)																	
4	0	F	0	0	5	21,000	P	S	0	1							
4	1	F	0	0	6	500	P	S	0	1							
4	2	F	0	0	7	500	P	S	0	1							
4	3	F	0	0	9	500	P	S	0	1							
4	4	P	0	0	3	1,000	P	S	0	1							
4	5	P	0	1	2	1,000	P	S	0	1							
4	6	P	0	1	5	1,000	P	S	0	1							
4	7	P	0	2	9	1,000	P	S	0	1							
4	8	P	0	3	0	1,000	P	S	0	1							
4	9	P	0	3	1	1,000	P	S	0	1							
5	0	P	0	3	8	1,000	P	S	0	1							
5	1	P	0	5	6	1,000	P	S	0	1							
5	2	P	0	6	3	1,000	P	S	0	1							
5	3	P	0	6	8	1,000	P	S	0	1							
5	4	P	0	7	3	1,000	P	S	0	1							
5	5	P	0	7	6	1,000	P	S	0	1							
5	6	P	0	7	8	1,000	P	S	0	1							
5	7	P	0	9	5	1,000	P	S	0	1							
5	8	P	0	9	6	1,000	P	S	0	1							
5	9	P	0	9	8	1,000	P	S	0	1							
6	0	P	0	9	9	500	P	S	0	1							
6	1	P	1	0	6	1,000	P	S	0	1							
6	2	P	1	1	3	1,000	P	S	0	1							
6	3	P	1	2	0	1,000	P	S	0	1							
6	4	U	0	0	1	1,000	P	S	0	1							
6	5	U	0	0	2	1,000	P	S	0	1							
6	6	U	0	0	3	1,000	P	S	0	1							
6	7	U	0	1	2	1,000	P	S	0	1							
6	8	U	0	1	9	1,000	P	S	0	1							
6	9	U	0	2	2	1,000	P	S	0	1							
7	0	U	0	2	9	1,000	P	S	0	1							
7	1	U	0	3	1	1,000	P	S	0	1							
7	2	U	0	3	7	1,000	P	S	0	1							
7	3	U	0	4	4	1,000	P	S	0	1							
7	4	U	0	4	5	1,000	P	S	0	1							
7	5	U	0	5	2	1,000	P	S	0	1							
7	6	U	0	5	6	1,000	P	S	0	1							
7	7	U	0	5	7	1,000	P	S	0	1							
7	8	U	0	7	5	1,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 3 (Continued)																		
	7	9	U	0	7	7	1,000	P	S	0	1							
	8	0	U	0	8	0	1,000	P	S	0	1							
	8	1	U	1	0	3	500	P	S	0	1							
	8	2	U	1	0	8	1,000	P	S	0	1							
	8	3	U	1	1	2	1,000	P	S	0	1							
	8	4	U	1	1	5	1,000	P	S	0	1							
	8	5	U	1	1	7	1,000	P	S	0	1							
	8	6	U	1	2	1	1,000	P	S	0	1							
	8	7	U	1	2	2	1,000	P	S	0	1							
	8	8	U	1	2	3	1,000	P	S	0	1							
	8	9	U	1	3	1	1,000	P	S	0	1							
	9	0	U	1	3	3	1,000	P	S	0	1							
	9	1	U	1	3	4	1,000	P	S	0	1							
	9	2	U	1	3	5	1,000	P	S	0	1							
	9	3	U	1	4	0	1,000	P	S	0	1							
	9	4	U	1	4	4	1,000	P	S	0	1							
	9	5	U	1	5	1	1,000	P	S	0	1							
	9	6	U	1	5	4	1,000	P	S	0	1							
	9	7	U	1	5	9	1,000	P	S	0	1							
	9	8	U	1	6	0	1,000	P	S	0	1							
	9	9	U	1	6	1	1,000	P	S	0	1							
1	0	0	U	1	6	5	1,000	P	S	0	1							
1	0	1	U	1	6	9	1,000	P	S	0	1							
1	0	2	U	1	8	8	1,000	P	S	0	1							
1	0	3	U	1	9	0	1,000	P	S	0	1							
1	0	4	U	1	9	6	1,000	P	S	0	1							
1	0	5	U	2	0	4	1,000	P	S	0	1							
1	0	6	U	2	1	0	1,000	P	S	0	1							
1	0	7	U	2	1	1	1,000	P	S	0	1							
1	0	8	U	2	1	3	1,000	P	S	0	1							
1	0	9	U	2	1	6	1,000	P	S	0	1							
1	1	0	U	2	1	8	1,000	P	S	0	1							
1	1	1	U	2	1	9	1,000	P	S	0	1							
1	1	2	U	2	2	0	1,000	P	S	0	1							
1	1	3	U	2	2	5	500	P	S	0	1							
1	1	4	U	2	2	6	1,000	P	S	0	1							
1	1	5	U	2	2	7	500	P	S	0	1							
1	1	6	U	2	2	8	1,000	P	S	0	1							
1	1	7	U	2	3	9	500	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 3 (Continued)																		
1	1	8	U	2	4	6	500	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 14																	
	1	D	0	0	1	2,000	P	X	0	1							
	2	D	0	0	3												Included with above.
	3	D	0	0	5												Included with above.
	4	D	0	0	6												Included with above.
	5	D	0	0	7												Included with above.
	6	D	0	0	8												Included with above.
	7	D	0	0	9												Included with above.
	8	D	0	1	1												Included with above.
	9	D	0	1	8												Included with above.
1	0	D	0	2	2												Included with above.
1	1	D	0	2	8												Included with above.
1	2	D	0	2	9												Included with above.
1	3	D	0	3	0												Included with above.
1	4	D	0	3	5												Included with above.
1	5	D	0	3	6												Included with above.
1	6	D	0	3	8												Included with above.
1	7	D	0	4	0												Included with above.
1	8	F	0	0	1												Included with above.
1	9	F	0	0	2												Included with above.
2	0	F	0	0	3												Included with above.
2	1	F	0	0	4												Included with above.
2	2	F	0	0	5												Included with above.
2	3																
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 16																	
	1	D	0	0	1	6,000	P	X	0	1							
	2	D	0	0	2												Included with above.
	3	D	0	0	3												Included with above.
	4	D	0	0	5												Included with above.
	5	D	0	0	6												Included with above.
	6	D	0	0	7												Included with above.
	7	D	0	0	8												Included with above.
	8	D	0	0	9												Included with above.
	9	D	0	1	0												Included with above.
1	0	D	0	1	1												Included with above.
1	1	D	0	1	8												Included with above.
1	2	D	0	2	2												Included with above.
1	3	D	0	2	8												Included with above.
1	4	D	0	2	9												Included with above.
1	5	D	0	3	0												Included with above.
1	6	D	0	3	5												Included with above.
1	7	D	0	3	6												Included with above.
1	8	D	0	3	8												Included with above.
1	9	D	0	4	0												Included with above.
2	0	F	0	0	1												Included with above.
2	1	F	0	0	2												Included with above.
2	2	F	0	0	3												Included with above.
2	3	F	0	0	4												Included with above.
2	4	F	0	0	5												Included with above.
2	5	K	0	4	4												Included with above.
2	6	K	0	4	5												Included with above.
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 36																	
	1	D	0	0	1	15,000	P	X	0	1							
	2	D	0	0	3												Included with above.
	3	D	0	0	5												Included with above.
	4	D	0	0	6												Included with above.
	5	D	0	0	7												Included with above.
	6	D	0	0	8												Included with above.
	7	D	0	0	9												Included with above.
	8	D	0	1	0												Included with above.
	9	D	0	1	1												Included with above.
1	0	D	0	1	8												Included with above.
1	1	D	0	2	2												Included with above.
1	2	D	0	2	8												Included with above.
1	3	D	0	2	9												Included with above.
1	4	D	0	3	0												Included with above.
1	5	D	0	3	5												Included with above.
1	6	D	0	3	6												Included with above.
1	7	D	0	3	8												Included with above.
1	8	D	0	4	0												Included with above.
1	9	F	0	0	1												Included with above.
2	0	F	0	0	2												Included with above.
2	1	F	0	0	3												Included with above.
2	2	F	0	0	4												Included with above.
2	3	F	0	0	5												Included with above.
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 39																	
	1	D	0	0	1	15,000	P	X	0	1							
	2	D	0	0	3												Included with above.
	3	D	0	0	5												Included with above.
	4	D	0	0	6												Included with above.
	5	D	0	0	7												Included with above.
	6	D	0	0	8												Included with above.
	7	D	0	0	9												Included with above.
	8	D	0	1	0												Included with above.
	9	D	0	1	1												Included with above.
1	0	D	0	1	8												Included with above.
1	1	D	0	2	2												Included with above.
1	2	D	0	2	8												Included with above.
1	3	D	0	2	9												Included with above.
1	4	D	0	3	0												Included with above.
1	5	D	0	3	5												Included with above.
1	6	D	0	3	6												Included with above.
1	7	D	0	3	8												Included with above.
1	8	D	0	4	0												Included with above.
1	9	F	0	0	1												Included with above.
2	0	F	0	0	2												Included with above.
2	1	F	0	0	3												Included with above.
2	2	F	0	0	4												Included with above.
2	3	F	0	0	5												Included with above.
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50																	
	1	D	0	0	1	69,696	P	S	0	1							
	2	D	0	0	2	52,734	P	S	0	1							
	3	D	0	0	3	3,444	P	S	0	1							
	4	D	0	0	4	7,531	P	S	0	1							
	5	D	0	0	5	7,740	P	S	0	1							
	6	D	0	0	6	535, 451	P	S	0	1							
	7	D	0	0	7	567, 226	P	S	0	1							
	8	D	0	0	8	1,405,439	P	S	0	1							
	9	D	0	0	9	75,666	P	S	0	1							
1	0	D	0	1	0	8,922	P	S	0	1							
1	1	D	0	1	1	31,255	P	S	0	1							
1	2	D	0	1	2	100	P	S	0	1							
1	3	D	0	1	3	100	P	S	0	1							
1	4	D	0	1	4	100	P	S	0	1							
1	5	D	0	1	5	100	P	S	0	1							
1	6	D	0	1	6	44	P	S	0	1							
1	7	D	0	1	7	66	P	S	0	1							
1	8	D	0	1	8	5,535	P	S	0	1							
1	9	D	0	1	9	4,261	P	S	0	1							
2	0	D	0	2	0	100	P	S	0	1							
2	1	D	0	2	1	100	P	S	0	1							
2	2	D	0	2	2	100	P	S	0	1							
2	3	D	0	2	3	100	P	S	0	1							
2	4	D	0	2	4	100	P	S	0	1							
2	5	D	0	2	5	100	P	S	0	1							
2	6	D	0	2	6	518	P	S	0	1							
2	7	D	0	2	7	972	P	S	0	1							
2	8	D	0	2	8	216,783	P	S	0	1							
2	9	D	0	2	9	215,184	P	S	0	1							
3	0	D	0	3	0	5,491	P	S	0	1							
3	1	D	0	3	1	293	P	S	0	1							
3	2	D	0	3	2	3,135	P	S	0	1							
3	3	D	0	3	3	2,222	P	S	0	1							
3	4	D	0	3	4	1,228	P	S	0	1							
3	5	D	0	3	5	1,792	P	S	0	1							
3	6	D	0	3	6	549	P	S	0	1							
3	7	D	0	3	7	761	P	S	0	1							
3	8	D	0	3	8	1,549	P	S	0	1							
3	9	D	0	3	9	1,675	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																	
4	0	D	0	4	0	3,942	P	S	0	1							
4	1	D	0	4	1	293	P	S	0	1							
4	2	D	0	4	2	1,182	P	S	0	1							
4	3	D	0	4	3	655	P	S	0	1							
4	4	F	0	0	1	442,263	P	S	0	1							
4	5	F	0	0	2	147,347	P	S	0	1							
4	6	F	0	0	3	50,980	P	S	0	1							
4	7	F	0	0	4	2,817	P	S	0	1							
4	8	F	0	0	5	334,821	P	S	0	1							
4	9	F	0	0	6	100	P	S	0	1							
5	0	F	0	0	7	100	P	S	0	1							
5	1	F	0	0	8	100	P	S	0	1							
5	2	F	0	0	9	165	P	S	0	1							
5	3	F	0	1	0	100	P	S	0	1							
5	4	F	0	1	1	100	P	S	0	1							
5	5	F	0	1	2	100	P	S	0	1							
5	6	F	0	1	9	100	P	S	0	1							
5	7	F	0	2	0	100	P	S	0	1							
5	8	F	0	2	1	100	P	S	0	1							
5	9	F	0	2	2	100	P	S	0	1							
6	0	F	0	2	3	100	P	S	0	1							
6	1	F	0	2	4	100	P	S	0	1							
6	2	F	0	2	5	100	P	S	0	1							
6	3	F	0	2	6	100	P	S	0	1							
6	4	F	0	2	7	165	P	S	0	1							
6	5	F	0	2	8	100	P	S	0	1							
6	6	F	0	3	2	100	P	S	0	1							
6	7	F	0	3	4	100	P	S	0	1							
6	8	F	0	3	5	100	P	S	0	1							
6	9	F	0	3	7	100	P	S	0	1							
7	0	F	0	3	8	100	P	S	0	1							
7	1	F	0	3	9	100	P	S	0	1							
7	2	K	0	4	4	100	P	S	0	1							
7	3	K	0	4	5	100	P	S	0	1							
7	4	K	0	4	6	100	P	S	0	1							
7	5	K	0	4	7	100	P	S	0	1							
7	6	K	0	8	4	100	P	S	0	1							
7	7	K	1	0	1	100	P	S	0	1							
7	8	K	1	0	2	100	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
	7	9	P	0	0	1	100	P	S	0	1							
	8	0	P	0	0	2	100	P	S	0	1							
	8	1	P	0	0	3	293	P	S	0	1							
	8	2	P	0	0	4	100	P	S	0	1							
	8	3	P	0	0	5	100	P	S	0	1							
	8	4	P	0	0	6	143	P	S	0	1							
	8	5	P	0	0	7	100	P	S	0	1							
	8	6	P	0	0	8	100	P	S	0	1							
	8	7	P	0	0	9	100	P	S	0	1							
	8	8	P	0	1	0	100	P	S	0	1							
	8	9	P	0	1	1	143	P	S	0	1							
	9	0	P	0	1	2	293	P	S	0	1							
	9	1	P	0	1	3	100	P	S	0	1							
	9	2	P	0	1	4	100	P	S	0	1							
	9	3	P	0	1	5	293	P	S	0	1							
	9	4	P	0	1	6	100	P	S	0	1							
	9	5	P	0	1	7	100	P	S	0	1							
	9	6	P	0	1	8	100	P	S	0	1							
	9	7	P	0	2	0	100	P	S	0	1							
	9	8	P	0	2	1	100	P	S	0	1							
	9	9	P	0	2	2	100	P	S	0	1							
1	0	0	P	0	2	3	100	P	S	0	1							
1	0	1	P	0	2	4	100	P	S	0	1							
1	0	2	P	0	2	6	100	P	S	0	1							
1	0	3	P	0	2	7	100	P	S	0	1							
1	0	4	P	0	2	8	100	P	S	0	1							
1	0	5	P	0	2	9	293	P	S	0	1							
1	0	6	P	0	3	0	485	P	S	0	1							
1	0	7	P	0	3	1	485	P	S	0	1							
1	0	8	P	0	3	3	143	P	S	0	1							
1	0	9	P	0	3	4	100	P	S	0	1							
1	1	0	P	0	3	6	100	P	S	0	1							
1	1	1	P	0	3	7	100	P	S	0	1							
1	1	2	P	0	3	8	227	P	S	0	1							
1	1	3	P	0	3	9	100	P	S	0	1							
1	1	4	P	0	4	0	100	P	S	0	1							
1	1	5	P	0	4	1	100	P	S	0	1							
1	1	6	P	0	4	2	100	P	S	0	1							
1	1	7	P	0	4	3	143	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
1	1	8	P	0	4	4	100	P	S	0	1							
1	1	9	P	0	4	5	100	P	S	0	1							
1	2	0	P	0	4	6	100	P	S	0	1							
1	2	1	P	0	4	7	100	P	S	0	1							
1	2	2	P	0	4	8	143	P	S	0	1							
1	2	3	P	0	4	9	100	P	S	0	1							
1	2	4	P	0	5	0	100	P	S	0	1							
1	2	5	P	0	5	1	100	P	S	0	1							
1	2	6	P	0	5	4	100	P	S	0	1							
1	2	7	P	0	5	6	2,624	P	S	0	1							
1	2	8	P	0	5	7	100	P	S	0	1							
1	2	9	P	0	5	8	100	P	S	0	1							
1	3	0	P	0	5	9	100	P	S	0	1							
1	3	1	P	0	6	0	100	P	S	0	1							
1	3	2	P	0	6	2	100	P	S	0	1							
1	3	3	P	0	6	3	293	P	S	0	1							
1	3	4	P	0	6	4	100	P	S	0	1							
1	3	5	P	0	6	5	100	P	S	0	1							
1	3	6	P	0	6	6	100	P	S	0	1							
1	3	7	P	0	6	7	100	P	S	0	1							
1	3	8	P	0	6	8	293	P	S	0	1							
1	3	9	P	0	6	9	100	P	S	0	1							
1	4	0	P	0	7	0	100	P	S	0	1							
1	4	1	P	0	7	1	100	P	S	0	1							
1	4	2	P	0	7	2	100	P	S	0	1							
1	4	3	P	0	7	3	293	P	S	0	1							
1	4	4	P	0	7	4	100	P	S	0	1							
1	4	5	P	0	7	5	100	P	S	0	1							
1	4	6	P	0	7	6	403	P	S	0	1							
1	4	7	P	0	7	7	100	P	S	0	1							
1	4	8	P	0	7	8	425	P	S	0	1							
1	4	9	P	0	8	1	100	P	S	0	1							
1	5	0	P	0	8	2	100	P	S	0	1							
1	5	1	P	0	8	4	100	P	S	0	1							
1	5	2	P	0	8	5	100	P	S	0	1							
1	5	3	P	0	8	7	100	P	S	0	1							
1	5	4	P	0	8	8	100	P	S	0	1							
1	5	5	P	0	8	9	100	P	S	0	1							
1	5	6	P	0	9	2	143	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
1	5	7	P	0	9	3	100	P	S	0	1							
1	5	8	P	0	9	4	100	P	S	0	1							
1	5	9	P	0	9	5	293	P	S	0	1							
1	6	0	P	0	9	6	293	P	S	0	1							
1	6	1	P	0	9	7	100	P	S	0	1							
1	6	2	P	0	9	8	293	P	S	0	1							
1	6	3	P	0	9	9	100	P	S	0	1							
1	6	4	P	1	0	1	100	P	S	0	1							
1	6	5	P	1	0	2	100	P	S	0	1							
1	6	6	P	1	0	3	100	P	S	0	1							
1	6	7	P	1	0	4	143	P	S	0	1							
1	6	8	P	1	0	5	143	P	S	0	1							
1	6	9	P	1	0	6	293	P	S	0	1							
1	7	0	P	1	0	8	100	P	S	0	1							
1	7	1	P	1	0	9	100	P	S	0	1							
1	7	2	P	1	1	0	100	P	S	0	1							
1	7	3	P	1	1	1	100	P	S	0	1							
1	7	4	P	1	1	2	143	P	S	0	1							
1	7	5	P	1	1	3	293	P	S	0	1							
1	7	6	P	1	1	4	100	P	S	0	1							
1	7	7	P	1	1	5	100	P	S	0	1							
1	7	8	P	1	1	6	100	P	S	0	1							
1	7	9	P	1	1	8	100	P	S	0	1							
1	8	0	P	1	1	9	143	P	S	0	1							
1	8	1	P	1	2	0	293	P	S	0	1							
1	8	2	P	1	2	1	100	P	S	0	1							
1	8	3	P	1	2	2	100	P	S	0	1							
1	8	4	P	1	2	3	100	P	S	0	1							
1	8	5	P	1	2	7	100	P	S	0	1							
1	8	6	P	1	2	8	100	P	S	0	1							
1	8	7	P	1	8	5	100	P	S	0	1							
1	8	8	P	1	8	8	100	P	S	0	1							
1	8	9	P	1	8	9	100	P	S	0	1							
1	9	0	P	1	9	0	100	P	S	0	1							
1	9	1	P	1	9	1	100	P	S	0	1							
1	9	2	P	1	9	2	100	P	S	0	1							
1	9	3	P	1	9	4	100	P	S	0	1							
1	9	4	P	1	9	6	100	P	S	0	1							
1	9	5	P	1	9	7	100	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
1	9	6	P	1	9	8	100	P	S	0	1							
1	9	7	P	1	9	9	100	P	S	0	1							
1	9	8	P	2	0	1	100	P	S	0	1							
1	9	9	P	2	0	2	100	P	S	0	1							
2	0	0	P	2	0	3	100	P	S	0	1							
2	0	1	P	2	0	4	100	P	S	0	1							
2	0	2	P	2	0	5	100	P	S	0	1							
2	0	3	U	0	0	1	293	P	S	0	1							
2	0	4	U	0	0	2	954	P	S	0	1							
2	0	5	U	0	0	3	485	P	S	0	1							
2	0	6	U	0	0	4	100	P	S	0	1							
2	0	7	U	0	0	5	100	P	S	0	1							
2	0	8	U	0	0	6	100	P	S	0	1							
2	0	9	U	0	0	7	143	P	S	0	1							
2	1	0	U	0	0	8	143	P	S	0	1							
2	1	1	U	0	0	9	143	P	S	0	1							
2	1	2	U	0	1	0	100	P	S	0	1							
2	1	3	U	0	1	1	100	P	S	0	1							
2	1	4	U	0	1	2	293	P	S	0	1							
2	1	5	U	0	1	4	100	P	S	0	1							
2	1	6	U	0	1	5	100	P	S	0	1							
2	1	7	U	0	1	6	100	P	S	0	1							
2	1	8	U	0	1	7	100	P	S	0	1							
2	1	9	U	0	1	8	143	P	S	0	1							
2	2	0	U	0	1	9	470	P	S	0	1							
2	2	1	U	0	2	0	100	P	S	0	1							
2	2	2	U	0	2	1	100	P	S	0	1							
2	2	3	U	0	2	2	293	P	S	0	1							
2	2	4	U	0	2	3	100	P	S	0	1							
2	2	5	U	0	2	4	100	P	S	0	1							
2	2	6	U	0	2	5	100	P	S	0	1							
2	2	7	U	0	2	6	100	P	S	0	1							
2	2	8	U	0	2	7	100	P	S	0	1							
2	2	9	U	0	2	8	100	P	S	0	1							
2	3	0	U	0	2	9	293	P	S	0	1							
2	3	1	U	0	3	0	100	P	S	0	1							
2	3	2	U	0	3	1	293	P	S	0	1							
2	3	3	U	0	3	2	100	P	S	0	1							
2	3	4	U	0	3	3	143	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
2	3	5	U	0	3	4	100	P	S	0	1							
2	3	6	U	0	3	5	100	P	S	0	1							
2	3	7	U	0	3	6	100	P	S	0	1							
2	3	8	U	0	3	7	143	P	S	0	1							
2	3	9	U	0	3	8	100	P	S	0	1							
2	4	0	U	0	3	9	100	P	S	0	1							
2	4	1	U	0	4	1	143	P	S	0	1							
2	4	2	U	0	4	2	100	P	S	0	1							
2	4	3	U	0	4	3	100	P	S	0	1							
2	4	4	U	0	4	4	293	P	S	0	1							
2	4	5	U	0	4	5	293	P	S	0	1							
2	4	6	U	0	4	6	100	P	S	0	1							
2	4	7	U	0	4	7	100	P	S	0	1							
2	4	8	U	0	4	8	100	P	S	0	1							
2	4	9	U	0	4	9	100	P	S	0	1							
2	5	0	U	0	5	0	100	P	S	0	1							
2	5	1	U	0	5	1	100	P	S	0	1							
2	5	2	U	0	5	2	293	P	S	0	1							
2	5	3	U	0	5	3	100	P	S	0	1							
2	5	4	U	0	5	5	143	P	S	0	1							
2	5	5	U	0	5	6	293	P	S	0	1							
2	5	6	U	0	5	7	293	P	S	0	1							
2	5	7	U	0	5	8	100	P	S	0	1							
2	5	8	U	0	5	9	100	P	S	0	1							
2	5	9	U	0	6	0	100	P	S	0	1							
2	6	0	U	0	6	1	100	P	S	0	1							
2	6	1	U	0	6	2	100	P	S	0	1							
2	6	2	U	0	6	3	100	P	S	0	1							
2	6	3	U	0	6	4	100	P	S	0	1							
2	6	4	U	0	6	6	100	P	S	0	1							
2	6	5	U	0	6	7	143	P	S	0	1							
2	6	6	U	0	6	8	143	P	S	0	1							
2	6	7	U	0	6	9	100	P	S	0	1							
2	6	8	U	0	7	0	165	P	S	0	1							
2	6	9	U	0	7	1	100	P	S	0	1							
2	7	0	U	0	7	2	100	P	S	0	1							
2	7	1	U	0	7	3	100	P	S	0	1							
2	7	2	U	0	7	4	100	P	S	0	1							
2	7	3	U	0	7	5	381	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
2	7	4	U	0	7	6	100	P	S	0	1							
2	7	5	U	0	7	7	293	P	S	0	1							
2	7	6	U	0	7	8	100	P	S	0	1							
2	7	7	U	0	7	9	100	P	S	0	1							
2	7	8	U	0	8	0	4,129	P	S	0	1							
2	7	9	U	0	8	1	100	P	S	0	1							
2	8	0	U	0	8	2	100	P	S	0	1							
2	8	1	U	0	8	3	100	P	S	0	1							
2	8	2	U	0	8	4	100	P	S	0	1							
2	8	3	U	0	8	5	143	P	S	0	1							
2	8	4	U	0	8	6	100	P	S	0	1							
2	8	5	U	0	8	7	100	P	S	0	1							
2	8	6	U	0	8	8	100	P	S	0	1							
2	8	7	U	0	8	9	100	P	S	0	1							
2	8	8	U	0	9	0	100	P	S	0	1							
2	8	9	U	0	9	1	518	P	S	0	1							
2	9	0	U	0	9	2	143	P	S	0	1							
2	9	1	U	0	9	3	100	P	S	0	1							
2	9	2	U	0	9	4	100	P	S	0	1							
2	9	3	U	0	9	5	100	P	S	0	1							
2	9	4	U	0	9	6	100	P	S	0	1							
2	9	5	U	0	9	7	100	P	S	0	1							
2	9	6	U	0	9	8	100	P	S	0	1							
2	9	7	U	0	9	9	100	P	S	0	1							
2	9	8	U	1	0	1	100	P	S	0	1							
2	9	9	U	1	0	2	100	P	S	0	1							
3	0	0	U	1	0	3	143	P	S	0	1							
3	0	1	U	1	0	5	100	P	S	0	1							
3	0	2	U	1	0	6	100	P	S	0	1							
3	0	3	U	1	0	7	100	P	S	0	1							
3	0	4	U	1	0	8	293	P	S	0	1							
3	0	5	U	1	0	9	143	P	S	0	1							
3	0	6	U	1	1	0	100	P	S	0	1							
3	0	7	U	1	1	1	100	P	S	0	1							
3	0	8	U	1	1	2	293	P	S	0	1							
3	0	9	U	1	1	3	100	P	S	0	1							
3	1	0	U	1	1	4	100	P	S	0	1							
3	1	1	U	1	1	5	293	P	S	0	1							
3	1	2	U	1	1	6	100	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
3	1	3	U	1	1	7	293	P	S	0	1							
3	1	4	U	1	1	8	100	P	S	0	1							
3	1	5	U	1	1	9	100	P	S	0	1							
3	1	6	U	1	2	0	100	P	S	0	1							
3	1	7	U	1	2	1	293	P	S	0	1							
3	1	8	U	1	2	2	778	P	S	0	1							
3	1	9	U	1	2	3	293	P	S	0	1							
3	2	0	U	1	2	4	143	P	S	0	1							
3	2	1	U	1	2	5	100	P	S	0	1							
3	2	2	U	1	2	6	100	P	S	0	1							
3	2	3	U	1	2	7	100	P	S	0	1							
3	2	4	U	1	2	8	100	P	S	0	1							
3	2	5	U	1	2	9	100	P	S	0	1							
3	2	6	U	1	3	0	100	P	S	0	1							
3	2	7	U	1	3	1	293	P	S	0	1							
3	2	8	U	1	3	2	100	P	S	0	1							
3	2	9	U	1	3	3	293	P	S	0	1							
3	3	0	U	1	3	4	667	P	S	0	1							
3	3	1	U	1	3	5	447	P	S	0	1							
3	3	2	U	1	3	6	143	P	S	0	1							
3	3	3	U	1	3	7	100	P	S	0	1							
3	3	4	U	1	3	8	100	P	S	0	1							
3	3	5	U	1	4	0	293	P	S	0	1							
3	3	6	U	1	4	1	100	P	S	0	1							
3	3	7	U	1	4	2	100	P	S	0	1							
3	3	8	U	1	4	3	100	P	S	0	1							
3	3	9	U	1	4	4	293	P	S	0	1							
3	4	0	U	1	4	5	293	P	S	0	1							
3	4	1	U	1	4	6	100	P	S	0	1							
3	4	2	U	1	4	7	100	P	S	0	1							
3	4	3	U	1	4	8	100	P	S	0	1							
3	4	4	U	1	4	9	100	P	S	0	1							
3	4	5	U	1	5	0	100	P	S	0	1							
3	4	6	U	1	5	1	884	P	S	0	1							
3	4	7	U	1	5	2	100	P	S	0	1							
3	4	8	U	1	5	3	143	P	S	0	1							
3	4	9	U	1	5	4	359	P	S	0	1							
3	5	0	U	1	5	5	100	P	S	0	1							
3	5	1	U	1	5	6	100	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
3	5	2	U	1	5	7	100	P	S	0	1							
3	5	3	U	1	5	8	100	P	S	0	1							
3	5	4	U	1	5	9	315	P	S	0	1							
3	5	5	U	1	6	0	293	P	S	0	1							
3	5	6	U	1	6	1	470	P	S	0	1							
3	5	7	U	1	6	2	143	P	S	0	1							
3	5	8	U	1	6	3	143	P	S	0	1							
3	5	9	U	1	6	4	100	P	S	0	1							
3	6	0	U	1	6	5	293	P	S	0	1							
3	6	1	U	1	6	6	100	P	S	0	1							
3	6	2	U	1	6	7	143	P	S	0	1							
3	6	3	U	1	6	8	143	P	S	0	1							
3	6	4	U	1	6	9	293	P	S	0	1							
3	6	5	U	1	7	0	143	P	S	0	1							
3	6	6	U	1	7	1	100	P	S	0	1							
3	6	7	U	1	7	2	100	P	S	0	1							
3	6	8	U	1	7	3	100	P	S	0	1							
3	6	9	U	1	7	4	100	P	S	0	1							
3	7	0	U	1	7	6	100	P	S	0	1							
3	7	1	U	1	7	7	100	P	S	0	1							
3	7	2	U	1	7	8	100	P	S	0	1							
3	7	3	U	1	7	9	100	P	S	0	1							
3	7	4	U	1	8	0	100	P	S	0	1							
3	7	5	U	1	8	1	100	P	S	0	1							
3	7	6	U	1	8	2	100	P	S	0	1							
3	7	7	U	1	8	3	100	P	S	0	1							
3	7	8	U	1	8	4	100	P	S	0	1							
3	7	9	U	1	8	5	100	P	S	0	1							
3	8	0	U	1	8	6	100	P	S	0	1							
3	8	1	U	1	8	7	100	P	S	0	1							
3	8	2	U	1	8	8	293	P	S	0	1							
3	8	3	U	1	8	9	100	P	S	0	1							
3	8	4	U	1	9	0	293	P	S	0	1							
3	8	5	U	1	9	1	100	P	S	0	1							
3	8	6	U	1	9	2	100	P	S	0	1							
3	8	7	U	1	9	3	100	P	S	0	1							
3	8	8	U	1	9	4	100	P	S	0	1							
3	8	9	U	1	9	6	293	P	S	0	1							
3	9	0	U	1	9	7	100	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
3	9	1	U	2	0	0	100	P	S	0	1							
3	9	2	U	2	0	1	100	P	S	0	1							
3	9	3	U	2	0	2	100	P	S	0	1							
3	9	4	U	2	0	3	100	P	S	0	1							
3	9	5	U	2	0	4	293	P	S	0	1							
3	9	6	U	2	0	5	100	P	S	0	1							
3	9	7	U	2	0	6	100	P	S	0	1							
3	9	8	U	2	0	7	100	P	S	0	1							
3	9	9	U	2	0	8	100	P	S	0	1							
4	0	0	U	2	0	9	100	P	S	0	1							
4	0	1	U	2	1	0	513	P	S	0	1							
4	0	2	U	2	1	1	359	P	S	0	1							
4	0	3	U	2	1	3	293	P	S	0	1							
4	0	4	U	2	1	4	100	P	S	0	1							
4	0	5	U	2	1	5	100	P	S	0	1							
4	0	6	U	2	1	6	293	P	S	0	1							
4	0	7	U	2	1	7	100	P	S	0	1							
4	0	8	U	2	1	8	293	P	S	0	1							
4	0	9	U	2	1	9	293	P	S	0	1							
4	1	0	U	2	2	0	491	P	S	0	1							
4	1	1	U	2	2	1	100	P	S	0	1							
4	1	2	U	2	2	2	100	P	S	0	1							
4	1	3	U	2	2	3	143	P	S	0	1							
4	1	4	U	2	2	5	293	P	S	0	1							
4	1	5	U	2	2	6	6,594	P	S	0	1							
4	1	6	U	2	2	7	293	P	S	0	1							
4	1	7	U	2	2	8	1,219	P	S	0	1							
4	1	8	U	2	3	4	100	P	S	0	1							
4	1	9	U	2	3	5	100	P	S	0	1							
4	2	0	U	2	3	6	100	P	S	0	1							
4	2	1	U	2	3	7	100	P	S	0	1							
4	2	2	U	2	3	8	100	P	S	0	1							
4	2	3	U	2	3	9	646	P	S	0	1							
4	2	4	U	2	4	0	143	P	S	0	1							
4	2	5	U	2	4	3	100	P	S	0	1							
4	2	6	U	2	4	4	100	P	S	0	1							
4	2	7	U	2	4	6	231	P	S	0	1							
4	2	8	U	2	4	7	100	P	S	0	1							
4	2	9	U	2	4	8	100	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 50 (Continued)																		
4	3	0	U	2	4	9	100	P	S	0	1							
4	3	1	U	2	7	1	100	P	S	0	1							
4	3	2	U	2	7	8	100	P	S	0	1							
4	3	3	U	2	7	9	100	P	S	0	1							
4	3	4	U	2	8	0	100	P	S	0	1							
4	3	5	U	3	2	8	100	P	S	0	1							
4	3	6	U	3	5	3	100	P	S	0	1							
4	3	7	U	3	5	9	100	P	S	0	1							
4	3	8	U	3	6	4	100	P	S	0	1							
4	3	9	U	3	6	7	100	P	S	0	1							
4	4	0	U	3	7	2	100	P	S	0	1							
4	4	1	U	3	7	3	100	P	S	0	1							
4	4	2	U	3	8	7	100	P	S	0	1							
4	4	3	U	3	8	9	100	P	S	0	1							
4	4	4	U	3	9	4	100	P	S	0	1							
4	4	5	U	3	9	5	100	P	S	0	1							
4	4	6	U	4	0	4	100	P	S	0	1							
4	4	7	U	4	0	9	100	P	S	0	1							
4	4	8	U	4	1	0	100	P	S	0	1							
4	4	9	U	4	1	1	100	P	S	0	1							
4	5	0																
4	5	1																
4	5	2																
4	5	3																
4	5	4																
4	5	5																
4	5	6																
4	5	7																
4	5	8																
4	5	9																
4	6	0																
4	6	1																
4	6	2																
4	6	3																
4	6	4																
4	6	5																
4	6	6																
4	6	7																
4	6	8																

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L																	
	1	D	0	0	1	220,000	P	S	0	1							
	2	D	0	0	2	365,000	P	S	0	1							
	3	D	0	0	3	100,000	P	S	0	1							
	4	D	0	0	4	25,000	P	S	0	1							
	5	D	0	0	5	80,000	P	S	0	1							
	6	D	0	0	6	65,000	P	S	0	1							
	7	D	0	0	7	75,000	P	S	0	1							
	8	D	0	0	8	800,000	P	S	0	1							
	9	D	0	0	9	65,000	P	S	0	1							
1	0	D	0	1	0	30,000	P	S	0	1							
1	1	D	0	1	1	40,000	P	S	0	1							
1	2	D	0	1	2	12,000	P	S	0	1							
1	3	D	0	1	3	4,000	P	S	0	1							
1	4	D	0	1	4	4,000	P	S	0	1							
1	5	D	0	1	5	7,000	P	S	0	1							
1	6	D	0	1	6	4,000	P	S	0	1							
1	7	D	0	1	7	4,000	P	S	0	1							
1	8	D	0	1	8	20,000	P	S	0	1							
1	9	D	0	1	9	20,000	P	S	0	1							
2	0	D	0	2	0	30,000	P	S	0	1							
2	1	D	0	2	1	10,000	P	S	0	1							
2	2	D	0	2	2	23,000	P	S	0	1							
2	3	D	0	2	3	4,000	P	S	0	1							
2	4	D	0	2	4	4,000	P	S	0	1							
2	5	D	0	2	5	4,000	P	S	0	1							
2	6	D	0	2	6	4,000	P	S	0	1							
2	7	D	0	2	7	12,000	P	S	0	1							
2	8	D	0	2	8	30,000	P	S	0	1							
2	9	D	0	2	9	7,000	P	S	0	1							
3	0	D	0	3	0	20,000	P	S	0	1							
3	1	D	0	3	1	12,000	P	S	0	1							
3	2	D	0	3	2	19,000	P	S	0	1							
3	3	D	0	3	3	19,000	P	S	0	1							
3	4	D	0	3	4	19,000	P	S	0	1							
3	5	D	0	3	5	20,000	P	S	0	1							
3	6	D	0	3	6	9,000	P	S	0	1							
3	7	D	0	3	7	7,000	P	S	0	1							
3	8	D	0	3	8	4,000	P	S	0	1							
3	9	D	0	3	9	10,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																	
4	0	D	0	4	0	15,000	P	S	0	1							
4	1	D	0	4	1	7,000	P	S	0	1							
4	2	D	0	4	2	12,000	P	S	0	1							
4	3	D	0	4	3	15,000	P	S	0	1							
4	4	F	0	0	1	660,000	P	S	0	1							
4	5	F	0	0	2	350,000	P	S	0	1							
4	6	F	0	0	3	250,000	P	S	0	1							
4	7	F	0	0	4	30,000	P	S	0	1							
4	8	F	0	0	5	250,000	P	S	0	1							
4	9	F	0	0	6	7,000	P	S	0	1							
5	0	F	0	0	7	28,000	P	S	0	1							
5	1	F	0	0	8	7,000	P	S	0	1							
5	2	F	0	0	9	8,000	P	S	0	1							
5	3	F	0	1	0	4,000	P	S	0	1							
5	4	F	0	1	1	4,000	P	S	0	1							
5	5	F	0	1	2	4,000	P	S	0	1							
5	6	F	0	1	9	500	P	S	0	1							
5	7	F	0	2	0	500	P	S	0	1							
5	8	F	0	2	1	500	P	S	0	1							
5	9	F	0	2	2	500	P	S	0	1							
6	0	F	0	2	3	500	P	S	0	1							
6	1	F	0	2	4	500	P	S	0	1							
6	2	F	0	2	5	500	P	S	0	1							
6	3	F	0	2	6	500	P	S	0	1							
6	4	F	0	2	7	4,000	P	S	0	1							
6	5	F	0	2	8	4,000	P	S	0	1							
6	6	F	0	3	2	500	P	S	0	1							
6	7	F	0	3	4	500	P	S	0	1							
6	8	F	0	3	5	500	P	S	0	1							
6	9	F	0	3	7	500	P	S	0	1							
7	0	F	0	3	8	500	P	S	0	1							
7	1	F	0	3	9	4,000	P	S	0	1							
7	2	K	0	4	4	22,000	P	S	0	1							
7	3	K	0	4	5	4,000	P	S	0	1							
7	4	K	0	4	6	4,000	P	S	0	1							
7	5	K	0	4	7	4,000	P	S	0	1							
7	6	K	0	8	4	500	P	S	0	1							
7	7	K	1	0	1	500	P	S	0	1							
7	8	K	1	0	2	500	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
	7	9	P	0	0	1	4,000	P	S	0	1							
	8	0	P	0	0	2	4,000	P	S	0	1							
	8	1	P	0	0	3	4,000	P	S	0	1							
	8	2	P	0	0	4	4,000	P	S	0	1							
	8	3	P	0	0	5	4,000	P	S	0	1							
	8	4	P	0	0	6	4,000	P	S	0	1							
	8	5	P	0	0	7	4,000	P	S	0	1							
	8	6	P	0	0	8	4,000	P	S	0	1							
	8	7	P	0	0	9	4,000	P	S	0	1							
	8	8	P	0	1	0	4,000	P	S	0	1							
	8	9	P	0	1	1	4,000	P	S	0	1							
	9	0	P	0	1	2	4,000	P	S	0	1							
	9	1	P	0	1	3	4,000	P	S	0	1							
	9	2	P	0	1	4	4,000	P	S	0	1							
	9	3	P	0	1	5	4,000	P	S	0	1							
	9	4	P	0	1	6	4,000	P	S	0	1							
	9	5	P	0	1	7	4,000	P	S	0	1							
	9	6	P	0	1	8	4,000	P	S	0	1							
	9	7	P	0	2	0	4,000	P	S	0	1							
	9	8	P	0	2	1	4,000	P	S	0	1							
	9	9	P	0	2	2	4,000	P	S	0	1							
1	0	0	P	0	2	3	4,000	P	S	0	1							
1	0	1	P	0	2	4	4,000	P	S	0	1							
1	0	2	P	0	2	6	4,000	P	S	0	1							
1	0	3	P	0	2	7	4,000	P	S	0	1							
1	0	4	P	0	2	8	4,000	P	S	0	1							
1	0	5	P	0	2	9	4,000	P	S	0	1							
1	0	6	P	0	3	0	4,000	P	S	0	1							
1	0	7	P	0	3	1	4,000	P	S	0	1							
1	0	8	P	0	3	3	4,000	P	S	0	1							
1	0	9	P	0	3	4	4,000	P	S	0	1							
1	1	0	P	0	3	6	4,000	P	S	0	1							
1	1	1	P	0	3	7	4,000	P	S	0	1							
1	1	2	P	0	3	8	4,000	P	S	0	1							
1	1	3	P	0	3	9	4,000	P	S	0	1							
1	1	4	P	0	4	0	4,000	P	S	0	1							
1	1	5	P	0	4	1	4,000	P	S	0	1							
1	1	6	P	0	4	2	4,000	P	S	0	1							
1	1	7	P	0	4	3	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
1	1	8	P	0	4	4	4,000	P	S	0	1							
1	1	9	P	0	4	5	4,000	P	S	0	1							
1	2	0	P	0	4	6	4,000	P	S	0	1							
1	2	1	P	0	4	7	4,000	P	S	0	1							
1	2	2	P	0	4	8	4,000	P	S	0	1							
1	2	3	P	0	4	9	4,000	P	S	0	1							
1	2	4	P	0	5	0	4,000	P	S	0	1							
1	2	5	P	0	5	1	4,000	P	S	0	1							
1	2	6	P	0	5	4	4,000	P	S	0	1							
1	2	7	P	0	5	6	4,000	P	S	0	1							
1	2	8	P	0	5	7	4,000	P	S	0	1							
1	2	9	P	0	5	8	4,000	P	S	0	1							
1	3	0	P	0	5	9	4,000	P	S	0	1							
1	3	1	P	0	6	0	4,000	P	S	0	1							
1	3	2	P	0	6	2	4,000	P	S	0	1							
1	3	3	P	0	6	3	4,000	P	S	0	1							
1	3	4	P	0	6	4	4,000	P	S	0	1							
1	3	5	P	0	6	5	4,000	P	S	0	1							
1	3	6	P	0	6	6	4,000	P	S	0	1							
1	3	7	P	0	6	7	4,000	P	S	0	1							
1	3	8	P	0	6	8	4,000	P	S	0	1							
1	3	9	P	0	6	9	4,000	P	S	0	1							
1	4	0	P	0	7	0	4,000	P	S	0	1							
1	4	1	P	0	7	1	4,000	P	S	0	1							
1	4	2	P	0	7	2	4,000	P	S	0	1							
1	4	3	P	0	7	3	4,000	P	S	0	1							
1	4	4	P	0	7	4	4,000	P	S	0	1							
1	4	5	P	0	7	5	4,000	P	S	0	1							
1	4	6	P	0	7	6	4,000	P	S	0	1							
1	4	7	P	0	7	7	4,000	P	S	0	1							
1	4	8	P	0	7	8	4,000	P	S	0	1							
1	4	9	P	0	8	1	4,000	P	S	0	1							
1	5	0	P	0	8	2	4,000	P	S	0	1							
1	5	1	P	0	8	4	4,000	P	S	0	1							
1	5	2	P	0	8	5	4,000	P	S	0	1							
1	5	3	P	0	8	7	4,000	P	S	0	1							
1	5	4	P	0	8	8	4,000	P	S	0	1							
1	5	5	P	0	8	9	4,000	P	S	0	1							
1	5	6	P	0	9	2	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
1	5	7	P	0	9	3	4,000	P	S	0	1							
1	5	8	P	0	9	4	4,000	P	S	0	1							
1	5	9	P	0	9	5	4,000	P	S	0	1							
1	6	0	P	0	9	6	4,000	P	S	0	1							
1	6	1	P	0	9	7	4,000	P	S	0	1							
1	6	2	P	0	9	8	4,000	P	S	0	1							
1	6	3	P	0	9	9	4,000	P	S	0	1							
1	6	4	P	1	0	1	4,000	P	S	0	1							
1	6	5	P	1	0	2	4,000	P	S	0	1							
1	6	6	P	1	0	3	4,000	P	S	0	1							
1	6	7	P	1	0	4	4,000	P	S	0	1							
1	6	8	P	1	0	5	4,000	P	S	0	1							
1	6	9	P	1	0	6	4,000	P	S	0	1							
1	7	0	P	1	0	8	4,000	P	S	0	1							
1	7	1	P	1	0	9	4,000	P	S	0	1							
1	7	2	P	1	1	0	4,000	P	S	0	1							
1	7	3	P	1	1	1	4,000	P	S	0	1							
1	7	4	P	1	1	2	4,000	P	S	0	1							
1	7	5	P	1	1	3	4,000	P	S	0	1							
1	7	6	P	1	1	4	4,000	P	S	0	1							
1	7	7	P	1	1	5	4,000	P	S	0	1							
1	7	8	P	1	1	6	4,000	P	S	0	1							
1	7	9	P	1	1	8	4,000	P	S	0	1							
1	8	0	P	1	1	9	4,000	P	S	0	1							
1	8	1	P	1	2	0	4,000	P	S	0	1							
1	8	2	P	1	2	1	4,000	P	S	0	1							
1	8	3	P	1	2	2	4,000	P	S	0	1							
1	8	4	P	1	2	3	4,000	P	S	0	1							
1	8	5	P	1	2	7	4,000	P	S	0	1							
1	8	6	P	1	2	8	4,000	P	S	0	1							
1	8	7	P	1	8	5	4,000	P	S	0	1							
1	8	8	P	1	8	8	4,000	P	S	0	1							
1	8	9	P	1	8	9	4,000	P	S	0	1							
1	9	0	P	1	9	0	4,000	P	S	0	1							
1	9	1	P	1	9	1	4,000	P	S	0	1							
1	9	2	P	1	9	2	4,000	P	S	0	1							
1	9	3	P	1	9	4	4,000	P	S	0	1							
1	9	4	P	1	9	6	4,000	P	S	0	1							
1	9	5	P	1	9	7	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
1	9	6	P	1	9	8	4,000	P	S	0	1							
1	9	7	P	1	9	9	4,000	P	S	0	1							
1	9	8	P	2	0	1	4,000	P	S	0	1							
1	9	9	P	2	0	2	4,000	P	S	0	1							
2	0	0	P	2	0	3	4,000	P	S	0	1							
2	0	1	P	2	0	4	4,000	P	S	0	1							
2	0	2	P	2	0	5	4,000	P	S	0	1							
2	0	3	U	0	0	1	4,000	P	S	0	1							
2	0	4	U	0	0	2	4,000	P	S	0	1							
2	0	5	U	0	0	3	4,000	P	S	0	1							
2	0	6	U	0	0	4	4,000	P	S	0	1							
2	0	7	U	0	0	5	4,000	P	S	0	1							
2	0	8	U	0	0	6	4,000	P	S	0	1							
2	0	9	U	0	0	7	4,000	P	S	0	1							
2	1	0	U	0	0	8	4,000	P	S	0	1							
2	1	1	U	0	0	9	4,000	P	S	0	1							
2	1	2	U	0	1	0	4,000	P	S	0	1							
2	1	3	U	0	1	1	4,000	P	S	0	1							
2	1	4	U	0	1	2	4,000	P	S	0	1							
2	1	5	U	0	1	4	4,000	P	S	0	1							
2	1	6	U	0	1	5	4,000	P	S	0	1							
2	1	7	U	0	1	6	4,000	P	S	0	1							
2	1	8	U	0	1	7	4,000	P	S	0	1							
2	1	9	U	0	1	8	4,000	P	S	0	1							
2	2	0	U	0	1	9	4,000	P	S	0	1							
2	2	1	U	0	2	0	4,000	P	S	0	1							
2	2	2	U	0	2	1	4,000	P	S	0	1							
2	2	3	U	0	2	2	4,000	P	S	0	1							
2	2	4	U	0	2	3	4,000	P	S	0	1							
2	2	5	U	0	2	4	4,000	P	S	0	1							
2	2	6	U	0	2	5	4,000	P	S	0	1							
2	2	7	U	0	2	6	4,000	P	S	0	1							
2	2	8	U	0	2	7	4,000	P	S	0	1							
2	2	9	U	0	2	8	4,000	P	S	0	1							
2	3	0	U	0	2	9	4,000	P	S	0	1							
2	3	1	U	0	3	0	4,000	P	S	0	1							
2	3	2	U	0	3	1	4,000	P	S	0	1							
2	3	3	U	0	3	2	4,000	P	S	0	1							
2	3	4	U	0	3	3	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)	D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)					
235	U034	4,000	P	S01	
236	U035	4,000	P	S01	
237	U036	4,000	P	S01	
238	U037	4,000	P	S01	
239	U038	4,000	P	S01	
240	U039	4,000	P	S01	
241	U041	4,000	P	S01	
242	U042	4,000	P	S01	
243	U043	4,000	P	S01	
244	U044	4,000	P	S01	
245	U045	4,000	P	S01	
246	U046	4,000	P	S01	
247	U047	4,000	P	S01	
248	U048	4,000	P	S01	
249	U049	4,000	P	S01	
250	U050	4,000	P	S01	
251	U051	4,000	P	S01	
252	U052	4,000	P	S01	
253	U053	4,000	P	S01	
254	U055	4,000	P	S01	
255	U056	4,000	P	S01	
256	U057	4,000	P	S01	
257	U058	4,000	P	S01	
258	U059	4,000	P	S01	
259	U060	4,000	P	S01	
260	U061	4,000	P	S01	
261	U062	4,000	P	S01	
262	U063	4,000	P	S01	
263	U064	4,000	P	S01	
264	U066	4,000	P	S01	
265	U067	4,000	P	S01	
266	U068	4,000	P	S01	
267	U069	4,000	P	S01	
268	U070	4,000	P	S01	
269	U071	4,000	P	S01	
270	U072	4,000	P	S01	
271	U073	4,000	P	S01	
272	U074	4,000	P	S01	
273	U075	4,000	P	S01	

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
2	7	4	U	0	7	6	4,000	P	S	0	1							
2	7	5	U	0	7	7	4,000	P	S	0	1							
2	7	6	U	0	7	8	4,000	P	S	0	1							
2	7	7	U	0	7	9	4,000	P	S	0	1							
2	7	8	U	0	8	0	4,000	P	S	0	1							
2	7	9	U	0	8	1	4,000	P	S	0	1							
2	8	0	U	0	8	2	4,000	P	S	0	1							
2	8	1	U	0	8	3	4,000	P	S	0	1							
2	8	2	U	0	8	4	4,000	P	S	0	1							
2	8	3	U	0	8	5	4,000	P	S	0	1							
2	8	4	U	0	8	6	4,000	P	S	0	1							
2	8	5	U	0	8	7	4,000	P	S	0	1							
2	8	6	U	0	8	8	4,000	P	S	0	1							
2	8	7	U	0	8	9	4,000	P	S	0	1							
2	8	8	U	0	9	0	4,000	P	S	0	1							
2	8	9	U	0	9	1	4,000	P	S	0	1							
2	9	0	U	0	9	2	4,000	P	S	0	1							
2	9	1	U	0	9	3	4,000	P	S	0	1							
2	9	2	U	0	9	4	4,000	P	S	0	1							
2	9	3	U	0	9	5	4,000	P	S	0	1							
2	9	4	U	0	9	6	4,000	P	S	0	1							
2	9	5	U	0	9	7	4,000	P	S	0	1							
2	9	6	U	0	9	8	4,000	P	S	0	1							
2	9	7	U	0	9	9	4,000	P	S	0	1							
2	9	8	U	1	0	1	4,000	P	S	0	1							
2	9	9	U	1	0	2	4,000	P	S	0	1							
3	0	0	U	1	0	3	4,000	P	S	0	1							
3	0	1	U	1	0	5	4,000	P	S	0	1							
3	0	2	U	1	0	6	4,000	P	S	0	1							
3	0	3	U	1	0	7	4,000	P	S	0	1							
3	0	4	U	1	0	8	4,000	P	S	0	1							
3	0	5	U	1	0	9	4,000	P	S	0	1							
3	0	6	U	1	1	0	4,000	P	S	0	1							
3	0	7	U	1	1	1	4,000	P	S	0	1							
3	0	8	U	1	1	2	4,000	P	S	0	1							
3	0	9	U	1	1	3	4,000	P	S	0	1							
3	1	0	U	1	1	4	4,000	P	S	0	1							
3	1	1	U	1	1	5	4,000	P	S	0	1							
3	1	2	U	1	1	6	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
3	1	3	U	1	1	7	4,000	P	S	0	1							
3	1	4	U	1	1	8	4,000	P	S	0	1							
3	1	5	U	1	1	9	4,000	P	S	0	1							
3	1	6	U	1	2	0	4,000	P	S	0	1							
3	1	7	U	1	2	1	4,000	P	S	0	1							
3	1	8	U	1	2	2	4,000	P	S	0	1							
3	1	9	U	1	2	3	4,000	P	S	0	1							
3	2	0	U	1	2	4	4,000	P	S	0	1							
3	2	1	U	1	2	5	4,000	P	S	0	1							
3	2	2	U	1	2	6	4,000	P	S	0	1							
3	2	3	U	1	2	7	4,000	P	S	0	1							
3	2	4	U	1	2	8	4,000	P	S	0	1							
3	2	5	U	1	2	9	4,000	P	S	0	1							
3	2	6	U	1	3	0	4,000	P	S	0	1							
3	2	7	U	1	3	1	4,000	P	S	0	1							
3	2	8	U	1	3	2	4,000	P	S	0	1							
3	2	9	U	1	3	3	4,000	P	S	0	1							
3	3	0	U	1	3	4	4,000	P	S	0	1							
3	3	1	U	1	3	5	4,000	P	S	0	1							
3	3	2	U	1	3	6	4,000	P	S	0	1							
3	3	3	U	1	3	7	4,000	P	S	0	1							
3	3	4	U	1	3	8	4,000	P	S	0	1							
3	3	5	U	1	4	0	4,000	P	S	0	1							
3	3	6	U	1	4	1	4,000	P	S	0	1							
3	3	7	U	1	4	2	4,000	P	S	0	1							
3	3	8	U	1	4	3	4,000	P	S	0	1							
3	3	9	U	1	4	4	4,000	P	S	0	1							
3	4	0	U	1	4	5	4,000	P	S	0	1							
3	4	1	U	1	4	6	4,000	P	S	0	1							
3	4	2	U	1	4	7	4,000	P	S	0	1							
3	4	3	U	1	4	8	4,000	P	S	0	1							
3	4	4	U	1	4	9	4,000	P	S	0	1							
3	4	5	U	1	5	0	4,000	P	S	0	1							
3	4	6	U	1	5	1	4,000	P	S	0	1							
3	4	7	U	1	5	2	4,000	P	S	0	1							
3	4	8	U	1	5	3	4,000	P	S	0	1							
3	4	9	U	1	5	4	4,000	P	S	0	1							
3	5	0	U	1	5	5	4,000	P	S	0	1							
3	5	1	U	1	5	6	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
3	5	2	U	1	5	7	4,000	P	S	0	1							
3	5	3	U	1	5	8	4,000	P	S	0	1							
3	5	4	U	1	5	9	4,000	P	S	0	1							
3	5	5	U	1	6	0	4,000	P	S	0	1							
3	5	6	U	1	6	1	4,000	P	S	0	1							
3	5	7	U	1	6	2	4,000	P	S	0	1							
3	5	8	U	1	6	3	4,000	P	S	0	1							
3	5	9	U	1	6	4	4,000	P	S	0	1							
3	6	0	U	1	6	5	4,000	P	S	0	1							
3	6	1	U	1	6	6	4,000	P	S	0	1							
3	6	2	U	1	6	7	4,000	P	S	0	1							
3	6	3	U	1	6	8	4,000	P	S	0	1							
3	6	4	U	1	6	9	4,000	P	S	0	1							
3	6	5	U	1	7	0	4,000	P	S	0	1							
3	6	6	U	1	7	1	4,000	P	S	0	1							
3	6	7	U	1	7	2	4,000	P	S	0	1							
3	6	8	U	1	7	3	4,000	P	S	0	1							
3	6	9	U	1	7	4	4,000	P	S	0	1							
3	7	0	U	1	7	6	4,000	P	S	0	1							
3	7	1	U	1	7	7	4,000	P	S	0	1							
3	7	2	U	1	7	8	4,000	P	S	0	1							
3	7	3	U	1	7	9	4,000	P	S	0	1							
3	7	4	U	1	8	0	4,000	P	S	0	1							
3	7	5	U	1	8	1	4,000	P	S	0	1							
3	7	6	U	1	8	2	4,000	P	S	0	1							
3	7	7	U	1	8	3	4,000	P	S	0	1							
3	7	8	U	1	8	4	4,000	P	S	0	1							
3	7	9	U	1	8	5	4,000	P	S	0	1							
3	8	0	U	1	8	6	4,000	P	S	0	1							
3	8	1	U	1	8	7	4,000	P	S	0	1							
3	8	2	U	1	8	8	4,000	P	S	0	1							
3	8	3	U	1	8	9	4,000	P	S	0	1							
3	8	4	U	1	9	0	4,000	P	S	0	1							
3	8	5	U	1	9	1	4,000	P	S	0	1							
3	8	6	U	1	9	2	4,000	P	S	0	1							
3	8	7	U	1	9	3	4,000	P	S	0	1							
3	8	8	U	1	9	4	4,000	P	S	0	1							
3	8	9	U	1	9	6	4,000	P	S	0	1							
3	9	0	U	1	9	7	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
3	9	1	U	2	0	0	4,000	P	S	0	1							
3	9	2	U	2	0	1	4,000	P	S	0	1							
3	9	3	U	2	0	2	4,000	P	S	0	1							
3	9	4	U	2	0	3	4,000	P	S	0	1							
3	9	5	U	2	0	4	4,000	P	S	0	1							
3	9	6	U	2	0	5	4,000	P	S	0	1							
3	9	7	U	2	0	6	4,000	P	S	0	1							
3	9	8	U	2	0	7	4,000	P	S	0	1							
3	9	9	U	2	0	8	4,000	P	S	0	1							
4	0	0	U	2	0	9	4,000	P	S	0	1							
4	0	1	U	2	1	0	4,000	P	S	0	1							
4	0	2	U	2	1	1	4,000	P	S	0	1							
4	0	3	U	2	1	3	4,000	P	S	0	1							
4	0	4	U	2	1	4	4,000	P	S	0	1							
4	0	5	U	2	1	5	4,000	P	S	0	1							
4	0	6	U	2	1	6	4,000	P	S	0	1							
4	0	7	U	2	1	7	4,000	P	S	0	1							
4	0	8	U	2	1	8	4,000	P	S	0	1							
4	0	9	U	2	1	9	4,000	P	S	0	1							
4	1	0	U	2	2	0	7,000	P	S	0	1							
4	1	1	U	2	2	1	4,000	P	S	0	1							
4	1	2	U	2	2	2	4,000	P	S	0	1							
4	1	3	U	2	2	3	4,000	P	S	0	1							
4	1	4	U	2	2	5	4,000	P	S	0	1							
4	1	5	U	2	2	6	7,000	P	S	0	1							
4	1	6	U	2	2	7	4,000	P	S	0	1							
4	1	7	U	2	2	8	7,000	P	S	0	1							
4	1	8	U	2	3	4	4,000	P	S	0	1							
4	1	9	U	2	3	5	4,000	P	S	0	1							
4	2	0	U	2	3	6	4,000	P	S	0	1							
4	2	1	U	2	3	7	4,000	P	S	0	1							
4	2	2	U	2	3	8	4,000	P	S	0	1							
4	2	3	U	2	3	9	7,000	P	S	0	1							
4	2	4	U	2	4	0	4,000	P	S	0	1							
4	2	5	U	2	4	3	4,000	P	S	0	1							
4	2	6	U	2	4	4	4,000	P	S	0	1							
4	2	7	U	2	4	6	4,000	P	S	0	1							
4	2	8	U	2	4	7	4,000	P	S	0	1							
4	2	9	U	2	4	8	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area L (Continued)																		
4	3	0	U	2	4	9	4,000	P	S	0	1							
4	3	1	U	2	7	1	4,000	P	S	0	1							
4	3	2	U	2	7	8	4,000	P	S	0	1							
4	3	3	U	2	7	9	4,000	P	S	0	1							
4	3	4	U	2	8	0	4,000	P	S	0	1							
4	3	5	U	3	2	8	4,000	P	S	0	1							
4	3	6	U	3	5	3	4,000	P	S	0	1							
4	3	7	U	3	5	9	4,000	P	S	0	1							
4	3	8	U	3	6	4	4,000	P	S	0	1							
4	3	9	U	3	6	7	4,000	P	S	0	1							
4	4	0	U	3	7	2	4,000	P	S	0	1							
4	4	1	U	3	7	3	4,000	P	S	0	1							
4	4	2	U	3	8	7	4,000	P	S	0	1							
4	4	3	U	3	8	9	4,000	P	S	0	1							
4	4	4	U	3	9	4	4,000	P	S	0	1							
4	4	5	U	3	9	5	4,000	P	S	0	1							
4	4	6	U	4	0	4	4,000	P	S	0	1							
4	4	7	U	4	0	9	4,000	P	S	0	1							
4	4	8	U	4	1	0	4,000	P	S	0	1							
4	4	9	U	4	1	1	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Material Disposal Area L (Impoundments B and D/Shafts 1, 13-17, and 19-34)[a,b]																	
	1	D	0	0	1	82,000	P	D	8	0							
	2	D	0	0	2	17,200	P	D	8	0							
	3	D	0	0	3	750	P	D	8	0							
	4	D	0	0	4	1,700	P	D	8	0							
	5	D	0	0	6	650	P	D	8	0							
	6	D	0	0	7	1,000	P	D	8	0							
	7	D	0	0	8	1,250	P	D	8	0							
	8	D	0	0	9	2,200	P	D	8	0							
	9	D	0	1	1	100	P	D	8	0							
1	0	D	0	1	6	600	P	D	8	0							
1	1	F	0	0	2	1,400	P	D	8	0							
1	2	P	0	1	5	4,000	P	D	8	0							
1	3	P	0	8	7	15	P	D	8	0							
1	4	U	0	0	2	5,000	P	D	8	0							
1	5	U	0	1	9	200	P	D	8	0							
1	6	U	0	6	9	500	P	D	8	0							
1	7	U	0	8	0	2,000	P	D	8	0							
1	8	U	1	2	2	550	P	D	8	0							
1	9	U	1	5	1	35	P	D	8	0							
2	0	U	1	5	4	550	P	D	8	0							
2	1	U	1	5	9	300	P	D	8	0							
2	2	U	1	6	1	500	P	D	8	0							
2	3	U	1	6	5	140	P	D	8	0							
2	4	U	2	2	0	620	P	D	8	0							
2	5	U	2	2	6	10,000	P	D	8	0							
2	6	U	2	2	8	4,400	P	D	8	0							
2	7	U	2	3	9	345	P	D	8	0							
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

[a] Based on historical data from waste operations personnel.

[b] To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G																	
	1	D	0	0	1	330,000	P	S	0	1							
	2	D	0	0	2	395,000	P	S	0	1							
	3	D	0	0	3	185,000	P	S	0	1							
	4	D	0	0	4	2,525,000	P	S	0	1							
	5	D	0	0	5	82,000	P	S	0	1							
	6	D	0	0	6	515,000	P	S	0	1							
	7	D	0	0	7	3,775,000	P	S	0	1							
	8	D	0	0	8	5,400,000	P	S	0	1							
	9	D	0	0	9	100,000	P	S	0	1							
1	0	D	0	1	0	45,000	P	S	0	1							
1	1	D	0	1	1	2,540,000	P	S	0	1							
1	2	D	0	1	2	18,000	P	S	0	1							
1	3	D	0	1	3	4,000	P	S	0	1							
1	4	D	0	1	4	4,000	P	S	0	1							
1	5	D	0	1	5	7,000	P	S	0	1							
1	6	D	0	1	6	4,000	P	S	0	1							
1	7	D	0	1	7	4,000	P	S	0	1							
1	8	D	0	1	8	30,000	P	S	0	1							
1	9	D	0	1	9	25,000	P	S	0	1							
2	0	D	0	2	0	30,000	P	S	0	1							
2	1	D	0	2	1	15,000	P	S	0	1							
2	2	D	0	2	2	33,000	P	S	0	1							
2	3	D	0	2	3	4,000	P	S	0	1							
2	4	D	0	2	4	4,000	P	S	0	1							
2	5	D	0	2	5	4,000	P	S	0	1							
2	6	D	0	2	6	4,000	P	S	0	1							
2	7	D	0	2	7	22,000	P	S	0	1							
2	8	D	0	2	8	40,000	P	S	0	1							
2	9	D	0	2	9	7,000	P	S	0	1							
3	0	D	0	3	0	30,000	P	S	0	1							
3	1	D	0	3	1	22,000	P	S	0	1							
3	2	D	0	3	2	29,000	P	S	0	1							
3	3	D	0	3	3	29,000	P	S	0	1							
3	4	D	0	3	4	29,000	P	S	0	1							
3	5	D	0	3	5	30,000	P	S	0	1							
3	6	D	0	3	6	19,000	P	S	0	1							
3	7	D	0	3	7	7,000	P	S	0	1							
3	8	D	0	3	8	14,000	P	S	0	1							
3	9	D	0	3	9	20,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																	
4	0	D	0	4	0	25,000	P	S	0	1							
4	1	D	0	4	1	17,000	P	S	0	1							
4	2	D	0	4	2	22,000	P	S	0	1							
4	3	D	0	4	3	25,000	P	S	0	1							
4	4	F	0	0	1	6,410,000	P	S	0	1							
4	5	F	0	0	2	3,450,000	P	S	0	1							
4	6	F	0	0	3	2,850,000	P	S	0	1							
4	7	F	0	0	4	35,000	P	S	0	1							
4	8	F	0	0	5	3,250,000	P	S	0	1							
4	9	F	0	0	6	7,000	P	S	0	1							
5	0	F	0	0	7	18,000	P	S	0	1							
5	1	F	0	0	8	7,000	P	S	0	1							
5	2	F	0	0	9	8,000	P	S	0	1							
5	3	F	0	1	0	4,000	P	S	0	1							
5	4	F	0	1	1	4,000	P	S	0	1							
5	5	F	0	1	2	4,000	P	S	0	1							
5	6	F	0	1	9	4,000	P	S	0	1							
5	7	F	0	2	0	4,000	P	S	0	1							
5	8	F	0	2	1	4,000	P	S	0	1							
5	9	F	0	2	2	4,000	P	S	0	1							
6	0	F	0	2	3	4,000	P	S	0	1							
6	1	F	0	2	4	4,000	P	S	0	1							
6	2	F	0	2	5	4,000	P	S	0	1							
6	3	F	0	2	6	4,000	P	S	0	1							
6	4	F	0	2	7	4,000	P	S	0	1							
6	5	F	0	2	8	4,000	P	S	0	1							
6	6	F	0	3	2	4,000	P	S	0	1							
6	7	F	0	3	4	4,000	P	S	0	1							
6	8	F	0	3	5	4,000	P	S	0	1							
6	9	F	0	3	7	4,000	P	S	0	1							
7	0	F	0	3	8	4,000	P	S	0	1							
7	1	F	0	3	9	4,000	P	S	0	1							
7	2	K	0	4	4	22,000	P	S	0	1							
7	3	K	0	4	5	4,000	P	S	0	1							
7	4	K	0	4	6	4,000	P	S	0	1							
7	5	K	0	4	7	4,000	P	S	0	1							
7	6	K	0	8	4	500	P	S	0	1							
7	7	K	1	0	1	500	P	S	0	1							
7	8	K	1	0	2	500	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
	7	9	P	0	0	1	4,000	P	S	0	1							
	8	0	P	0	0	2	4,000	P	S	0	1							
	8	1	P	0	0	3	4,100	P	S	0	1							
	8	2	P	0	0	4	4,000	P	S	0	1							
	8	3	P	0	0	5	4,000	P	S	0	1							
	8	4	P	0	0	6	4,000	P	S	0	1							
	8	5	P	0	0	7	4,000	P	S	0	1							
	8	6	P	0	0	8	4,000	P	S	0	1							
	8	7	P	0	0	9	4,000	P	S	0	1							
	8	8	P	0	1	0	4,000	P	S	0	1							
	8	9	P	0	1	1	4,000	P	S	0	1							
	9	0	P	0	1	2	4,100	P	S	0	1							
	9	1	P	0	1	3	4,000	P	S	0	1							
	9	2	P	0	1	4	4,000	P	S	0	1							
	9	3	P	0	1	5	4,100	P	S	0	1							
	9	4	P	0	1	6	4,000	P	S	0	1							
	9	5	P	0	1	7	4,000	P	S	0	1							
	9	6	P	0	1	8	4,000	P	S	0	1							
	9	7	P	0	2	0	4,000	P	S	0	1							
	9	8	P	0	2	1	4,000	P	S	0	1							
	9	9	P	0	2	2	4,000	P	S	0	1							
1	0	0	P	0	2	3	4,000	P	S	0	1							
1	0	1	P	0	2	4	4,000	P	S	0	1							
1	0	2	P	0	2	6	4,000	P	S	0	1							
1	0	3	P	0	2	7	4,000	P	S	0	1							
1	0	4	P	0	2	8	4,000	P	S	0	1							
1	0	5	P	0	2	9	4,100	P	S	0	1							
1	0	6	P	0	3	0	4,100	P	S	0	1							
1	0	7	P	0	3	1	4,100	P	S	0	1							
1	0	8	P	0	3	3	4,000	P	S	0	1							
1	0	9	P	0	3	4	4,000	P	S	0	1							
1	1	0	P	0	3	6	4,000	P	S	0	1							
1	1	1	P	0	3	7	4,000	P	S	0	1							
1	1	2	P	0	3	8	4,100	P	S	0	1							
1	1	3	P	0	3	9	4,000	P	S	0	1							
1	1	4	P	0	4	0	4,000	P	S	0	1							
1	1	5	P	0	4	1	4,000	P	S	0	1							
1	1	6	P	0	4	2	4,000	P	S	0	1							
1	1	7	P	0	4	3	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
1	1	8	P	0	4	4	4,000	P	S	0	1							
1	1	9	P	0	4	5	4,000	P	S	0	1							
1	2	0	P	0	4	6	4,000	P	S	0	1							
1	2	1	P	0	4	7	4,000	P	S	0	1							
1	2	2	P	0	4	8	4,000	P	S	0	1							
1	2	3	P	0	4	9	4,000	P	S	0	1							
1	2	4	P	0	5	0	4,000	P	S	0	1							
1	2	5	P	0	5	1	4,000	P	S	0	1							
1	2	6	P	0	5	4	4,000	P	S	0	1							
1	2	7	P	0	5	6	4,100	P	S	0	1							
1	2	8	P	0	5	7	4,000	P	S	0	1							
1	2	9	P	0	5	8	4,000	P	S	0	1							
1	3	0	P	0	5	9	4,000	P	S	0	1							
1	3	1	P	0	6	0	4,000	P	S	0	1							
1	3	2	P	0	6	2	4,000	P	S	0	1							
1	3	3	P	0	6	3	4,100	P	S	0	1							
1	3	4	P	0	6	4	4,000	P	S	0	1							
1	3	5	P	0	6	5	4,000	P	S	0	1							
1	3	6	P	0	6	6	4,000	P	S	0	1							
1	3	7	P	0	6	7	4,000	P	S	0	1							
1	3	8	P	0	6	8	4,100	P	S	0	1							
1	3	9	P	0	6	9	4,000	P	S	0	1							
1	4	0	P	0	7	0	4,000	P	S	0	1							
1	4	1	P	0	7	1	4,000	P	S	0	1							
1	4	2	P	0	7	2	4,000	P	S	0	1							
1	4	3	P	0	7	3	4,100	P	S	0	1							
1	4	4	P	0	7	4	4,000	P	S	0	1							
1	4	5	P	0	7	5	4,000	P	S	0	1							
1	4	6	P	0	7	6	4,000	P	S	0	1							
1	4	7	P	0	7	7	4,000	P	S	0	1							
1	4	8	P	0	7	8	4,000	P	S	0	1							
1	4	9	P	0	8	1	4,000	P	S	0	1							
1	5	0	P	0	8	2	4,000	P	S	0	1							
1	5	1	P	0	8	4	4,000	P	S	0	1							
1	5	2	P	0	8	5	4,000	P	S	0	1							
1	5	3	P	0	8	7	4,000	P	S	0	1							
1	5	4	P	0	8	8	4,000	P	S	0	1							
1	5	5	P	0	8	9	4,000	P	S	0	1							
1	5	6	P	0	9	2	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
1	5	7	P	0	9	3	4,000	P	S	0	1							
1	5	8	P	0	9	4	4,000	P	S	0	1							
1	5	9	P	0	9	5	4,100	P	S	0	1							
1	6	0	P	0	9	6	4,100	P	S	0	1							
1	6	1	P	0	9	7	4,000	P	S	0	1							
1	6	2	P	0	9	8	4,100	P	S	0	1							
1	6	3	P	0	9	9	4,000	P	S	0	1							
1	6	4	P	1	0	1	4,000	P	S	0	1							
1	6	5	P	1	0	2	4,000	P	S	0	1							
1	6	6	P	1	0	3	4,000	P	S	0	1							
1	6	7	P	1	0	4	4,000	P	S	0	1							
1	6	8	P	1	0	5	4,000	P	S	0	1							
1	6	9	P	1	0	6	4,100	P	S	0	1							
1	7	0	P	1	0	8	4,000	P	S	0	1							
1	7	1	P	1	0	9	4,000	P	S	0	1							
1	7	2	P	1	1	0	4,000	P	S	0	1							
1	7	3	P	1	1	1	4,000	P	S	0	1							
1	7	4	P	1	1	2	4,000	P	S	0	1							
1	7	5	P	1	1	3	4,000	P	S	0	1							
1	7	6	P	1	1	4	4,000	P	S	0	1							
1	7	7	P	1	1	5	4,000	P	S	0	1							
1	7	8	P	1	1	6	4,000	P	S	0	1							
1	7	9	P	1	1	8	4,000	P	S	0	1							
1	8	0	P	1	1	9	4,000	P	S	0	1							
1	8	1	P	1	2	0	4,100	P	S	0	1							
1	8	2	P	1	2	1	4,000	P	S	0	1							
1	8	3	P	1	2	2	4,000	P	S	0	1							
1	8	4	P	1	2	3	4,000	P	S	0	1							
1	8	5	P	1	2	7	4,000	P	S	0	1							
1	8	6	P	1	2	8	4,000	P	S	0	1							
1	8	7	P	1	8	5	4,000	P	S	0	1							
1	8	8	P	1	8	8	4,000	P	S	0	1							
1	8	9	P	1	8	9	4,000	P	S	0	1							
1	9	0	P	1	9	0	4,000	P	S	0	1							
1	9	1	P	1	9	1	4,000	P	S	0	1							
1	9	2	P	1	9	2	4,000	P	S	0	1							
1	9	3	P	1	9	4	4,000	P	S	0	1							
1	9	4	P	1	9	6	4,000	P	S	0	1							
1	9	5	P	1	9	7	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
1	9	6	P	1	9	8	4,000	P	S	0	1							
1	9	7	P	1	9	9	4,000	P	S	0	1							
1	9	8	P	2	0	1	4,000	P	S	0	1							
1	9	9	P	2	0	2	4,000	P	S	0	1							
2	0	0	P	2	0	3	4,000	P	S	0	1							
2	0	1	P	2	0	4	4,000	P	S	0	1							
2	0	2	P	2	0	5	4,000	P	S	0	1							
2	0	3	U	0	0	1	4,100	P	S	0	1							
2	0	4	U	0	0	2	7,100	P	S	0	1							
2	0	5	U	0	0	3	4,100	P	S	0	1							
2	0	6	U	0	0	4	4,000	P	S	0	1							
2	0	7	U	0	0	5	4,000	P	S	0	1							
2	0	8	U	0	0	6	4,000	P	S	0	1							
2	0	9	U	0	0	7	4,000	P	S	0	1							
2	1	0	U	0	0	8	4,000	P	S	0	1							
2	1	1	U	0	0	9	4,000	P	S	0	1							
2	1	2	U	0	1	0	4,000	P	S	0	1							
2	1	3	U	0	1	1	4,000	P	S	0	1							
2	1	4	U	0	1	2	4,100	P	S	0	1							
2	1	5	U	0	1	4	4,000	P	S	0	1							
2	1	6	U	0	1	5	4,000	P	S	0	1							
2	1	7	U	0	1	6	4,000	P	S	0	1							
2	1	8	U	0	1	7	4,000	P	S	0	1							
2	1	9	U	0	1	8	4,000	P	S	0	1							
2	2	0	U	0	1	9	4,100	P	S	0	1							
2	2	1	U	0	2	0	4,000	P	S	0	1							
2	2	2	U	0	2	1	4,000	P	S	0	1							
2	2	3	U	0	2	2	4,100	P	S	0	1							
2	2	4	U	0	2	3	4,000	P	S	0	1							
2	2	5	U	0	2	4	4,000	P	S	0	1							
2	2	6	U	0	2	5	4,000	P	S	0	1							
2	2	7	U	0	2	6	4,000	P	S	0	1							
2	2	8	U	0	2	7	4,000	P	S	0	1							
2	2	9	U	0	2	8	4,000	P	S	0	1							
2	3	0	U	0	2	9	4,100	P	S	0	1							
2	3	1	U	0	3	0	4,000	P	S	0	1							
2	3	2	U	0	3	1	4,100	P	S	0	1							
2	3	3	U	0	3	2	4,000	P	S	0	1							
2	3	4	U	0	3	3	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)	D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)					
235	U034	4,000	P	S01	
236	U035	4,000	P	S01	
237	U036	4,000	P	S01	
238	U037	4,100	P	S01	
239	U038	4,000	P	S01	
240	U039	4,000	P	S01	
241	U041	4,000	P	S01	
242	U042	4,000	P	S01	
243	U043	4,000	P	S01	
244	U044	4,100	P	S01	
245	U045	4,100	P	S01	
246	U046	4,000	P	S01	
247	U047	4,000	P	S01	
248	U048	4,000	P	S01	
249	U049	4,000	P	S01	
250	U050	4,000	P	S01	
251	U051	4,000	P	S01	
252	U052	4,100	P	S01	
253	U053	4,000	P	S01	
254	U055	4,000	P	S01	
255	U056	4,100	P	S01	
256	U057	4,100	P	S01	
257	U058	4,000	P	S01	
258	U059	4,000	P	S01	
259	U060	4,000	P	S01	
260	U061	4,000	P	S01	
261	U062	4,000	P	S01	
262	U063	4,000	P	S01	
263	U064	4,000	P	S01	
264	U066	4,000	P	S01	
265	U067	4,000	P	S01	
266	U068	4,000	P	S01	
267	U069	4,000	P	S01	
268	U070	4,000	P	S01	
269	U071	4,000	P	S01	
270	U072	4,000	P	S01	
271	U073	4,000	P	S01	
272	U074	4,000	P	S01	
273	U075	4,100	P	S01	

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)	D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)					
274	U076	4,000	P	S01	
275	U077	4,100	P	S01	
276	U078	4,000	P	S01	
277	U079	4,000	P	S01	
278	U080	12,000	P	S01	
279	U081	4,000	P	S01	
280	U082	4,000	P	S01	
281	U083	4,000	P	S01	
282	U084	4,000	P	S01	
283	U085	4,000	P	S01	
284	U086	4,000	P	S01	
285	U087	4,000	P	S01	
286	U088	4,000	P	S01	
287	U089	4,000	P	S01	
288	U090	4,000	P	S01	
289	U091	4,000	P	S01	
290	U092	4,000	P	S01	
291	U093	4,000	P	S01	
292	U094	4,000	P	S01	
293	U095	4,000	P	S01	
294	U096	4,000	P	S01	
295	U097	4,000	P	S01	
296	U098	4,000	P	S01	
297	U099	4,000	P	S01	
298	U101	4,000	P	S01	
299	U102	4,000	P	S01	
300	U103	4,000	P	S01	
301	U105	4,000	P	S01	
302	U106	4,000	P	S01	
303	U107	4,000	P	S01	
304	U108	4,100	P	S01	
305	U109	4,000	P	S01	
306	U110	4,000	P	S01	
307	U111	4,000	P	S01	
308	U112	4,100	P	S01	
309	U113	4,000	P	S01	
310	U114	4,000	P	S01	
311	U115	4,100	P	S01	
312	U116	4,000	P	S01	

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
3	1	3	U	1	1	7	4,100	P	S	0	1							
3	1	4	U	1	1	8	4,000	P	S	0	1							
3	1	5	U	1	1	9	4,000	P	S	0	1							
3	1	6	U	1	2	0	4,000	P	S	0	1							
3	1	7	U	1	2	1	4,100	P	S	0	1							
3	1	8	U	1	2	2	7,100	P	S	0	1							
3	1	9	U	1	2	3	4,100	P	S	0	1							
3	2	0	U	1	2	4	4,000	P	S	0	1							
3	2	1	U	1	2	5	4,000	P	S	0	1							
3	2	2	U	1	2	6	4,000	P	S	0	1							
3	2	3	U	1	2	7	4,000	P	S	0	1							
3	2	4	U	1	2	8	4,000	P	S	0	1							
3	2	5	U	1	2	9	4,000	P	S	0	1							
3	2	6	U	1	3	0	4,000	P	S	0	1							
3	2	7	U	1	3	1	4,100	P	S	0	1							
3	2	8	U	1	3	2	4,000	P	S	0	1							
3	2	9	U	1	3	3	4,100	P	S	0	1							
3	3	0	U	1	3	4	12,100	P	S	0	1							
3	3	1	U	1	3	5	4,100	P	S	0	1							
3	3	2	U	1	3	6	4,000	P	S	0	1							
3	3	3	U	1	3	7	4,000	P	S	0	1							
3	3	4	U	1	3	8	4,000	P	S	0	1							
3	3	5	U	1	4	0	4,100	P	S	0	1							
3	3	6	U	1	4	1	4,000	P	S	0	1							
3	3	7	U	1	4	2	4,000	P	S	0	1							
3	3	8	U	1	4	3	4,000	P	S	0	1							
3	3	9	U	1	4	4	4,100	P	S	0	1							
3	4	0	U	1	4	5	4,000	P	S	0	1							
3	4	1	U	1	4	6	4,000	P	S	0	1							
3	4	2	U	1	4	7	4,000	P	S	0	1							
3	4	3	U	1	4	8	4,000	P	S	0	1							
3	4	4	U	1	4	9	4,000	P	S	0	1							
3	4	5	U	1	5	0	4,000	P	S	0	1							
3	4	6	U	1	5	1	7,100	P	S	0	1							
3	4	7	U	1	5	2	4,000	P	S	0	1							
3	4	8	U	1	5	3	4,000	P	S	0	1							
3	4	9	U	1	5	4	4,100	P	S	0	1							
3	5	0	U	1	5	5	4,000	P	S	0	1							
3	5	1	U	1	5	6	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes *(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)*

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
3	5	2	U	1	5	7	4,000	P	S	0	1							
3	5	3	U	1	5	8	4,000	P	S	0	1							
3	5	4	U	1	5	9	4,100	P	S	0	1							
3	5	5	U	1	6	0	4,100	P	S	0	1							
3	5	6	U	1	6	1	4,100	P	S	0	1							
3	5	7	U	1	6	2	4,000	P	S	0	1							
3	5	8	U	1	6	3	4,000	P	S	0	1							
3	5	9	U	1	6	4	4,000	P	S	0	1							
3	6	0	U	1	6	5	4,100	P	S	0	1							
3	6	1	U	1	6	6	4,000	P	S	0	1							
3	6	2	U	1	6	7	4,000	P	S	0	1							
3	6	3	U	1	6	8	4,000	P	S	0	1							
3	6	4	U	1	6	9	4,100	P	S	0	1							
3	6	5	U	1	7	0	4,000	P	S	0	1							
3	6	6	U	1	7	1	4,000	P	S	0	1							
3	6	7	U	1	7	2	4,000	P	S	0	1							
3	6	8	U	1	7	3	4,000	P	S	0	1							
3	6	9	U	1	7	4	4,000	P	S	0	1							
3	7	0	U	1	7	6	4,000	P	S	0	1							
3	7	1	U	1	7	7	4,000	P	S	0	1							
3	7	2	U	1	7	8	4,000	P	S	0	1							
3	7	3	U	1	7	9	4,000	P	S	0	1							
3	7	4	U	1	8	0	4,000	P	S	0	1							
3	7	5	U	1	8	1	4,000	P	S	0	1							
3	7	6	U	1	8	2	4,000	P	S	0	1							
3	7	7	U	1	8	3	4,000	P	S	0	1							
3	7	8	U	1	8	4	4,000	P	S	0	1							
3	7	9	U	1	8	5	4,000	P	S	0	1							
3	8	0	U	1	8	6	4,000	P	S	0	1							
3	8	1	U	1	8	7	4,000	P	S	0	1							
3	8	2	U	1	8	8	4,100	P	S	0	1							
3	8	3	U	1	8	9	4,000	P	S	0	1							
3	8	4	U	1	9	0	4,100	P	S	0	1							
3	8	5	U	1	9	1	4,000	P	S	0	1							
3	8	6	U	1	9	2	4,000	P	S	0	1							
3	8	7	U	1	9	3	4,000	P	S	0	1							
3	8	8	U	1	9	4	4,000	P	S	0	1							
3	8	9	U	1	9	6	4,100	P	S	0	1							
3	9	0	U	1	9	7	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
3	9	1	U	2	0	0	4,000	P	S	0	1							
3	9	2	U	2	0	1	4,000	P	S	0	1							
3	9	3	U	2	0	2	4,000	P	S	0	1							
3	9	4	U	2	0	3	4,000	P	S	0	1							
3	9	5	U	2	0	4	4,100	P	S	0	1							
3	9	6	U	2	0	5	4,000	P	S	0	1							
3	9	7	U	2	0	6	4,000	P	S	0	1							
3	9	8	U	2	0	7	4,000	P	S	0	1							
3	9	9	U	2	0	8	4,000	P	S	0	1							
4	0	0	U	2	0	9	4,000	P	S	0	1							
4	0	1	U	2	1	0	4,100	P	S	0	1							
4	0	2	U	2	1	1	4,100	P	S	0	1							
4	0	3	U	2	1	3	4,100	P	S	0	1							
4	0	4	U	2	1	4	4,000	P	S	0	1							
4	0	5	U	2	1	5	4,000	P	S	0	1							
4	0	6	U	2	1	6	4,100	P	S	0	1							
4	0	7	U	2	1	7	4,000	P	S	0	1							
4	0	8	U	2	1	8	4,100	P	S	0	1							
4	0	9	U	2	1	9	4,100	P	S	0	1							
4	1	0	U	2	2	0	7,100	P	S	0	1							
4	1	1	U	2	2	1	4,000	P	S	0	1							
4	1	2	U	2	2	2	4,000	P	S	0	1							
4	1	3	U	2	2	3	4,000	P	S	0	1							
4	1	4	U	2	2	5	4,100	P	S	0	1							
4	1	5	U	2	2	6	7,100	P	S	0	1							
4	1	6	U	2	2	7	4,100	P	S	0	1							
4	1	7	U	2	2	8	7,100	P	S	0	1							
4	1	8	U	2	3	4	4,000	P	S	0	1							
4	1	9	U	2	3	5	4,000	P	S	0	1							
4	2	0	U	2	3	6	4,000	P	S	0	1							
4	2	1	U	2	3	7	4,000	P	S	0	1							
4	2	2	U	2	3	8	4,000	P	S	0	1							
4	2	3	U	2	3	9	7,100	P	S	0	1							
4	2	4	U	2	4	0	4,000	P	S	0	1							
4	2	5	U	2	4	3	4,000	P	S	0	1							
4	2	6	U	2	4	4	4,000	P	S	0	1							
4	2	7	U	2	4	6	4,100	P	S	0	1							
4	2	8	U	2	4	7	4,000	P	S	0	1							
4	2	9	U	2	4	8	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Area G (Continued)																		
4	3	0	U	2	4	9	4,000	P	S	0	1							
4	3	1	U	2	7	1	4,000	P	S	0	1							
4	3	2	U	2	7	8	4,000	P	S	0	1							
4	3	3	U	2	7	9	4,000	P	S	0	1							
4	3	4	U	2	8	0	4,000	P	S	0	1							
4	3	5	U	3	2	8	4,000	P	S	0	1							
4	3	6	U	3	5	3	4,000	P	S	0	1							
4	3	7	U	3	5	9	4,000	P	S	0	1							
4	3	8	U	3	6	4	4,000	P	S	0	1							
4	3	9	U	3	6	7	4,000	P	S	0	1							
4	4	0	U	3	7	2	4,000	P	S	0	1							
4	4	1	U	3	7	3	4,000	P	S	0	1							
4	4	2	U	3	8	7	4,000	P	S	0	1							
4	4	3	U	3	8	9	4,000	P	S	0	1							
4	4	4	U	3	9	4	4,000	P	S	0	1							
4	4	5	U	3	9	5	4,000	P	S	0	1							
4	4	6	U	4	0	4	4,000	P	S	0	1							
4	4	7	U	4	0	9	4,000	P	S	0	1							
4	4	8	U	4	1	0	4,000	P	S	0	1							
4	4	9	U	4	1	1	4,000	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Material Disposal Area G (Shaft 124 and Pit 29) [a, b]																	
	1	D	0	0	4	850	P	D	8	0							
	2	D	0	0	5	2,100	P	D	8	0							
	3	D	0	0	6	4,250	P	D	8	0							
	4	D	0	0	7	4,450	P	D	8	0							
	5	D	0	0	8	507,100	P	D	8	0							
	6	D	0	0	9	850	P	D	8	0							
	7	D	0	1	0	15	P	D	8	0							
	8	D	0	1	1	530	P	D	8	0							
	9																
1	0																
1	1																
1	2																
1	3																
1	4																
1	5																
1	6																
1	7																
1	8																
1	9																
2	0																
2	1																
2	2																
2	3																
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

[a] Based on total estimated hazardous waste chemical inventory from the TA-54 RFI Report, Los Alamos National Laboratory, Los Alamos, New Mexico, March 2000.

[b] To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West																	
	1	D	0	0	1	18,563	P	S	0	1							
	2	D	0	0	2	9,612	P	S	0	1							
	3	D	0	0	3	882	P	S	0	1							
	4	D	0	0	4	6,173	P	S	0	1							
	5	D	0	0	5	5,644	P	S	0	1							
	6	D	0	0	6	906,805	P	S	0	1							
	7	D	0	0	7	946,136	P	S	0	1							
	8	D	0	0	8	2,147,302	P	S	0	1							
	9	D	0	0	9	65,433	P	S	0	1							
1	0	D	0	1	0	6,790	P	S	0	1							
1	1	D	0	1	1	7,584	P	S	0	1							
1	2	D	0	1	2	9,000	P	S	0	1							
1	3	D	0	1	3	2,000	P	S	0	1							
1	4	D	0	1	4	2,000	P	S	0	1							
1	5	D	0	1	5	3,500	P	S	0	1							
1	6	D	0	1	6	2,000	P	S	0	1							
1	7	D	0	1	7	2,000	P	S	0	1							
1	8	D	0	1	8	353	P	S	0	1							
1	9	D	0	1	9	7,055	P	S	0	1							
2	0	D	0	2	0	15,000	P	S	0	1							
2	1	D	0	2	1	1,220	P	S	0	1							
2	2	D	0	2	2	1,676	P	S	0	1							
2	3	D	0	2	3	2,000	P	S	0	1							
2	4	D	0	2	4	2,000	P	S	0	1							
2	5	D	0	2	5	2,000	P	S	0	1							
2	6	D	0	2	6	2,000	P	S	0	1							
2	7	D	0	2	7	1,014	P	S	0	1							
2	8	D	0	2	8	289,600	P	S	0	1							
2	9	D	0	2	9	288,144	P	S	0	1							
3	0	D	0	3	0	6,525	P	S	0	1							
3	1	D	0	3	1	88	P	S	0	1							
3	2	D	0	3	2	4,145	P	S	0	1							
3	3	D	0	3	3	2,778	P	S	0	1							
3	4	D	0	3	4	1,455	P	S	0	1							
3	5	D	0	3	5	132	P	S	0	1							
3	6	D	0	3	6	441	P	S	0	1							
3	7	D	0	3	7	705	P	S	0	1							
3	8	D	0	3	8	88	P	S	0	1							
3	9	D	0	3	9	1,940	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																	
4	0	D	0	4	0	4,365	P	S	0	1							
4	1	D	0	4	1	88	P	S	0	1							
4	2	D	0	4	2	1,411	P	S	0	1							
4	3	D	0	4	3	529	P	S	0	1							
4	4	F	0	0	1	556,402	P	S	0	1							
4	5	F	0	0	2	72,003	P	S	0	1							
4	6	F	0	0	3	34,464	P	S	0	1							
4	7	F	0	0	4	2,160	P	S	0	1							
4	8	F	0	0	5	324,211	P	S	0	1							
4	9	F	0	0	6	3,500	P	S	0	1							
5	0	F	0	0	7	9,000	P	S	0	1							
5	1	F	0	0	8	3,500	P	S	0	1							
5	2	F	0	0	9	2,000	P	S	0	1							
5	3	F	0	1	0	2,000	P	S	0	1							
5	4	F	0	1	1	2,000	P	S	0	1							
5	5	F	0	1	2	2,000	P	S	0	1							
5	6	F	0	1	9	2,000	P	S	0	1							
5	7	F	0	2	0	2,000	P	S	0	1							
5	8	F	0	2	1	2,000	P	S	0	1							
5	9	F	0	2	2	2,000	P	S	0	1							
6	0	F	0	2	3	2,000	P	S	0	1							
6	1	F	0	2	4	2,000	P	S	0	1							
6	2	F	0	2	5	2,000	P	S	0	1							
6	3	F	0	2	6	2,000	P	S	0	1							
6	4	F	0	2	7	2,000	P	S	0	1							
6	5	F	0	2	8	2,000	P	S	0	1							
6	6	F	0	3	2	2,000	P	S	0	1							
6	7	F	0	3	4	2,000	P	S	0	1							
6	8	F	0	3	5	2,000	P	S	0	1							
6	9	F	0	3	7	2,000	P	S	0	1							
7	0	F	0	3	8	2,000	P	S	0	1							
7	1	F	0	3	9	2,000	P	S	0	1							
7	2	K	0	4	4	1,000	P	S	0	1							
7	3	K	0	4	5	2,000	P	S	0	1							
7	4	K	0	4	6	2,000	P	S	0	1							
7	5	K	0	4	7	2,000	P	S	0	1							
7	6	K	0	8	4	250	P	S	0	1							
7	7	K	1	0	1	250	P	S	0	1							
7	8	K	1	0	2	250	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
	7	9	P	0	0	1	44	P	S	0	1							
	8	0	P	0	0	2	44	P	S	0	1							
	8	1	P	0	0	3	44	P	S	0	1							
	8	2	P	0	0	4	44	P	S	0	1							
	8	3	P	0	0	5	44	P	S	0	1							
	8	4	P	0	0	6	44	P	S	0	1							
	8	5	P	0	0	7	44	P	S	0	1							
	8	6	P	0	0	8	44	P	S	0	1							
	8	7	P	0	0	9	44	P	S	0	1							
	8	8	P	0	1	0	44	P	S	0	1							
	8	9	P	0	1	1	44	P	S	0	1							
	9	0	P	0	1	2	44	P	S	0	1							
	9	1	P	0	1	3	44	P	S	0	1							
	9	2	P	0	1	4	44	P	S	0	1							
	9	3	P	0	1	5	44	P	S	0	1							
	9	4	P	0	1	6	44	P	S	0	1							
	9	5	P	0	1	7	44	P	S	0	1							
	9	6	P	0	1	8	44	P	S	0	1							
	9	7	P	0	2	0	44	P	S	0	1							
	9	8	P	0	2	1	44	P	S	0	1							
	9	9	P	0	2	2	44	P	S	0	1							
1	0	0	P	0	2	3	44	P	S	0	1							
1	0	1	P	0	2	4	44	P	S	0	1							
1	0	2	P	0	2	6	44	P	S	0	1							
1	0	3	P	0	2	7	44	P	S	0	1							
1	0	4	P	0	2	8	44	P	S	0	1							
1	0	5	P	0	2	9	44	P	S	0	1							
1	0	6	P	0	3	0	44	P	S	0	1							
1	0	7	P	0	3	1	44	P	S	0	1							
1	0	8	P	0	3	3	44	P	S	0	1							
1	0	9	P	0	3	4	44	P	S	0	1							
1	1	0	P	0	3	6	44	P	S	0	1							
1	1	1	P	0	3	7	44	P	S	0	1							
1	1	2	P	0	3	8	44	P	S	0	1							
1	1	3	P	0	3	9	44	P	S	0	1							
1	1	4	P	0	4	0	44	P	S	0	1							
1	1	5	P	0	4	1	44	P	S	0	1							
1	1	6	P	0	4	2	44	P	S	0	1							
1	1	7	P	0	4	3	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
1	1	8	P	0	4	4	44	P	S	0	1							
1	1	9	P	0	4	5	44	P	S	0	1							
1	2	0	P	0	4	6	44	P	S	0	1							
1	2	1	P	0	4	7	44	P	S	0	1							
1	2	2	P	0	4	8	44	P	S	0	1							
1	2	3	P	0	4	9	44	P	S	0	1							
1	2	4	P	0	5	0	44	P	S	0	1							
1	2	5	P	0	5	1	44	P	S	0	1							
1	2	6	P	0	5	4	44	P	S	0	1							
1	2	7	P	0	5	6	44	P	S	0	1							
1	2	8	P	0	5	7	44	P	S	0	1							
1	2	9	P	0	5	8	44	P	S	0	1							
1	3	0	P	0	5	9	44	P	S	0	1							
1	3	1	P	0	6	0	44	P	S	0	1							
1	3	2	P	0	6	2	44	P	S	0	1							
1	3	3	P	0	6	3	44	P	S	0	1							
1	3	4	P	0	6	4	44	P	S	0	1							
1	3	5	P	0	6	5	44	P	S	0	1							
1	3	6	P	0	6	6	44	P	S	0	1							
1	3	7	P	0	6	7	44	P	S	0	1							
1	3	8	P	0	6	8	44	P	S	0	1							
1	3	9	P	0	6	9	44	P	S	0	1							
1	4	0	P	0	7	0	44	P	S	0	1							
1	4	1	P	0	7	1	44	P	S	0	1							
1	4	2	P	0	7	2	44	P	S	0	1							
1	4	3	P	0	7	3	44	P	S	0	1							
1	4	4	P	0	7	4	44	P	S	0	1							
1	4	5	P	0	7	5	44	P	S	0	1							
1	4	6	P	0	7	6	44	P	S	0	1							
1	4	7	P	0	7	7	44	P	S	0	1							
1	4	8	P	0	7	8	44	P	S	0	1							
1	4	9	P	0	8	1	44	P	S	0	1							
1	5	0	P	0	8	2	44	P	S	0	1							
1	5	1	P	0	8	4	44	P	S	0	1							
1	5	2	P	0	8	5	44	P	S	0	1							
1	5	3	P	0	8	7	44	P	S	0	1							
1	5	4	P	0	8	8	44	P	S	0	1							
1	5	5	P	0	8	9	44	P	S	0	1							
1	5	6	P	0	9	2	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
1	5	7	P	0	9	3	44	P	S	0	1							
1	5	8	P	0	9	4	44	P	S	0	1							
1	5	9	P	0	9	5	44	P	S	0	1							
1	6	0	P	0	9	6	44	P	S	0	1							
1	6	1	P	0	9	7	44	P	S	0	1							
1	6	2	P	0	9	8	44	P	S	0	1							
1	6	3	P	0	9	9	44	P	S	0	1							
1	6	4	P	1	0	1	44	P	S	0	1							
1	6	5	P	1	0	2	44	P	S	0	1							
1	6	6	P	1	0	3	44	P	S	0	1							
1	6	7	P	1	0	4	44	P	S	0	1							
1	6	8	P	1	0	5	44	P	S	0	1							
1	6	9	P	1	0	6	44	P	S	0	1							
1	7	0	P	1	0	8	44	P	S	0	1							
1	7	1	P	1	0	9	44	P	S	0	1							
1	7	2	P	1	1	0	44	P	S	0	1							
1	7	3	P	1	1	1	44	P	S	0	1							
1	7	4	P	1	1	2	44	P	S	0	1							
1	7	5	P	1	1	3	44	P	S	0	1							
1	7	6	P	1	1	4	44	P	S	0	1							
1	7	7	P	1	1	5	44	P	S	0	1							
1	7	8	P	1	1	6	44	P	S	0	1							
1	7	9	P	1	1	8	44	P	S	0	1							
1	8	0	P	1	1	9	44	P	S	0	1							
1	8	1	P	1	2	0	44	P	S	0	1							
1	8	2	P	1	2	1	44	P	S	0	1							
1	8	3	P	1	2	2	44	P	S	0	1							
1	8	4	P	1	2	3	44	P	S	0	1							
1	8	5	P	1	2	7	44	P	S	0	1							
1	8	6	P	1	2	8	44	P	S	0	1							
1	8	7	P	1	8	5	44	P	S	0	1							
1	8	8	P	1	8	8	44	P	S	0	1							
1	8	9	P	1	8	9	44	P	S	0	1							
1	9	0	P	1	9	0	44	P	S	0	1							
1	9	1	P	1	9	1	44	P	S	0	1							
1	9	2	P	1	9	2	44	P	S	0	1							
1	9	3	P	1	9	4	44	P	S	0	1							
1	9	4	P	1	9	6	44	P	S	0	1							
1	9	5	P	1	9	7	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
1	9	6	P	1	9	8	44	P	S	0	1							
1	9	7	P	1	9	9	44	P	S	0	1							
1	9	8	P	2	0	1	44	P	S	0	1							
1	9	9	P	2	0	2	44	P	S	0	1							
2	0	0	P	2	0	3	44	P	S	0	1							
2	0	1	P	2	0	4	44	P	S	0	1							
2	0	2	P	2	0	5	44	P	S	0	1							
2	0	3	U	0	0	1	44	P	S	0	1							
2	0	4	U	0	0	2	44	P	S	0	1							
2	0	5	U	0	0	3	44	P	S	0	1							
2	0	6	U	0	0	4	44	P	S	0	1							
2	0	7	U	0	0	5	44	P	S	0	1							
2	0	8	U	0	0	6	44	P	S	0	1							
2	0	9	U	0	0	7	44	P	S	0	1							
2	1	0	U	0	0	8	44	P	S	0	1							
2	1	1	U	0	0	9	44	P	S	0	1							
2	1	2	U	0	1	0	44	P	S	0	1							
2	1	3	U	0	1	1	44	P	S	0	1							
2	1	4	U	0	1	2	44	P	S	0	1							
2	1	5	U	0	1	4	44	P	S	0	1							
2	1	6	U	0	1	5	44	P	S	0	1							
2	1	7	U	0	1	6	44	P	S	0	1							
2	1	8	U	0	1	7	44	P	S	0	1							
2	1	9	U	0	1	8	44	P	S	0	1							
2	2	0	U	0	1	9	44	P	S	0	1							
2	2	1	U	0	2	0	44	P	S	0	1							
2	2	2	U	0	2	1	44	P	S	0	1							
2	2	3	U	0	2	2	44	P	S	0	1							
2	2	4	U	0	2	3	44	P	S	0	1							
2	2	5	U	0	2	4	44	P	S	0	1							
2	2	6	U	0	2	5	44	P	S	0	1							
2	2	7	U	0	2	6	44	P	S	0	1							
2	2	8	U	0	2	7	44	P	S	0	1							
2	2	9	U	0	2	8	44	P	S	0	1							
2	3	0	U	0	2	9	44	P	S	0	1							
2	3	1	U	0	3	0	44	P	S	0	1							
2	3	2	U	0	3	1	44	P	S	0	1							
2	3	3	U	0	3	2	44	P	S	0	1							
2	3	4	U	0	3	3	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
2	3	5	U	0	3	4	44	P	S	0	1							
2	3	6	U	0	3	5	44	P	S	0	1							
2	3	7	U	0	3	6	44	P	S	0	1							
2	3	8	U	0	3	7	44	P	S	0	1							
2	3	9	U	0	3	8	44	P	S	0	1							
2	4	0	U	0	3	9	44	P	S	0	1							
2	4	1	U	0	4	1	44	P	S	0	1							
2	4	2	U	0	4	2	44	P	S	0	1							
2	4	3	U	0	4	3	44	P	S	0	1							
2	4	4	U	0	4	4	44	P	S	0	1							
2	4	5	U	0	4	5	44	P	S	0	1							
2	4	6	U	0	4	6	44	P	S	0	1							
2	4	7	U	0	4	7	44	P	S	0	1							
2	4	8	U	0	4	8	44	P	S	0	1							
2	4	9	U	0	4	9	44	P	S	0	1							
2	5	0	U	0	5	0	44	P	S	0	1							
2	5	1	U	0	5	1	44	P	S	0	1							
2	5	2	U	0	5	2	44	P	S	0	1							
2	5	3	U	0	5	3	44	P	S	0	1							
2	5	4	U	0	5	5	44	P	S	0	1							
2	5	5	U	0	5	6	44	P	S	0	1							
2	5	6	U	0	5	7	44	P	S	0	1							
2	5	7	U	0	5	8	44	P	S	0	1							
2	5	8	U	0	5	9	44	P	S	0	1							
2	5	9	U	0	6	0	44	P	S	0	1							
2	6	0	U	0	6	1	44	P	S	0	1							
2	6	1	U	0	6	2	44	P	S	0	1							
2	6	2	U	0	6	3	44	P	S	0	1							
2	6	3	U	0	6	4	44	P	S	0	1							
2	6	4	U	0	6	6	44	P	S	0	1							
2	6	5	U	0	6	7	44	P	S	0	1							
2	6	6	U	0	6	8	44	P	S	0	1							
2	6	7	U	0	6	9	44	P	S	0	1							
2	6	8	U	0	7	0	44	P	S	0	1							
2	6	9	U	0	7	1	44	P	S	0	1							
2	7	0	U	0	7	2	44	P	S	0	1							
2	7	1	U	0	7	3	44	P	S	0	1							
2	7	2	U	0	7	4	44	P	S	0	1							
2	7	3	U	0	7	5	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
2	7	4	U	0	7	6	44	P	S	0	1							
2	7	5	U	0	7	7	44	P	S	0	1							
2	7	6	U	0	7	8	44	P	S	0	1							
2	7	7	U	0	7	9	44	P	S	0	1							
2	7	8	U	0	8	0	132	P	S	0	1							
2	7	9	U	0	8	1	44	P	S	0	1							
2	8	0	U	0	8	2	44	P	S	0	1							
2	8	1	U	0	8	3	44	P	S	0	1							
2	8	2	U	0	8	4	44	P	S	0	1							
2	8	3	U	0	8	5	44	P	S	0	1							
2	8	4	U	0	8	6	44	P	S	0	1							
2	8	5	U	0	8	7	44	P	S	0	1							
2	8	6	U	0	8	8	44	P	S	0	1							
2	8	7	U	0	8	9	44	P	S	0	1							
2	8	8	U	0	9	0	44	P	S	0	1							
2	8	9	U	0	9	1	44	P	S	0	1							
2	9	0	U	0	9	2	44	P	S	0	1							
2	9	1	U	0	9	3	44	P	S	0	1							
2	9	2	U	0	9	4	44	P	S	0	1							
2	9	3	U	0	9	5	44	P	S	0	1							
2	9	4	U	0	9	6	44	P	S	0	1							
2	9	5	U	0	9	7	44	P	S	0	1							
2	9	6	U	0	9	8	44	P	S	0	1							
2	9	7	U	0	9	9	44	P	S	0	1							
2	9	8	U	1	0	1	44	P	S	0	1							
2	9	9	U	1	0	2	44	P	S	0	1							
3	0	0	U	1	0	3	44	P	S	0	1							
3	0	1	U	1	0	5	44	P	S	0	1							
3	0	2	U	1	0	6	44	P	S	0	1							
3	0	3	U	1	0	7	44	P	S	0	1							
3	0	4	U	1	0	8	44	P	S	0	1							
3	0	5	U	1	0	9	44	P	S	0	1							
3	0	6	U	1	1	0	44	P	S	0	1							
3	0	7	U	1	1	1	44	P	S	0	1							
3	0	8	U	1	1	2	44	P	S	0	1							
3	0	9	U	1	1	3	44	P	S	0	1							
3	1	0	U	1	1	4	44	P	S	0	1							
3	1	1	U	1	1	5	44	P	S	0	1							
3	1	2	U	1	1	6	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
3	1	3	U	1	1	7	44	P	S	0	1							
3	1	4	U	1	1	8	44	P	S	0	1							
3	1	5	U	1	1	9	44	P	S	0	1							
3	1	6	U	1	2	0	44	P	S	0	1							
3	1	7	U	1	2	1	44	P	S	0	1							
3	1	8	U	1	2	2	44	P	S	0	1							
3	1	9	U	1	2	3	44	P	S	0	1							
3	2	0	U	1	2	4	44	P	S	0	1							
3	2	1	U	1	2	5	44	P	S	0	1							
3	2	2	U	1	2	6	44	P	S	0	1							
3	2	3	U	1	2	7	44	P	S	0	1							
3	2	4	U	1	2	8	44	P	S	0	1							
3	2	5	U	1	2	9	44	P	S	0	1							
3	2	6	U	1	3	0	44	P	S	0	1							
3	2	7	U	1	3	1	44	P	S	0	1							
3	2	8	U	1	3	2	44	P	S	0	1							
3	2	9	U	1	3	3	44	P	S	0	1							
3	3	0	U	1	3	4	44	P	S	0	1							
3	3	1	U	1	3	5	44	P	S	0	1							
3	3	2	U	1	3	6	44	P	S	0	1							
3	3	3	U	1	3	7	44	P	S	0	1							
3	3	4	U	1	3	8	44	P	S	0	1							
3	3	5	U	1	4	0	44	P	S	0	1							
3	3	6	U	1	4	1	44	P	S	0	1							
3	3	7	U	1	4	2	44	P	S	0	1							
3	3	8	U	1	4	3	44	P	S	0	1							
3	3	9	U	1	4	4	44	P	S	0	1							
3	4	0	U	1	4	5	44	P	S	0	1							
3	4	1	U	1	4	6	44	P	S	0	1							
3	4	2	U	1	4	7	44	P	S	0	1							
3	4	3	U	1	4	8	44	P	S	0	1							
3	4	4	U	1	4	9	44	P	S	0	1							
3	4	5	U	1	5	0	44	P	S	0	1							
3	4	6	U	1	5	1	265	P	S	0	1							
3	4	7	U	1	5	2	44	P	S	0	1							
3	4	8	U	1	5	3	44	P	S	0	1							
3	4	9	U	1	5	4	44	P	S	0	1							
3	5	0	U	1	5	5	44	P	S	0	1							
3	5	1	U	1	5	6	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
3	5	2	U	1	5	7	44	P	S	0	1							
3	5	3	U	1	5	8	44	P	S	0	1							
3	5	4	U	1	5	9	132	P	S	0	1							
3	5	5	U	1	6	0	44	P	S	0	1							
3	5	6	U	1	6	1	44	P	S	0	1							
3	5	7	U	1	6	2	44	P	S	0	1							
3	5	8	U	1	6	3	44	P	S	0	1							
3	5	9	U	1	6	4	44	P	S	0	1							
3	6	0	U	1	6	5	44	P	S	0	1							
3	6	1	U	1	6	6	44	P	S	0	1							
3	6	2	U	1	6	7	44	P	S	0	1							
3	6	3	U	1	6	8	44	P	S	0	1							
3	6	4	U	1	6	9	44	P	S	0	1							
3	6	5	U	1	7	0	44	P	S	0	1							
3	6	6	U	1	7	1	44	P	S	0	1							
3	6	7	U	1	7	2	44	P	S	0	1							
3	6	8	U	1	7	3	44	P	S	0	1							
3	6	9	U	1	7	4	44	P	S	0	1							
3	7	0	U	1	7	6	44	P	S	0	1							
3	7	1	U	1	7	7	44	P	S	0	1							
3	7	2	U	1	7	8	44	P	S	0	1							
3	7	3	U	1	7	9	44	P	S	0	1							
3	7	4	U	1	8	0	44	P	S	0	1							
3	7	5	U	1	8	1	44	P	S	0	1							
3	7	6	U	1	8	2	44	P	S	0	1							
3	7	7	U	1	8	3	44	P	S	0	1							
3	7	8	U	1	8	4	44	P	S	0	1							
3	7	9	U	1	8	5	44	P	S	0	1							
3	8	0	U	1	8	6	44	P	S	0	1							
3	8	1	U	1	8	7	44	P	S	0	1							
3	8	2	U	1	8	8	44	P	S	0	1							
3	8	3	U	1	8	9	44	P	S	0	1							
3	8	4	U	1	9	0	44	P	S	0	1							
3	8	5	U	1	9	1	44	P	S	0	1							
3	8	6	U	1	9	2	44	P	S	0	1							
3	8	7	U	1	9	3	44	P	S	0	1							
3	8	8	U	1	9	4	44	P	S	0	1							
3	8	9	U	1	9	6	44	P	S	0	1							
3	9	0	U	1	9	7	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
3	9	1	U	2	0	0	44	P	S	0	1							
3	9	2	U	2	0	1	44	P	S	0	1							
3	9	3	U	2	0	2	44	P	S	0	1							
3	9	4	U	2	0	3	44	P	S	0	1							
3	9	5	U	2	0	4	44	P	S	0	1							
3	9	6	U	2	0	5	44	P	S	0	1							
3	9	7	U	2	0	6	44	P	S	0	1							
3	9	8	U	2	0	7	44	P	S	0	1							
3	9	9	U	2	0	8	44	P	S	0	1							
4	0	0	U	2	0	9	44	P	S	0	1							
4	0	1	U	2	1	0	44	P	S	0	1							
4	0	2	U	2	1	1	44	P	S	0	1							
4	0	3	U	2	1	3	44	P	S	0	1							
4	0	4	U	2	1	4	44	P	S	0	1							
4	0	5	U	2	1	5	44	P	S	0	1							
4	0	6	U	2	1	6	44	P	S	0	1							
4	0	7	U	2	1	7	44	P	S	0	1							
4	0	8	U	2	1	8	44	P	S	0	1							
4	0	9	U	2	1	9	44	P	S	0	1							
4	1	0	U	2	2	0	44	P	S	0	1							
4	1	1	U	2	2	1	44	P	S	0	1							
4	1	2	U	2	2	2	44	P	S	0	1							
4	1	3	U	2	2	3	44	P	S	0	1							
4	1	4	U	2	2	5	44	P	S	0	1							
4	1	5	U	2	2	6	1,146	P	S	0	1							
4	1	6	U	2	2	7	44	P	S	0	1							
4	1	7	U	2	2	8	44	P	S	0	1							
4	1	8	U	2	3	4	44	P	S	0	1							
4	1	9	U	2	3	5	44	P	S	0	1							
4	2	0	U	2	3	6	44	P	S	0	1							
4	2	1	U	2	3	7	44	P	S	0	1							
4	2	2	U	2	3	8	44	P	S	0	1							
4	2	3	U	2	3	9	88	P	S	0	1							
4	2	4	U	2	4	0	44	P	S	0	1							
4	2	5	U	2	4	3	44	P	S	0	1							
4	2	6	U	2	4	4	44	P	S	0	1							
4	2	7	U	2	4	6	44	P	S	0	1							
4	2	8	U	2	4	7	44	P	S	0	1							
4	2	9	U	2	4	8	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number			A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
									(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, West (Continued)																		
4	3	0	U	2	4	9	44	P	S	0	1							
4	3	1	U	2	7	1	44	P	S	0	1							
4	3	2	U	2	7	8	44	P	S	0	1							
4	3	3	U	2	7	9	44	P	S	0	1							
4	3	4	U	2	8	0	44	P	S	0	1							
4	3	5	U	3	2	8	44	P	S	0	1							
4	3	6	U	3	5	3	44	P	S	0	1							
4	3	7	U	3	5	9	44	P	S	0	1							
4	3	8	U	3	6	4	44	P	S	0	1							
4	3	9	U	3	6	7	44	P	S	0	1							
4	4	0	U	3	7	2	44	P	S	0	1							
4	4	1	U	3	7	3	44	P	S	0	1							
4	4	2	U	3	8	7	44	P	S	0	1							
4	4	3	U	3	8	9	44	P	S	0	1							
4	4	4	U	3	9	4	44	P	S	0	1							
4	4	5	U	3	9	5	44	P	S	0	1							
4	4	6	U	4	0	4	44	P	S	0	1							
4	4	7	U	4	0	9	44	P	S	0	1							
4	4	8	U	4	1	0	44	P	S	0	1							
4	4	9	U	4	1	1	44	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 54, Material Disposal Area H (Shaft 9) [a]																	
	1	D	0	0	3	15	P	D	8	0							
	2																
	3																
	4																
	5																
	6																
	7																
	8																
	9																
1	0																
1	1																
1	2																
1	3																
1	4																
1	5																
1	6																
1	7																
1	8																
1	9																
2	0																
2	1																
2	2																
2	3																
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

[b] To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 55																	
	1	D	0	0	1	75,000	P	S	0	1							
	2	D	0	0	2	150,000	P	S	0	1	S	0	2	T	0	4	
	3	D	0	0	3	42,000	P	S	0	1							
	4	D	0	0	4	5,000	P	S	0	1	S	0	2	T	0	4	
	5	D	0	0	5	11,000	P	S	0	1	S	0	2	T	0	4	
	6	D	0	0	6	400,500	P	S	0	1	S	0	2	T	0	4	
	7	D	0	0	7	605,000	P	S	0	1	S	0	2	T	0	4	
	8	D	0	0	8	900,000	P	S	0	1	S	0	2	T	0	4	
	9	D	0	0	9	26,000	P	S	0	1	S	0	2	T	0	4	
1	0	D	0	1	0	2,500	P	S	0	1	S	0	2	T	0	4	
1	1	D	0	1	1	11,000	P	S	0	1	S	0	2	T	0	4	
1	2	D	0	1	2	1,000	P	S	0	1				T	0	4	
1	3	D	0	1	8	4,500	P	S	0	1				T	0	4	
1	4	D	0	1	9	4,500	P	S	0	1				T	0	4	
1	5	D	0	2	1	4,500	P	S	0	1				T	0	4	
1	6	D	0	2	2	1,500	P	S	0	1				T	0	4	
1	7	D	0	2	7	1,500	P	S	0	1				T	0	4	
1	8	D	0	2	8	2,500	P	S	0	1				T	0	4	
1	9	D	0	3	0	1,500	P	S	0	1				T	0	4	
2	0	D	0	3	2	1,500	P	S	0	1				T	0	4	
2	1	D	0	3	3	1,500	P	S	0	1				T	0	4	
2	2	D	0	3	4	1,500	P	S	0	1				T	0	4	
2	3	D	0	3	5	12,000	P	S	0	1				T	0	4	
2	4	D	0	3	6	1,500	P	S	0	1				T	0	4	
2	5	D	0	3	7	1,500	P	S	0	1				T	0	4	
2	6	D	0	3	8	1,500	P	S	0	1				T	0	4	
2	7	D	0	3	9	11,000	P	S	0	1				T	0	4	
2	8	D	0	4	0	11,000	P	S	0	1				T	0	4	
2	9	D	0	4	2	1,500	P	S	0	1				T	0	4	
3	0	D	0	4	3	1,500	P	S	0	1				T	0	4	
3	1	F	0	0	1	110,000	P	S	0	1							
3	2	F	0	0	2	110,000	P	S	0	1							
3	3	F	0	0	3	110,000	P	S	0	1							
3	4	F	0	0	5	110,000	P	S	0	1							
3	5	F	0	0	6	500	P	S	0	1							
3	6	F	0	0	7	500	P	S	0	1							
3	7	F	0	0	9	500	P	S	0	1							
3	8	P	0	0	3	1,500	P	S	0	1							
3	9	P	0	1	2	1,500	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 55 (Continued)																	
4	0	P	0	1	5	6,000	P	S	0	1							
4	1	P	0	2	9	1,500	P	S	0	1							
4	2	P	0	3	0	1,500	P	S	0	1							
4	3	P	0	3	1	1,500	P	S	0	1							
4	4	P	0	3	8	1,500	P	S	0	1							
4	5	P	0	5	6	3,000	P	S	0	1							
4	6	P	0	6	3	1,500	P	S	0	1							
4	7	P	0	6	8	1,500	P	S	0	1							
4	8	P	0	7	3	1,500	P	S	0	1							
4	9	P	0	7	6	1,500	P	S	0	1							
5	0	P	0	7	8	1,500	P	S	0	1							
5	1	P	0	9	5	1,500	P	S	0	1							
5	2	P	0	9	6	1,500	P	S	0	1							
5	3	P	0	9	8	1,500	P	S	0	1							
5	4	P	0	9	9	500	P	S	0	1							
5	5	P	1	0	6	1,500	P	S	0	1							
5	6	P	1	1	3	1,500	P	S	0	1							
5	7	P	1	2	0	1,500	P	S	0	1							
5	8	U	0	0	1	3,000	P	S	0	1							
5	9	U	0	0	2	1,500	P	S	0	1							
6	0	U	0	0	3	1,500	P	S	0	1							
6	1	U	0	1	2	1,500	P	S	0	1							
6	2	U	0	1	9	3,000	P	S	0	1							
6	3	U	0	2	2	1,500	P	S	0	1							
6	4	U	0	2	9	1,500	P	S	0	1							
6	5	U	0	3	1	1,500	P	S	0	1							
6	6	U	0	3	7	1,500	P	S	0	1							
6	7	U	0	4	4	1,500	P	S	0	1							
6	8	U	0	4	5	1,500	P	S	0	1							
6	9	U	0	5	2	1,500	P	S	0	1							
7	0	U	0	5	6	1,500	P	S	0	1							
7	1	U	0	5	7	1,500	P	S	0	1							
7	2	U	0	7	5	1,500	P	S	0	1							
7	3	U	0	7	7	1,500	P	S	0	1							
7	4	U	0	8	0	6,000	P	S	0	1							
7	5	U	1	0	3	500	P	S	0	1							
7	6	U	1	0	8	1,500	P	S	0	1							
7	7	U	1	1	2	1,500	P	S	0	1							
7	8	U	1	1	5	1,500	P	S	0	1							

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 55 (Continued)							
79	U117	1,500	P	S01			
80	U121	1,500	P	S01			
81	U122	1,500	P	S01			
82	U123	1,500	P	S01			
83	U131	1,500	P	S01			
84	U133	1,500	P	S01			
85	U134	6,000	P	S01			
86	U135	1,500	P	S01			
87	U140	1,500	P	S01			
88	U144	1,500	P	S01			
89	U151	6,000	P	S01			
90	U154	6,000	P	S01			
91	U159	6,000	P	S01			
92	U160	1,500	P	S01			
93	U161	1,500	P	S01			
94	U165	1,500	P	S01			
95	U169	1,500	P	S01			
96	U188	1,500	P	S01			
97	U190	1,500	P	S01			
98	U196	1,500	P	S01			
99	U204	1,500	P	S01			
100	U210	6,000	P	S01			
101	U211	6,000	P	S01			
102	U213	1,500	P	S01			
103	U216	1,500	P	S01			
104	U218	1,500	P	S01			
105	U219	1,500	P	S01			
106	U220	6,000	P	S01			
107	U225	1,500	P	S01			
108	U226	6,000	P	S01			
109	U227	1,500	P	S01			
110	U228	1,500	P	S01			
111	U239	1,500	P	S01			
112	U246	1,500	P	S01			
113							
114							
115							
116							
117							

10. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

11. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

12. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

13. Comments

EXPLANATION OF PROCESS CODE LISTINGS AND DESIGN CAPACITIES AT TECHNICAL AREA (TA) 16

Description	Capacity	Associated Structure No./Area
Line 1 X01 Open Burning Units		
Burn Pad/Burn Tray 399[a] (one burn pad/burn tray for burning RCRA[b]-regulated waste);	1,000 pounds (of waste per burn)	TA-16-399
Burn Tray/Flash Pad 388 (one burn tray and one flash pad for burning RCRA[b]-regulated waste);	50 gallons/ 200 pounds[c] (of waste per burn, respectively)	TA-16-388
TOTAL X01	**1,200 pounds** **100 gallons**	

[a] TA-16-399 Burn Tray to be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G and P, requirements. Permitted status is not requested.

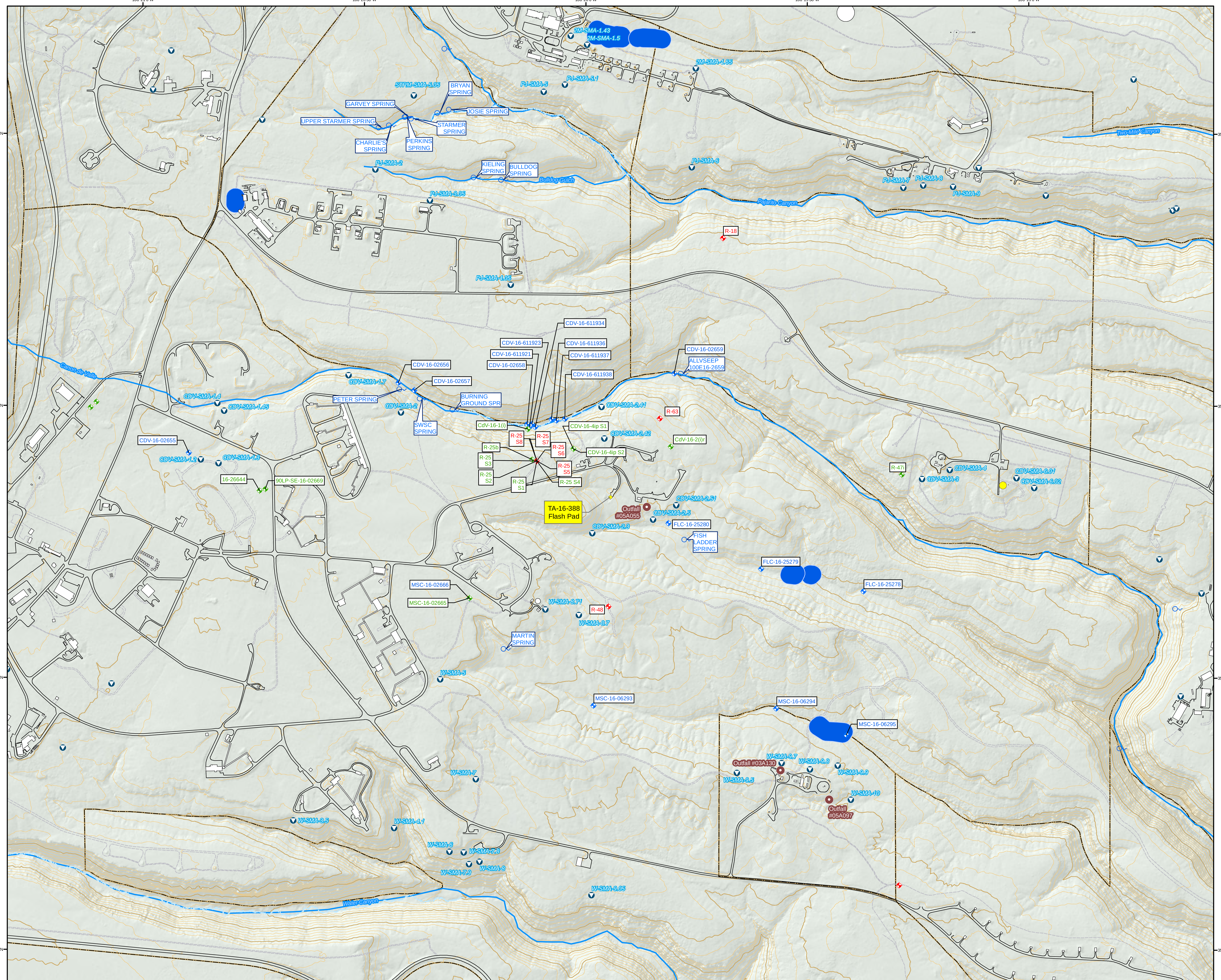
[b] RCRA is the Resource Conservation and Recovery Act.

[c] Hazardous debris that exhibits a reactive characteristic will be treated at the unit. The hazardous debris may also be mixed with “toxicity characteristic debris” or a “debris contaminated with listed waste” (see 40 CFR § 268.45(b)). The alternative treatment standards outlined in Table 1 at 40 CFR § 268.45 will be met prior to land disposal of any waste residue.

TA-16-388, Process Code X01, Open Burning (Burn Tray/Flash Pad 388)
(Photograph taken 9/10/01)

TA-16-399, Process Code X01, Open Burning (Burn Pad/Burn Tray 399)
(Photograph taken 3/18/98)

Topographic Map Showing the Location of the Open Burning Treatment Unit at Technical Area 16



Legend

- Alluvial monitoring well
- Intermediate monitoring well
- Regional monitoring well
- Water supply well (None present at this extent)
- Springs
- NPDES Permitted Outfalls
- Site Monitoring Areas (SMAs)
- Streams, Perennial
- Drainage
- Contours, 20 ft
- Contours, 100 ft
- Roads, paved
- Roads, dirt
- Structures
- Wetlands
- RCRA-Regulated Waste Management Unit
- TAs

Note: Labeled wells, outfalls, springs, and SMAs are within 1 mile of the open detonation site.

N
W E
S

0.25 0.125 0 0.25 0.5
Kilometers

0.25 0.125 0 0.25 0.5
Miles

Created by Winters Red Star, 01 MAY 2012 Map #13-0037-01

New Mexico State Plane Coordinate System
Central Zone US Ft
North American Datum 1983
National Geodetic Vertical Datum 1929

Grid provides Degrees-Minutes-Seconds
Grid interval: 30 sec

DISCLAIMER: This map was created for work processes associated with TA-16 Permit Application. All other uses for this map should be confirmed with ENV-EDA staff.

Attachment D

Redline/Strikeout of 2010 LANL Hazardous Waste Facility Permit

(Included in LA-UR-13- 27579)

regulations. However, it is the State regulations that are legally applicable and enforceable. Therefore, for the purpose of this Permit, and enforcement of its terms and conditions, all references to provisions of federal regulations that have been incorporated into the State regulations shall be deemed to include the State incorporation of those provisions.

1.4 EFFECT OF PERMIT

As to those activities specifically authorized or otherwise specifically addressed under this Permit, compliance with this Permit during its term shall constitute compliance, for purposes of enforcement, with Subtitle C of RCRA and the HWA, and the implementing regulations at 40 CFR Parts 264, 266, and 268 except for those requirements that become effective by statute after the Permit has been issued (*see* 40 CFR § 270.4).

Compliance with this Permit shall not constitute a defense to any order issued or any action brought under: §§ 74-4-10, 74-4-10.1, or 74-4-13 of the HWA; §§ 3008(a), 3008(h), 3013, 7002(a)(1)(B), or 7003 of RCRA; §§ 104, 106(a), or 107, of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 to 9675; or any other federal, state or local law providing for protection of public health or the environment.

This Permit does not convey any property rights of any sort or any exclusive privilege, nor authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Compliance with this Permit does not relieve Permittees from the responsibility of complying with all applicable state or federal laws and regulations (*see* 40 CFR §§ 270.4, 270.30(g) and 270.32(b)(1)).

1.4.1 Effect of this Permit on Interim Status Units

For the interim status units listed in Table J-1 that the Permittees do not choose to operate, the Permittees shall submit to the Department within 180 days of the effective date of this Permit either a notice of intent to close in accordance with a current closure plan, or a revised closure plan. These documents shall indicate that the closure of these interim status units shall be initiated in accordance with 40 CFR § 265.113(a) no later than 270 days of the effective date of this Permit.

For the interim status units listed in Table J-1 that the Permittees propose to permit, the Permittees shall submit to the Department 180 days of the effective date of this Permit a permit modification request in accordance with 40 CFR § 270.42 that includes all applicable information required at 40 CFR §§ 270.10, 270.11, 270.14, and 270.23 for each unit.

1.5 EFFECT OF INACCURACIES IN PERMIT APPLICATION

This Permit is based on information submitted in the Permittees' Application. The Application has numerous iterations; however this Permit is based on:

(1) the Part A Application dated June 2009;

(2) the General Part B Permit Application dated August 2003;

(3) the TA-3-29 CMR Part B Application dated September 1999;

(4) the TA-50 Part B Permit Application dated August 2002;

(5) the TA-54 Part B Permit Application dated June 2003;~~ and~~

(6) the TA-55 Part B Permit Application dated September 2003; and

(9) the Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad).

Any inaccuracies found in the Application may be grounds for the termination, revocation and re-issuance, or modification of the Permit in accordance with 40 CFR §§ 270.41 through 270.43, which are incorporated herein by reference, and for enforcement action.

The Permittees shall inform the Department of any deviation from, or changes in, the information contained in the Application that would affect the Permittees' ability to comply with this Permit. Upon knowledge of such deviations, the Permittees shall, within 30 days, provide this information in writing to the Department in accordance with Permit Sections 1.9.14 and 1.9.15 and 40 CFR §§ 270.30(l)(11) and 270.43(a)(2), which are incorporated herein by reference.

1.6 PERMIT ACTIONS

1.6.1 Duration of Permit

This Permit shall be effective for a fixed term of ten years from its effective date. The effective date of this Permit shall be 30 days after notice of the Department's decision has been served on the Permittees or such later time as the Department may specify (*see* 40 CFR § 270.50(a)).

1.6.2 Permit Modification

This Permit may be modified for both routine and significant changes as specified in 40 CFR §§ 270.41 through 270.43, and any modification shall conform to the requirements specified in these regulations. The filing of a permit modification request by the Permittees, or the notification by the Permittees of planned changes or anticipated noncompliance, does not stay the applicability or enforceability of any permit condition (*see* 40 CFR § 270.30(f)).

auditable form in the Facility Operating Record. The Permittees shall assign a traceable identifier to this documentation to facilitate both access to this information and its verification by the Permittees and the Department.

2.4.4 Waste Received from Off-Site

If a hazardous waste stream is received at the Facility from an off-site facility identified at Permit Section 2.2.1, the Permittees shall obtain from the facility a detailed characterization of a representative sample of the waste. If acceptable knowledge is used for the waste characterization, the Permittees shall require the facility to provide all acceptable knowledge documentation used to characterize the waste stream (*see* 40 CFR § 270.32(b)(2)). In addition, the Permittees shall ensure that all applicable waste characterization requirements specified in Permit Section 2.4 have been met and documented.

The Permittees shall ensure that the waste matches the identity of the waste designated on the accompanying manifest or shipping paper. If discrepancies between the waste received from an off-site treatment facility and the information on the manifest are found, the Permittees shall comply with the requirements of 40 CFR § 264.72, which is incorporated herein by reference, to resolve the discrepancies.

2.4.5 Treatment-Derived Waste

The Permittees shall characterize treatment-derived wastes generated both on-site and off-site by determining whether the treatment residues meet the applicable treatment standard in accordance with 40 CFR § 268.7(b), which is incorporated herein by reference, unless the Permittees have documented that the purpose of the treatment process is not to attain the applicable treatment standard. The Permittees shall ensure adherence to notification and recordkeeping requirements specified at 40 CFR § 268.7(b)(3)(ii). If the waste remains a hazardous waste, the Permittees shall further characterize it in compliance with the applicable requirements of Permit Section 2.4.1.

2.4.6 ~~Reserved~~Thermal Treatment

The Permittees shall characterize any waste stream which has not previously been treated by the open burning process to establish appropriate operating conditions and to determine the type of pollutants which might be emitted (see 40 CFR § 265.375 and 270.32(b)). The Permittees shall submit a permit modification request prior to treatment of any a new waste stream to be thermally treated.

~~2.4.6~~2.4.7 Waste Characterization Review

The Permittees shall ensure that the initial characterization of any hazardous waste stream managed under this Permit is reviewed or repeated to verify that the characterization is accurate and up to date (*see* 40 CFR § 264.13(b)(4)). The Permittees shall document this review in the Facility Operating Record.

2.7 PERSONNEL TRAINING

The Permittees shall ensure that all Facility personnel who are involved in hazardous waste management activities regulated under this Permit successfully complete all training programs in compliance with the training requirements of 40 CFR § 264.16, which is incorporated herein by reference, as well as the training requirements in Attachment F (*Personnel Training Plan*).

2.8 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittees shall manage ignitable, reactive, and incompatible hazardous wastes in containers and tanks in compliance with the requirements of 40 CFR §§ 264.17, 264.176, 264.177, 264.198, and 264.199, which are incorporated herein by reference, and Permit Parts 3 and 4. The Permittees shall ensure that containers holding ignitable or reactive wastes are located at least 15 meters from the facility boundary defined as the technical area (TA) specific boundary identified in Figures 11, 16, 22, 24, and 38 in Permit Attachment N (*Figures*) (*see* 40 CFR §§ 264.176 and 270.32(b)(2)).

The Permittees shall take precautions during the treatment or storage of ignitable or reactive waste, the mixing of incompatible waste, or the mixing of incompatible wastes and other materials to prevent reactions that could lead to or cause the following:

(1) generation of extreme heat, pressure, fire, explosions, or violent reactions;

(2) production of uncontrolled toxic mist, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

(3) production of uncontrolled inflammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) damage to the structural integrity of the container, tank, permitted unit, or other structure associated with the permitted unit; and

(5) a threat to human health or the environment.

(*see* 40 CFR § 264.17(b))

2.8.1 Ignitable and Reactive Waste Precautions

The Permittees shall prevent accidental ignition or reaction of ignitable or reactive wastes by taking the following precautions:

(1) ensure there are no sources of open flames in, on, or around the container or tank;

6PART 6: ~~(RESERVED)~~TREATMENT BY OPEN BURNING

6.1 MANAGEMENT OF OPEN BURNING UNIT

The Permittees shall utilize the permit open burning unit at TA-16 only for the treatment of explosives waste streams. The Permittees shall treat by open burning only those hazardous wastes that that would result in detonation or deflagration to remove the characteristics of reactivity (D003) and ignitability (D001). Waste shall be treated by open burning only at the permitted unit, known as the TA-16-388 Flash Pad, identified with process code X01 in Attachment J (*Hazardous Waste Management Units*), Table J-1(*Active Portion of the Facility*). The permitted unit at the TA-16-388 Flash Pad (*see* Figures 5 and 17 in Permit Attachment N (*Figures*)) shall not treat waste in quantities that exceed the operating capacities identified in Table J-1.

The Permittees shall conduct open burning operations in accordance with this Permit Part; 40 CFR part 265, subpart P; 40 CFR part 264, subpart X; 40 CFR § 268.7(b); and 40 CFR Part 270, which are incorporated by reference.

6.1.1 Maximum Quantity of Waste to be Treated

The Permittees shall treat no more than 6,000 pounds via open burning per year and no more than 200 pounds per individual treatment event at the TA-16-388 Flash Pad (see 40 CFR § 270.32(b)(2)). The weight of any metal equipment or piping that will be recycled after treatment shall not be included in the waste-treated quantity.

6.1 WASTE STREAMS TO BE TREATED AT THE OPEN BURNING UNIT

The Permittees shall limit open burning treatment activities to the explosives waste streams for open burning identified in Attachment C (*Waste Analysis Plan*). The Permittees shall treat only those wastes identified by EPA Hazardous Waste Numbers (waste codes) listed in Attachment B (*Part A Application*) associated with TA-16 and identified as utilizing waste process code X01.

For certain waste streams, the following general provisions should be considered prior to acceptance of waste for treatment at the permitted unit (*see* 40 CFR §§ 265.382 and 270.32(b)(2)):

(1) Only excess explosives, explosives machining waste, explosives-contaminated combustible debris, explosives-contaminated noncombustible debris, and explosives-contaminated solvent waste may be treated by open burning.

(2) Explosives-contaminated equipment containing asbestos shall not be treated, unless the asbestos concentrations are in *de minimis* quantities.

(3) Liquids (e.g., water or dimethyl sulfoxide [DMSO]) shall have a minimum of 25% by volume of explosives content to be considered detonable.

(4) Solvents, other than DMSO or water, shall be treated only in *de minimis* quantities and associated only with explosives-contaminated debris.

The Permittees shall not treat by open burning any of the following wastes or materials (*see* 40 CFR § 270.32(b)(2)):

(1) the hazardous component of mixed wastes;

(2) beryllium;

(3) ammonium perchlorate;

(4) polyvinyl chloride (PVC);

(5) small control boxes or electronic equipment; and

(6) blasting caps, electric detonators, explosives units containing electric detonators, or mild detonating fuse arrays.

6.2 DESIGN, CONSTRUCTION, OPERATION, AND ROUTINE MAINTENANCE REQUIREMENTS

The Permittees shall operate and maintain the TA-16-388 Flash Pad in accordance with the requirements of this Permit to minimize the possibility of accidental fire, explosion, or any sudden or non-sudden release of hazardous waste or hazardous waste constituents into air, soil, sediment, surface water or groundwater which could threaten human health or the environment, as required by 40 CFR §§ 264.31 and 264.601.

The Permittees shall ensure that warning signs are posted at permitted unit in accordance with Permit Section 2.5.1. The Permittees shall document in the Facility Operating Record all inspections, equipment maintenance, and activities associated with open burning treatment identified in the subsequent sections of this Permit Part.

6.2.1 General Requirements

The Permittees shall comply with the following requirements for treatment at the TA-16-388 Flash Pad (*see* 40 CFR § 270.32(b)(2)).

(1) No fuel other than propane shall support open burning treatment operations.

(2) Wastes shall be placed on the Flash Pad only if treatment is planned within four hours of such placement. However, if oversized equipment requires complex staging, the Permittees may stage the equipment at the TA-16-388

Flash Pad for 48 hours; the Department will not consider this staging inappropriate storage. The equipment and the unit must be covered during staging.

(3) All explosives-contaminated combustible debris shall be covered with a screen prior to treatment.

(4) The Permittees shall place containers holding explosives-contaminated solvent (i.e. DMSO) in steel trays, or some other form of secondary containment (*e.g.*, additional pan, tray) for the duration of the treatment.

(5) Explosives-contaminated equipment to be treated shall be disassembled to the extent practicable prior to treatment.

6.2.2 Operational Restrictions

The Permittees shall comply with the following general requirements concerning operations at the open burning unit:

(1) The access gate at the TA-16-389 control building shall be closed for the duration of treatment.

(2) The gate in front of the unloading area at the TA-16-388 Flash Pad shall be kept closed for the duration of treatment and for the cool-down period after treatment to prevent the entry of unauthorized personnel into the area.

(3) The Permittees shall observe from the control building each treatment event using a computer, video display, or periscope for the duration of treatment.

(4) A minimum of 24 hours shall elapse between open burning treatment events.

(5) Only non-sparking tools shall be utilized at the permitted unit when waste is present.

(6) Open burning treatments shall be conducted only during the time period beginning 1 hour after sunrise and ending 1 hour before sunset.

6.2.3 Environmental Factors

The Permittees shall comply with the following requirements and restrictions with respect to environmental factors. Transportation of or routine operations with explosives waste at the permitted unit shall not be conducted during the following severe conditions:

(1) when lightning is detected within a six mile radius (9.6 kilometers) of the unit;

(2) during precipitation, or if storms are forecasted to occur within 4 hours at the location of the unit;

(3) when roads are icy (for transport);

(4) when wind speeds at the TA-16-389 control building exceed 20 mph; or

(5) during Red Flag conditions as detailed in the LANL Fire Danger Matrix (http://www.lanl.gov/resources/emergency/fire-danger-matrix.php).

6.2.4 Run-On and Run Off Controls

The Permittees shall design, construct, operate, and maintain run-off control systems (protective berms and check dams,) at the permitted unit to minimize precipitation run-off and prevent the migration of hazardous waste or hazardous waste constituents from the unit (see 40 CFR § 264.601(b)). The permitted unit's containment devices (*e.g.*, pans, trays, pads) shall be covered within 10 hours after use and will remain covered when not in use to prevent precipitation collection and runoff.

6.2.5 Routine Maintenance

The Permittees shall conduct the following maintenance and inspection activities prior to treatment events at the TA-16-388 Flash Pad:

(1) Notify TA-16 Access Control Center at the start and end of each treatment event;

(2) Inspect the permitted unit and its associated equipment, within 24 hours preceding a treatment event;

(3) Inspect the video display or periscope (which ever will be used to view the treatment operations) located in the TA-16-389 control building to ensure it is functional before waste is staged for treatment;

(4) Test the propane burners at the permitted unit prior to staging waste. The Permittees shall cancel the planned open burn treatment if the burners firing test fails; and

(5) Patrol the area in the immediate vicinity of the permitted unit to unloading the waste for a scheduled burn to ensure that no large wildlife or unauthorized personnel are present at or around the unit.

6.3 TREATMENT RESIDUES

The Permittees shall clean the waste containment devices of any treatment residues as close to 24 hours after a treatment event as possible. If the Permittees find any untreated explosives waste remaining in the residue during inspection of the unit after treatment,

Formatted: In

the Permittees shall re-treat the waste on that day subject to the restrictions of this Permit Part. If lightning occurs within 3 miles of the unit during residue collection, the Permittees shall cease collection, and resume no more than 4 hours after the storm passes. The residues shall be managed as waste and characterized in accordance with Attachment C (*Waste Analysis Plan*) Section C.3.1.2.5.

6.4 ALTERNATIVE ASSESSMENT

The Permittees shall submit an open burning alternative treatment assessment report to the Department no later than the 8th anniversary of the effective date of this Permit (*see* Permit Attachment I (*Compliance Schedule*)).

6.5 MONITORING REQUIREMENTS

6.5.1 Soil Monitoring Requirements

The Permittees shall implement a soil sampling and analysis program to monitor for hazardous constituents released to soils during open burning treatment events and to ensure that any releases do not have an adverse effect on human health or the environment (*see* 40 CFR § 264.602). All sampling events as described in this section shall commence no later than July 1 of the designated sampling year. Samples shall be collected and analyzed 2, 5, and 8 years after the effective date of this Permit (*see* Attachment I (*Compliance Schedule*)). The Permittees shall provide oral and written notification to the Department of the scheduled sampling activities at least 15 days prior to commencing sampling activity.

The Permittees shall analyze the soil samples collected during each monitoring event for total metals, explosive compounds, semi-volatile organic compounds, perchlorate, and dioxins/furans. Sampling events shall include at a minimum the 0 to 2 inch depth interval at the locations that are determined by the Department and the Permittees to be representative of drainage locations and potential deposition areas around the unit. These locations will be sampled for all three monitoring events. If no treatment was conducted at the open burning unit between sampling events, the Permittees may propose an alternative sampling schedule. The Permittees shall certify in writing no later than July 31 of the scheduled sampling year that treatment was not conducted since the preceding sampling event.

The Permittees shall submit to the Department a sampling and analysis report for each sampling event summarizing all sampling activities and the results of sample analyses by December 1 of each sampling year (*see* Attachment I (*Compliance Schedule*)). The Permittees shall identify in the report any sample analytical results that exceed concentrations detected in previous analyses of soil samples collected at the site.

9PART 9: CLOSURE

9.1 INTRODUCTION

This Permit Part addresses the three categories of permitted units at the Facility. They are identified as follows:

(1) regulated units (*i.e.*, material disposal areas G, H, L);

(2) indoor units (structures and related equipment); and

(3) outdoor units (asphalt or concrete pads and related structures and equipment):

a. co-located with a regulated unit; ~~and~~
b. not co-located with a regulated unit; and
c. associated with a thermal treatment unit.

Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*), identifies the category of each permitted unit in the column titled *Type of Unit*.

This Permit does not address the closure of interim status units.

The Permittees shall adhere to the closure performance standards in Permit Section 9.2 for all the permitted units addressed in this Permit Section.

The Permittees shall close the permitted storage and treatment units in accordance with the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and 264.197 (which are incorporated herein by reference), this Permit Part (9), and the procedures described in the permitted unit-specific closure plans in Attachment G (*Closure Plans*).

9.1.1 Regulated Units

The regulated units shall not accept hazardous or mixed waste and shall undergo closure. The Permittees shall adhere to the closure performance standards in Permit Section 9.2 and the closure requirements in Permit Sections 9.3 and 9.5 for the closure of these units.

9.1.2 Indoor Units

Indoor units are buildings (*e.g.*, TA-54-412 DVRS), structures (*e.g.*, storage sheds, domes, transportainers, canopies, trailers, and permacons), or rooms within a building (*e.g.*, TA-3 Room 9010). The Permittees shall comply with the specific closure requirements in Permit Sections 9.4 and 9.5 for these units and comply with the closure performance standards in Permit Section 9.2.

9.1.3 Outdoor Units

Outdoor units are pads which are constructed of either asphalt or concrete and include, at some units, buildings, structures, or both, situated thereon. There are two distinct types of outdoor units addressed by this Permit:

(1) asphalt or concrete storage pads co-located with a regulated unit (*i.e.*, outdoor storage unit) (*e.g.*, TA-54 Area L); and

(2) asphalt storage pads not co-located with a regulated unit (*i.e.*, outdoor storage unit) (*e.g.*, TA-50-69 Outdoor Unit).

The Permittees shall comply with the specific closure requirements in Permit Sections 9.4 and 9.5 for these units and adhere to the closure performance standards in Permit Section 9.2.

Any building or structure, or its associated equipment, situated on an outdoor unit shall meet the specific closure requirements in Permit Sections 9.4 and 9.5 and meet the closure performance standard in Permit Section 9.2.

9.1.3.1 Outdoor Treatment Units

Outdoor treatment units are open burning units which are constructed of a concrete pad and metal burn trays. The Permittees shall comply with the specific closure requirements in the Permit Sections 9.4 and 9.5 for these units and adhere to the closure performance standards in Permit Section 9.2.

Any building or structure, or its associated equipment, situated on an outdoor treatment unit shall meet the specific closure requirements in Permit Sections 9.4 and 9.5 and meet the closure performance standard in Permit Section 9.2.

9.2 CLOSURE PERFORMANCE STANDARDS

The Permittees shall meet the following closure performance standards for permitted units identified in Permit Section 9.1.

9.2.1 Clean Closure

To achieve clean closure, the Permittees must:

(1) remove all hazardous waste residues and hazardous constituents; and

(2) ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

(7) One sample at all joints and intersections of piping; and

(8) One sample every 30 feet beneath the axis of the lowest portions of any open conveyance drainage system in any permitted unit that has sloped flooring

(*see* 40 CFR § 270.32(b)).

9.4.7.1.iii Soil Sampling for Outdoor Treatment Units

The Permittees shall collect surface soil samples at the outdoor treatment units. Locations for soil sample collection include, but are not limited to, soils surrounding the units, soils in the vicinity of the units, and soils in the drainage area.

9.4.8 Amendment of the Closure Plan

The Permittees shall submit a permit modification request (*see* 40 CFR § 264.112(c) and Part 270) to seek authorization of a change in the approved closure plan upon the occurrence of events listed in 40 CFR § 264.112(c)(2), which is incorporated herein by reference. The request must include a copy of the amended closure plan and all proposed modifications to the plan.

The Permittees shall amend a permitted unit's closure plan whenever:

(1) newly identified hazardous constituents are determined to have been managed at the unit; and

(2) new sampling locations are determined as a result of the records review and structural assessment (*see* Permit Section 9.4.6)

(*see* 40 CFR §§ 264.112(c)(2)(iii)).

9.4.9 Variance to Decontamination Verification Standards

The Permittees may seek approval of a variance from the decontamination verification wipe standards in Permit Section 9.4.4.1 for surfaces and related equipment at indoor and outdoor units by submitting to the Department a written request for a determination that attainment of the standards are impracticable because of the inherent properties of the materials subjected to wipe sampling. The request shall include, at a minimum, the following:

(1) a statement of the proposed variance;

(2) a discussion of decontamination activities performed in accordance with the SAP;

(3) a discussion of the properties of the equipment or surface pertinent to the requested variance;

(4) the analytical data demonstrating the effectiveness of decontamination, as well as the analytical data demonstrating the chemical or physical properties of the equipment or surface that inhibit attainment of the standards;

ATTACHMENT A

TECHNICAL AREA (TA) - UNIT DESCRIPTIONS

Formatted: ... pt

Formatted: ...

Formatted: ...

A.7 TA-16

TA-16 is located in the southwestern portion of LANL (*see* Figure 16 in Attachment N (*Figures*)). It is situated on a broad mesa that is bounded on the north by Cañon 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. Elevation ranges from approximately 7,700 feet at the west end of the TA to approximately 6,800 feet at the lower east end. Topography is varied, ranging from steep precipitous canyon walls to sloping mesa tops. The open burning treatment unit at LANL is located at the TA-16 Burn Ground in the northeast corner of TA-16 (*see* Figure 16 in Attachment N (*Figures*)). It is located on a mesa and drains to the east and south and is bordered on the northern side by Cañon de Valle and on the southern side by Water Canyon.

A.7.1 TA-16-388 Flash Pad

The open burning unit, known as the TA-16-388 Flash Pad (*see* Figures 5 and 17 in Attachment N (*Figures*)), consists of a 22-ft by 22-ft concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft from the pad perimeter. Inset one ft from the edge of the concrete pad along the two sides and back is a 3-ft-high, 8-inch-thick, integrally-poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel roof that covers the entire unit when not in use.

Three 5-ft long forced air propane burners with adjustable mounts are mounted on the concrete wall. These propane burners provide the heat source for treatment activities at the unit. A burner is mounted outside the wall on each side and on the back of the pad. One, two, or three burners can be used, depending on the amount and configuration of the material to be treated. Most treatment events utilize the two side burners. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr). Therefore, the output of each burner is dependent on how many are used for a burn. Usually, the burners are operated at approximately 2.5 million BTU/hr. This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy explosives, and to maintain it at level sufficient to avoid formation of incomplete combustion products for the duration of the treatment event. The burners and other components are maintained, modified, and/or replaced, as needed to ensure proper operation and treatment effectiveness.

The TA-16-388 Flash Pad is used exclusively for open burning treatment of explosives waste streams that are generated at LANL, and no other activities. Following waste placement at the unit, open burning operations are controlled and monitored remotely from Building 16-389 (the control building). Operations at the unit require visual surveys and post-burn covering of the unit. This practice minimizes the potential for precipitation contacting untreated hazardous or residual waste, if any exists.

A.7.2 Security and Access Control

The TA-16-388 Flash Pad is located within a secured area at which security is maintained through both administratively controlled and physical barriers. Access into the security area can only be gained through controlled entry stations by persons possessing an appropriate security clearance and site-specific training. Entry into the secured area is controlled via an entry station that is manned by LANL security personnel or by badge readers 24 hours per day. In addition, entry into the TA-16 Burn Ground is through an industrial fence with access granted through an access control station or a locked access gate. To gain access to the area, visitors must check in at the access control station located in TA-16-969 to be added to the site-specific badge reader system. Unescorted access to the TA-16 Burn Ground is granted only to persons possessing appropriate security clearance and meeting site-specific training requirements. A chain-link fence and brick retaining wall surrounds the TA-16-388 Flash Pad ((*see* Figure 5 in Attachment N (*Figures*)). An entry gate is located directly in front of the loading area. This gate is kept closed when loading and unloading operations are not being conducted at the unit. Fences are inspected on a regular basis by security personnel, and repairs are made as necessary.

Warning signs are posted at the entrance to the TA-16-388 Flash Pad and can be seen by personnel approaching the unit. The legend on the signs indicates "Danger Explosives Area." Signs reading "Unauthorized Personnel Keep Out" or an equivalent warning are posted on gates on interior access roads in the vicinity of the TA-16 Burn Ground. All warning signs are legible from a distance of at least 25 feet and are written in English and Spanish.

Prior to operations at the open burning unit, unauthorized personnel are cleared from the area and the gate located at the TA-16-388 Flash Pad is closed to reduce the possibility of entry into this area. Additional gates are located along the access roads in the vicinity of the TA-16-388 Flash Pad are also closed to further reduce the possibility of entry into this area during actual open burning treatment operations. Personnel at the TA-16-389 control building notify access control at the beginning and end of the open burning treatment event. Access control can contact the TA-16 Burn Ground Operator to stop the operation should a breach of security occur. The location of access controls (fence and gates) at the TA-16-388 Flash Pad are shown on Figure 5 in Attachment N (*Figures*).

Formatte

ATTACHMENT B

PART A APPLICATION

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	1	S	0	2	533.788	G	001	
Technical Area 16								
	1	X	0	1	1,000 50/200	See Lines 2 & 3	002	
	2				Pounds per burn Gallons per burn/pounds per burn			
	3				Unit identified as TA-16-399 Burn Tray is to be closed in accordance with the Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.			
	4							
	5							
	6							
	7							
	8							
	9							
1	0							
1	1							
1	2							
1	3							

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	2	T	0	4	100.00	U	001	

9. Descriptions of Hazardous Wastes ***(Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D(1))
Technical Area 16																	
	1	D	0	0	1	6,000	P	X	0	1							
	2	D	0	0	2												Included with above.
	3	D	0	0	3												Included with above.
	4	D	0	0	5												Included with above.
	5	D	0	0	6												Included with above.
	6	D	0	0	7												Included with above.
	7	D	0	0	8												Included with above.
	8	D	0	0	9												Included with above.
	9	D	0	1	0												Included with above.
1	0	D	0	1	1												Included with above.
1	1	D	0	1	8												Included with above.
1	2	D	0	2	2												Included with above.
1	3	D	0	2	8												Included with above.
1	4	D	0	2	9												Included with above.
1	5	D	0	3	0												Included with above.
1	6	D	0	3	5												Included with above.
1	7	D	0	3	6												Included with above.
1	8	D	0	3	8												Included with above.
1	9	D	0	4	0												Included with above.
2	0	F	0	0	1												Included with above.
2	1	F	0	0	2												Included with above.
2	2	F	0	0	3												Included with above.
2	3	F	0	0	4												Included with above.
2	4	F	0	0	5												Included with above.
2	5	K	0	4	4												Included with above.
2	6	K	0	4	5												Included with above.
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																
3	7																
3	8																
3	9																

ATTACHMENT C

WASTE ANALYSIS PLAN

LIST OF TABLES

ATTACHMENT C

WASTE ANALYSIS PLAN

This Waste Analysis Plan (WAP) presents the characterization procedures used to determine the chemical and physical nature of non-mixed hazardous waste, the hazardous component of mixed low-level waste (MLLW), ~~and~~ the hazardous component of mixed transuranic waste (MTRUW), and explosives waste streams stored and treated at the Facility in accordance with 40 CFR § 264.13. The waste characterization requirements contained in this WAP are used for characterization of wastes stored in containers and tanks, and to support treatment the stabilization processes. Waste analysis regulatory requirements are specified in 40 CFR §§ 264.13, 270.14(b) and 268.7. Waste analysis permit requirements are specified in Permit Section 2.4. This WAP discusses how the waste characterization data prepared by generators are reviewed, supplemented, and used by the Permittees to comply with 40 CFR Part 264 and Part 268 regulatory requirements.

This WAP is organized as follows:

Section C.1 Facility Description: Includes a general description of the Facility; general descriptions of the wastes stored and treated and the activities that generate waste.

Section C.2 Waste Analysis Parameters: Includes a discussion of the proposed analytical parameters and methods used by the Permittees and the criteria/rationale for parameter selection.

Section C.3 Characterization Procedures: Includes the characterization approach (*e.g.*, acceptable knowledge, sampling and analysis) for each waste classification stored and treated at the Facility.

Section C.4 Off-Site Waste: Includes a discussion of procedures in place for acceptance of waste from off-site facilities.

Section C.5 Special Procedural Requirements: Includes a discussion of the procedures in place for ignitable, reactive, and incompatible wastes; procedures to ensure compliance with land disposal restrictions (LDR); and procedures to ensure compliance with Subpart CC requirements.

Section C.6 References.

C.1 FACILITY DESCRIPTION

LANL (the *Facility*) 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 by the U.S. Department of Energy (DOE) and is operated jointly by DOE and Los Alamos National Security, LLC (collectively the *Permittees*). A more complete Facility description is provided in Attachment A.

C.1.1 Facility Waste-Generating Processes and Activities

Wastes are generated at the Facility primarily from research and development (R&D) activities, processing and recovery operations, decontamination and decommissioning (D&D) projects, and environmental restoration (ER) activities. Wastes generated from these types of processes and activities may also be received from off-site facilities (*see* Attachment L (*Listing of Off-Site Facilities*)). Tables C-2 through ~~C-5~~C-8 present descriptive information on non-mixed hazardous wastes, MLLW, ~~and~~ MTRUW, and explosives waste streams potentially generated at the Facility. Wastes generated at off-site facilities that may be received at the Facility are described in Table C-8. These tables include brief waste descriptions, brief descriptions of the waste-generating process or activity, the characterization basis for waste designation, potential EPA Hazardous Waste Number(s), the hazardous constituent(s) listed in Appendix VIII of 40 CFR Part 261 and/or the characteristic(s) defined at 40 CFR Part 261, Subpart C that make the waste hazardous, and the regulatory limits, as appropriate.

C.1.2 Stored Waste

Non-mixed hazardous waste, MLLW, and MTRUW are stored at various container storage units throughout the Facility. The following sections contain general descriptions of these wastes and the processes that generate them.

C.1.2.1 Non-Mixed Hazardous Waste

Non-mixed hazardous wastes are generated at the Facility primarily from R&D activities, general facility operations, D&D projects, and ER activities. Non-mixed hazardous waste streams may be of uniform physical composition (*i.e.*, homogeneous) or of diverse composition (*i.e.*, heterogeneous). Homogeneous waste is defined as waste that contains only one material or substance or waste that has its components mixed so that representative samples can be drawn throughout. Homogeneous waste streams can be either solids or liquids.

Heterogeneous waste is defined as waste that contains multiple components that are separate because of density or specific gravity, are located in different places within the mixture, or are discrete and different articles. Heterogeneous wastes (*e.g.*, debris) do not lend themselves to representative sampling and analysis.

Routinely managed non-mixed hazardous wastes and their waste-generating processes are provided below and summarized in Table C-2.

LA-MIN05-COR: Mixed Inorganic Homogeneous Waste, Cemented Organics

This waste stream consists of mixed inorganic homogeneous solidified (cemented) organic process solids and emulsified solvents and oils generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance.

LA-MHD02-238: Mixed Heterogeneous Debris Waste, Pu-238

This waste stream consists of mixed heterogeneous debris waste generated by Pu-238 processing operations (primarily heat-source fabrication) and facility and equipment operations and maintenance. The waste includes Pu-238 contaminated noncombustible and combustible debris waste.

LA-MIN06-C238: Mixed Inorganic Homogeneous Waste, Cemented Inorganics, Pu-238

This waste stream consists of mixed inorganic homogeneous waste comprised of solidified (cemented) inorganic process solids. This waste stream is generated by Pu-238 processing operations (primarily heat-source fabrication) and facility and equipment operations and maintenance.

LA-MHD03-DD: Mixed Heterogeneous Debris Waste, D&D

This waste stream consists of mixed heterogeneous debris waste generated from facility and equipment D&D, including associated sectioning, size reduction, and packaging operations. The waste is comprised of plutonium-contaminated noncombustible and combustible debris waste.

LA-MHD05-ITRI: Mixed Heterogeneous Debris Waste, ITRI

This waste stream consists of mixed heterogeneous debris generated between 1975 and 1984 by the Inhalation Toxicology Research Institute, which is currently operated by Lovelace at the Kirtland Air Force Base, New Mexico. The waste is comprised of laboratory waste that may contain rags, tools, and biological waste contaminated with Pu-239.

LA-MHD04-RH: Mixed Heterogeneous Debris Waste, Remote-Handled

This waste stream consists of mixed remote-handled heterogeneous debris waste generated by hot cell operations. This waste is comprised of combustible and noncombustible waste.

C.1.3 Treated Wastes

MTRUW, and explosives waste streams are ~~is~~ treated at ~~a~~ permitted units at the Facility. MTRUW is treated by cementation to stabilize the waste for storage and to meet the WIPP waste acceptance criteria. Explosives waste streams are treated to remove the characteristic of reactivity.

C.1.3.1 Treated Mixed TRU Wastes

MTRUW that require treatment is generated primarily from R&D and processing and recovery operations. Treatment of MTRUW at the Facility may consist of stabilization by cementation to form a noncorrosive solid matrix. Additional specific information on the stabilization treatment process is provided in Section C.3.2.4 of this WAP.

C.1.3.2 Explosives Waste Streams

Explosives-contaminated waste and explosives waste are generated at the Facility primarily from explosives processing operations, such as machining and pressing; research and development activities, including pilot scale explosives production; decommissioning and demolition activities; and corrective action activities. Table C-6 provides a summary of available information on explosives found in the explosives waste streams generated at the Facility. The waste streams identified in Table C-8 are waste streams that may be treated by open burning. The waste streams include homogenous and heterogeneous wastes and are described in the following paragraphs.

Explosives machining waste

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 small 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.

C.1.4 Description of Permitted Units

The permitted units used for storage and treatment of wastes addressed in this WAP are located within various TAs at the Facility. These units are listed in Attachment J (*Hazardous Waste Management Units*). Detailed information on the permitted units is provided in Attachment A (*Technical Area Unit Descriptions*).

C.2 WASTE ANALYSIS PARAMETERS

The Permittees shall conduct detailed chemical and physical characterization on non-mixed hazardous wastes, the hazardous component of MLLW, and the hazardous component of MTRUW as required by 40 CFR § 264.13 and Permit Section 2.4. The Permittees shall select waste analysis parameters to ensure that the waste characterization documentation will contain the information necessary to manage the waste in accordance with Resource Conservation and Recovery Act (RCRA) general facility standards in 40 CFR Part 264 and the LDR requirements in 40 CFR Part 268.

C.2.1 Analytical Parameters and Methods

The Permittees shall use the characterization methods for non-mixed hazardous wastes, explosives waste streams, MLLW, and MTRUW summarized in Tables C-9 through C-11 to quantify the waste characterization parameters in those tables. The Permittees shall comply with the sampling and analysis requirements of Permit Sections 2.4.1 through 2.4.9. The Permittees shall use the methods listed below, as necessary, for the wastes listed in Attachment Section C.1.

1. Acceptable Knowledge (AK);
2. Sampling and laboratory analysis to determine the presence and concentrations of:

and the transfer documentation shall be part of the Facility Operating Record. After approval of waste characterization of a waste stream by waste management personnel, the Permittees shall approve subsequent transfer of waste from that waste stream based upon the generator's statement that the waste stream is accurately represented by the previously approved waste characterization information.

Training for use of waste characterization documentation is included in a facility waste documentation course. This training provides step-by-step instructions on how to complete and review forms for characterizing wastes.

The Permittees shall perform reevaluation of initial characterization information and annual verification in accordance with Permit Section 2.4.7.

The Permittees shall deem a waste container to contain free liquids if any of the following characterization methods so demonstrate:

1. generator waste-characterization knowledge;
2. visual examination;
3. radiography; or
4. the Paint Filter Test (*SW-846*, Method 9095).

C.3.1 Hazardous and Mixed Low-Level Waste Characterization

The Permittees shall select characterization methods for non-mixed hazardous waste and MLLW based on the physical nature of the waste stream (*i.e.*, homogeneous or heterogeneous). The Permittees shall characterize homogeneous solid waste for the presence of hazardous constituents (*e.g.*, VOCs, SVOCs, metals) on the basis of AK and, if necessary, sampling and analysis.

The Permittees shall characterize heterogeneous solid waste solely on the basis of AK for the following reasons:

1. the physical, chemical, and/or radiological nature of the waste makes it difficult to obtain representative samples;
2. the lack of appropriate sampling methodology; and
3. for MLLW, safety concerns associated with unnecessary exposure to the radioactive component of the waste.

In using AK to characterize waste, the Permittees shall review characterization documents with the help of subject matter experts, when necessary.

The Permittees shall characterize chemicals of an unknown nature by assembling all knowledge of the operations and activities that were performed at the site of generation relevant to waste generation and management. The Permittees shall test unknown wastes in volumes greater than one gallon for ignitability, corrosivity, reactivity, toxicity characteristics, and any other parameters indicated by the initial data gathered on the material. Based on that determination, the Permittees shall assign the waste the proper EPA Hazardous Waste Number(s) and LDR status. The Permittees shall use the characterization methods provided in Tables C-9 and C-10.

For purposes of managing unknown wastes, a small volume is defined as one liquid gallon or less. The rationale for this basis is that one gallon is the minimum quantity of sample needed to determine whether or not the waste is hazardous. The Permittees shall analyze small volumes of unknown wastes for pH, flash point, and reactivity.

Explosives waste streams at the Facility are treated to remove the characteristic of reactivity as defined in 40 CFR § 261.23. Open burning treatment of these wastes involves a propane-fueled burn that removes the high explosives component of the waste and renders the waste non-reactive and any residue amenable to handling and dispositioning. Regulations do not specify a particular test method for reactivity of explosives waste or explosives-contaminated waste, therefore, the determination of whether a waste is reactive is made based on the properties of the chemicals known or suspected to be in the waste. Wastes that contain concentrated explosives are characterized by process knowledge, as described in Section C.3.1.1.1. Explosives-contaminated waste streams are characterized by both process knowledge and/or other acceptable knowledge (Section C.3.1.1) information to determine whether explosives content within the waste stream is detonable as follows:

- If it is unknown whether explosives are present, a screening method or field test, such as the High Explosives Spot Test, may be used.
- If the waste contains visible explosives, it is considered reactive.
- If the waste came into direct contact with explosives, and all of the surfaces cannot be tested or visually examined (e.g., debris or equipment), it is assumed that there is a reactive amount of explosives associated with it.

Characterization methods for explosives waste streams and treatment residuals are summarized in Table C-13. Treatment by open burning completely removes the reactive characteristic from explosives waste streams.

C.3.1.1. Acceptable Knowledge

Acceptable knowledge (AK) includes process knowledge, additional characterization data, and facility records of analysis (EPA, 1994A).

Process knowledge (PK) includes information about the process used to generate the waste, material inputs to the process, and the time period during which the waste was generated. PK is described in 40 CFR § 264.13(a)(2) as data developed under 40 CFR Part 261 and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. PK may include off-site facility waste characterization data pertaining to a specific waste and laboratory analysis data performed prior to the effective date of applicable RCRA regulations.

Additional characterization data includes data obtained after the advent of RCRA and from chemical or physical analysis that is not subject to the most recent version of *SW-846* and other approved methods, or through testing of similar or surrogate waste streams. This includes

C.3.1.2.5 Characterization of Open Burning Treatment Residue

All open burning treatment residues shall be sampled and analyzed in accordance with the requirements of Section C.3.1.2 to ensure that treatment residuals are not hazardous waste. This is usually conducted using the appropriate analytical method from the most recent version of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)* as noted in Table C-13 and listed in Table C-16. All sampling of waste streams is conducted to be representative of the waste and to follow the methods presented in Permit Section 2.4.2, *Sampling and Analysis for Hazardous Wastes*.

Additionally, analysis of the treatment residue will be used to verify the characterization of the treated explosives waste stream that generated the residue. If analysis of the residue identifies constituents not identified in the waste characterization documentation, those constituents shall be included on the waste profile form for the waste stream prior to acceptance at the unit in the future. Most treatment residues generated by the open burning treatment process are characterized as nonhazardous wastes; however, all treatment residues (both nonhazardous and hazardous) are shipped off-site for disposal.

Because the TA-16-388 Flash Pad may be used to treat hazardous debris that exhibits a reactive characteristic potentially mixed with “toxicity characteristic debris” or a “debris contaminated with listed waste” (see 40 CFR § 268.45(b)), the alternative treatment standards outlined in Table 1 at 40 CFR § 268.45 must be met prior to land disposal of the waste. Any hazardous debris treated at the TA-16-388 Flash Pad that will be land disposed will be separated from treatment residues using simple physical or mechanical means as necessary. If further treatment of the hazardous debris waste is required to meet the waste-specific treatment standards for organic compounds, the additional treatment will be conducted at an off-site treatment facility prior to land disposal.

C.3.1.3 Verification Frequencies

The Permittees shall comply with the waste characterization verification procedures identified in Permit Section 2.4.7(3). The Permittees shall place a non-conformance report in the Facility Operating Record if the characterization for the waste stream is found to be inconsistent with the documentation. The Permittees shall decline to accept any waste from the waste stream in issue until the characterization deficiency is remedied.

The verification program for explosives waste streams is different from the procedures identified in Permit Section 2.4.7(3) because debris and explosives waste are the predominant types of waste treated and because there are a limited number of waste streams. Verification for the waste streams treated at the TA-16-388 Flash Pad occurs through visual inspection before treatment to ensure that the received waste matches the description on the waste acceptance documentation. Additionally, explosives waste streams are not sampled because the formulations are closely controlled and well characterized and routine sampling and analysis procedures for explosives waste streams cannot be conducted.

If the waste process changes the Permittees may require additional documentation or analysis. Additional documentation or analysis from generators may be requested based upon the following criteria:

- the complexity of the waste-generating process,
- constituents identified during testing of residues were not included on original waste characterization documentation,
- incomplete or suspect documentation, and/orpast performance of the waste generators.

C.3.2 Mixed Transuranic Waste Characterization

The Permittees characterize MTRUW for the information specified in Permit Section 2.4.1 in accordance with the parameters and methods shown in Tables C-11 and C-18 for management, storage, and treatment at the Facility. Characterization of the hazardous component of MTRUW to be stored and treated at the Facility shall be conduct in accordance with the procedures discussed in the following sections.

Initial characterization of MTRUW for the purpose of storage at the Facility is based primarily on AK (*see* Attachment Section C.3.1.1) with additional procedures applied to confirm the AK. The Permittees shall begin the AK process by reviewing the available generator documentation for the waste stream. This includes process knowledge, any extant analytical data, and the information included with the waste documentation forms associated with the individual waste containers.

The Permittees shall categorize MTRUW streams by Summary Category Groups based on the physical and chemical form of the waste as established by AK. The Permittees shall assign individual waste containers to waste streams based upon AK.

The Permittees shall utilize AK to determine the hazardous waste codes applicable to the waste stream or container under consideration. The Permittees shall utilize AK to determine whether the container requires additional waste management procedures such as secondary containment for liquid waste or segregation of incompatible, ignitable, or reactive wastes. If AK is insufficient to determine needed information (*e.g.*, ignitability), the Permittees shall use headspace gas sampling to provide the needed information.

Until it is determined that a container does not contain free liquids, the Permittees shall manage MTRUW container storage in accordance with regulations and Permit requirements applicable to containers holding free liquids (*i.e*., with secondary containment and appropriate labeling).

If AK is inadequate to characterize a homogeneous MTRUW stream or container (*e.g.*, homogeneous solids, soil and gravel, aqueous liquids and slurries) the Permittees shall collect a representative sample of the waste and submit the waste for laboratory analysis.

Table C-6

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

~~(This table is reserved)~~

Explosives [c]
Ammonium nitrate (AN)
Hexanitrohexaazaisowurtzitane (CL20)
3,3'-diamino-4,4'-azofurazan (DAAzF)
Diamino-azoxyfurazan (DAAF)
3,3'-azobis (6-amino-1,2,4,5-tetrazine) (DAAT)
3,3'-azobis (6-amino-1,2,4,5-tetrazine) n-oxide (DAATOx)
Diaminotrinitrobenzene (DATB)
Dihydrazino-1,2,4,5-tetrazine (DHT)
Dipentaerythritol hexanitrate (DiPEHN)
Dinitroglycouril (DINGU)
Dinitroxydiethylnitramine (DINA)
Ethylenedinitramine (EDNA)
1,1diamino-2,2dinitrethylene (FOX-7)
1,1-diamino-2,2dinitroethene
Glycidyl Azide Polymer (GAP)
Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX)
Hexanitroazobenzene (HNAB)
Hydrogen Peroxide (Pure compound)
Diaminotetrazine dioxide (TZX)
LAX-112
Nitrocellulose (NC)
Nitroguanidine (NQ)
Picrite
3-nitro-1,2,4-triazole-5-one (NTO)
Pentaerythritoltetranitrate (PETN)
Picric Acid
1,3,5-Trinitrophenol
2,6-Bis(picrylamino)-3,5-dinitropyridine (PYX)

Table C-6 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
Cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX)
Bis-triaminoguanidinium 3,3’-Dinitroazotriazole (TAGDNAT)
Triaminoguanidine nitrate (TAGN)
Triaminoguanidinium tetranitrobiimidizole (TAGN4BIM)
Triaminoguanidium azotetrazolate (TAGzT)
1,3,5-Triamino-2,4,6-trinitrobenzene (TATB)
1,3,3-Trinitroazetidine (TNAZ)
2,4,6-Trinitrophenylmethylnitramine (Tetryl)
Hexanitrostilbene (HNS)
2,4,6-Trinitrotoluene (TNT)
Trotyl
Tripentaerythritol octanitrate (TriPEON)
Bis (2-fluoro-2,2-dinitroethyl) formal (FEFO)
Isopropylnitrate
Methylnitrate
Nitromethane (NM)
Tetranitromethane
AFX-757
AFX-1209 Type II
AFX-1212
Aluminum/Fomblin oil
Ammonium perchlorate (AP)/Fuel mixture
Ammonium nitrate / fuel oil (ANFO)
Boracitol
Baratol
Calcitol
X-0533
CH-6
Composition A
Composition A-4
Composition A-5

Table C-6 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
Composition B
Hexolite
Hexotol
Composition B-3
Composition C-3
Composition C-4
CR-1
CR-2
CR-4
CR-5
Cyclotol
Detasheet
Detasheet C
Detasheet D
LX-04
Dinitroazotriazole (DNAT)
EDC-8
EDC-18
EDC-28
EDC-29
EDC-31
EDC-32
EDC-35
EDC-37
EDC-38
EF-96
Fixor
HBX-1
Helix-72
IMX-104
Kine-Pak/Kinestick

Table C-6 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
LAX-118
LLM-105
LX-07
PBX-9012
X-0211
X-0282
LX-14
LX-15
LX-16
LX-17
LX-18
Octogen
Octol
PAX
PBX-7
PBX 9001
PBX 9007
PBX 9010
PBX 9011
PBX 9205
PBX 9206
Benzotrifuroxan (BTF)
Hydrazinium Mononitrate
Hydrazine nitrate
ABX 116-2
ABX 120-1
DAAF/ Polyisobutylene (PIB)
IMX-101
PBX 9401
PBX 9404
PBX 9405

Table C-6 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
PBX 9407
PBX 9501
PBX 9502
PBX 9503
PBX 9504
X-0290
X-0351
X-0407
LX-10
PBXN-5
PBXN-7
PBXN-7 Type 1
PBXN-7 Type 2
PBXN-9
PBXN-109
PBXN-110
PBXN-111
PBXN-112
PBXN-113
Pentolite
PLG/UW-1
RFX-1300
RFX-SF78
RFX-SF80
RSI-007
RX-55
Semtex 1A
Semtex 10
Semtex 1H
TAGzT
X-0564

Table C-6 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
X-0565
TBX01
TBX02
Tritonal
Urea Nitrate
VEX288-2B
RX-61-AH
XTX-8004
X-0106
X-0208
X-0219
X-0233
X-0242
X-0298
X-0309
X-0319
X-0321
X-0401
X-0450
X-0457
X-0526
X-0534
X-0535
X-0541
X-0557
X-0566
X-0567
X-0569
XTX-8003
LX-13
Benite

Table C-6 (continued)

Waste Explosives[a] Treated[b] at Los Alamos National Laboratory

Explosives [c]
Black powder - Standard commercial and military grades only; Potassium nitrate 75%
Black powder substitute - Commercial synthetic black powder substitute, sodium or potassium nitrate based, Pyrodex or similar
HARP-1,-2
HELP-1,-2
HPP
M-14
Smokeless Powder- Single, Double, or Triple Base - Propellants containing NC, Nitroglycerine (NG), and NQ in combination with stabilizers, plasticizers, inorganic nitrates, and other modifying agents 2,4-dinitrotoluene (2,4-DNT) may also be present
VTP 25540
High power detonators
Low Energy Electro-Explosive Devices (LEEEDs)- Articles that may contain lead azide and/or lead styphnate
Library and Analytical Standards - Small quantities (generally <1 kg) of energetic materials used as library and/or analytical standards
Un-fused or un-primed munitions - Generally includes metal-lined shaped charges and conventional bombs filled with explosives or propellants
Small-arms ammunition of caliber 20-mm or less - Generally complete commercial products

[a] Additional developmental or novel types/formulations of explosives may be treated by open burning and/or open detonation at the treatment unit in small quantities. Specific compositions for mixtures of explosives are not provided.

[b] Treated includes both open burning and open detonation of hazardous waste. Not all explosives listed are suitable for open burning treatment.

[c] Developmental or novel types/formulations of explosives may be added to the allowed energetic materials list at the discretion of the Los Alamos National Laboratory Explosives Review Committee.

Table C-8

~~(This table is reserved)~~

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	Waste Stream Description	% of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives machining waste	Explosives machining chips, filters, filter solids, and water	80-95	Pentaerythritol tetranitrate (PETN), Cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX), Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX), plastic bonded explosives (PBX's or LX's), 4,4-diamino-3,3-azoxyfurazan (DAAF), 2,4,6- trinitrotoluene (TNT), Comp B, and triamino trinitrobenzene (TATB), Baratol, Cyclotol	Plastic bags	D003 D005 D008 D030	Reactivity Barium Lead 2,4-Dinitrotoluene	NA[5] 100.0 5.0 0.13

Table C-8 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	**Waste Stream Description**	**% of Total Waste Treated[1]**	**Potential Explosives[2]**	**Other Potential Materials**	**Potential EPA Hazardous Waste Numbers[3]**	**Potential Hazardous Constituents and/or Characteristics**	**Regulatory Limits[4] (mg/L)**
Excess explosives	Large, laboratory sized, or small amounts of excess standard 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.	5-15	HMX, RDX, PETN, TATB, DAAF, (2,6-Bis[picrylamino]-3,5-dinitropyridine (PYX), Nitroguanidine (NQ), Nitrocellulose, PBX's and LX's, Comp B, TNT, Boracitol, Cyclotol, HBX-1, Octol, Pentolite, Tritonal, Baratol	Plastic bags, plastic wrapping, plastic casings, cardboard, paper, paper bags, and/or fiberboard containers. Small potential for aluminum, stainless steel, steel, and/or copper.	D001 D003 D005 D030	Ignitability Reactivity Barium 2,4-Dinitrotoluene	NA[5] NA[5] 100.0 0.13

Table C-8 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	Waste Stream Description	% of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives-contaminated combustible debris	Explosives-contaminated debris generated in research laboratories and processing operations. Debris can involve filters removed from laboratories or processing bays, or may contain very small amounts of solvent. The most common solvents used are ethanol and acetone.	<1	HMX, RDX, PETN, Cyclotol, Octol, TATB, DAAF, PYX, TNT, PBXs and LXs	Plastic bags, plastic wrapping, weigh boats, gloves, vials, cardboard, paper, paper bags, fiberboard containers, kimwipes, rags, swabs, flasks, watch glasses, tubing, and/or rods. Possible aluminum, stainless steel, steel, and/or copper. When solvents are present, may contain trace amounts of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, or trichloroethylene.	D001 D003 D018 D022 D028 D029 D030 D035 D040 F001 F002 F003 F004 F005	Ignitability Reactivity Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene 2,4- Dinitrotoluene Methyl ethyl ketone Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents	NA[5] NA[5] 0.5 6.0 0.5 0.7 0.13 200.0 0.5 NA[5] NA[5] NA[5] NA[5] NA[5]

Table C-8 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

Waste Stream	Waste Stream Description	% of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives-contaminated solvent waste	Dimethyl sulfoxide (DMSO) containing dissolved explosives.	<1	HMX, RDX, PETN, TATB, DAAF, PBXs and LXs		D003 D030	Reactivity 2,4-Dinitrotoluene	NA[5] 0.13
Explosives-contaminated noncombustible debris	Explosives-contaminated equipment including discarded, noncombustible equipment; debris from firing sites; noncombustible material from decommissioning and demolition activities; and material from explosives processing areas such as carbon or sand from filtering processes.	1-3[6]	HMX, RDX, PETN, TATB, DAAF, PYX, NQ, Nitrocellulose, PBX's, LX's, Comp B, TNT, Boracitol, Cyclotol, HBX-1, Octol, Pentolite, Tritonal, Baratol	Noncombustible material may include glass or metal piping or equipment. Rarely when solvents are present, they may include trace amounts of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, or trichloroethylene.	D003 D018 D022 D028 D029 D030 D035 D040 F001 F002 F003 F004 F005	Reactivity Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Methyl ethyl ketone Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents Spent nonhalogenated solvents	NA[5] 0.5 6.0 0.5 0.7 0.13 200.0 0.5 NA[5] NA[5] NA[5] NA[5] NA[5]

[1] Estimated percentage of the waste stream's representation of all waste that will be treated at the unit.

Table C-8 (continued)

Waste Streams Treated Through Open Burning at Los Alamos National Laboratory

[2] Potential explosives do not include all of the possible explosives that may be treated at the unit, only those currently expected to be treated as part of the waste stream.

[3] Potential EPA Hazardous Waste Numbers do not include all of the possible waste numbers that may be treated at the unit, only those currently expected to be treated. A full list of EPA Hazardous Waste Numbers that may be treated at the unit is located within Attachment B of the Permit.

[4] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in Title 40 of the Code of Federal Regulations, Part 261, Subpart C. These are represented in milligrams per Liter (mg/L).

[5] Not Applicable

[6] Percentage of waste treated per year cannot be accurately estimated for this waste stream, as generation of the waste is dependent on funding for decommissioning and demolition activities. There may be many years this waste stream is not generated or treated.

Table C-13

~~(This table is reserved)~~

Summary of Characterization Methods[a] for Explosives Waste and Open Burning Treatment Residue

WASTE DESCRIPTION	PARAMETER[a]	CHARACTERIZATION METHOD	RATIONALE
Explosives machining waste	• Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs)	– Acceptable Knowledge[b] – Field Screening[c]	Determine characteristic for reactivity, the total concentration of metals, and the presence of SVOCs
Excess explosives	• Ignitibility • Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs)	– Acceptable Knowledge[b] – Field Screening[c]	Determine characteristic for ignitibility and reactivity, the total concentration of metals, and the presence of SVOCs
Explosives-contaminated combustible debris	• Ignitability • Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs) • Spent halogenated solvents • Spent nonhalogenated solvents	– Acceptable Knowledge[b] – Field Screening[c]	Determine characteristic for ignitibility and reactivity, the total concentration of metals, and the presence of SVOCs or solvents
Explosives-contaminated solvent waste	• Reactivity • 2,4-Dinitrotoluene	– Acceptable Knowledge[b] – Field Screening[c]	Determine characteristic for reactivity and the presence of SVOCs

Table C-13

Summary of Characterization Methods[a] for Explosives Waste and Open Burning Treatment Residue

WASTE DESCRIPTION	PARAMETER[a]	CHARACTERIZATION METHOD	RATIONALE
Explosives-contaminated noncombustible debris	• Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs) • Spent halogenated solvents • Spent nonhalogenated solvents	– Acceptable Knowledge [b] – Field Screening [c]	Determine characteristic for reactivity and the presence of SVOCs
Residue (ash) generated from	• Ignitibility • Reactivity • Resource Conservation and Recovery Act-regulated metals • Semi-volatile organic compounds (SVOCs)	– Acceptable Knowledge [b] – Sampling and analysis [d]	

[a] Regulations do not specify a particular characterization method for reactivity of explosives waste streams; characterization of explosives waste is based mainly on the properties of the chemicals known or suspected to be in the waste (e.g., process knowledge or acceptable knowledge).

[b] Acceptable knowledge is defined in Section C.3.1.1 of this Waste Analysis Plan.

[c] Field screening such as High Explosives Spot Test or DeTech can be used to determine the presence of explosives.

[d] Sampling and analysis is conducted in accordance with Permit Section 2.4.2, Sampling and Analysis for Hazardous Wastes, and Section C.3.1.2 of this Waste Analysis Plan.

ATTACHMENT D

CONTINGENCY PLAN

D.1.7.2 Los Alamos County Emergency Management Coordinator

Los Alamos County has an agreement with the Facility's EM to provide assistance in certain emergency situations. If an emergency occurs on Facility property that may affect the communities of Los Alamos and White Rock, EM personnel will notify the Los Alamos County Consolidated Dispatch Center which in turn will notify the Los Alamos County Emergency Management Coordinator, who will coordinate necessary emergency actions throughout the county.

D.1.7.3 Los Alamos Medical Center

The Facility maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by Facility occupational medical personnel. Radiation protection, industrial hygiene, and HAZMAT personnel also provide assistance to the emergency room staff; assistance from additional Facility resources is provided, as necessary. Assistance is coordinated through EM personnel.

D.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

The Permittees shall make available the lists of emergency equipment listed in Table D-2 for use at any of Permittees' hazardous or mixed waste management units. The list includes emergency equipment available in the HAZMAT vehicles and trailers as well as supplemental emergency equipment maintained by the LACFD, Maintenance Site Services, and occupational medicine personnel. A list of emergency equipment available for use at specific hazardous and/or mixed waste management units is identified in Attachment Tables TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, ~~and~~ TA-55 Building 185, D-4, and TA-16, D-1. Emergency equipment listed in these tables may be replaced and/or upgraded with functionally equivalent components and equipment, as necessary, for routine maintenance and repair.

D.2.2 Emergency Communications

The initial phase of an emergency may involve a small number of individuals at the affected area, require notification of the Duty Emergency Manager, and utilize local communication equipment and/or systems. When responding to hazardous and/or mixed waste emergencies, the Permittees shall ensure that EM personnel can provide communications between response units and emergency organizations.

D.2.2.1 Fire Alarms

Fire alarms are monitored 24 hours per day by trained personnel. Both the primary and backup buildings where the monitoring takes place have emergency power systems. The Duty mixed waste that present a potential threat to human health or the environment, as listed in Attachment Section D.3.1, require implementation of this Plan.

2. Hazardous and mixed wastes are stored on site at the Facility in a variety of containers. The general steps in handling hazardous and/or mixed waste spills are as follows:

1. Isolate the immediate area and deny entry to all unauthorized personnel;
2. Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe);
3. Monitor the spill area and sample the spilled waste and contaminated media.
4. Package the waste and contaminated media in sound containers;
5. Decontaminate the area and all involved equipment and personnel (followed by testing to assure adequate cleanup); and
6. Remove the waste and contaminated media (performed by appropriate waste management personnel).

3. The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely (by appropriately trained personnel) before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the Facility Command Leader.

4. The Permittees shall ensure that hazardous and/or mixed waste spills are stabilized and cleaned up. During spill control and cleanup, all personnel shall wear appropriate personal protective equipment (PPE). Monitoring will be conducted to ensure that chemical and, as appropriate, radiological exposure is minimized. The collected material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside hazardous waste management areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if it is determined by analysis that the runoff does not exhibit the characteristic (*i.e*., ignitability, corrosivity, reactivity, and/or toxicity), the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control any spill if it is known to be compatible with the spilled material. Appropriate containers or packaging shall be used to collect all spilled material and contaminated sorbent. Attachment Tables TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, ~~and~~ TA-55 Building 185, D-4 list emergency equipment, and TA-16, D-1 available for spill control at specific units. The ultimate disposition of any contaminated sorbent or waste material shall be determined by appropriate waste management personnel, and in accordance with hazardous waste management regulatory requirements.

2. In the event of an explosion at the Facility, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LAFD ambulance will transport these personnel to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact EM personnel immediately so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The LAFD is notified automatically upon fire alarm activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

3. If a fire results from an explosion, the LAFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LAFD Senior Officer will direct firefighting operations as the acting IC until EM formally assumes command.

D.6 FIRE

1. Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this Plan is required whenever there is a fire at a permitted unit.

2. Fire alarms will be sounded automatically or manually to alert personnel that a fire hazard exists and to evacuate the area immediately if in the vicinity. Information related to the various fire alarms at the specific units is included in Attachment Tables TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, ~~and~~ TA-55 Building 185, D-4, and TA-16, D-1.

3. Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, Facility policy does not encourage the use of portable fire extinguishers by employees unless they are properly trained. Instead, Facility policy encourages immediate evacuation of the area and notification of the Los Alamos County Emergency Coordinator by dialing 911. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and EM personnel must be contacted immediately. The Emergency Manager will alert the LAFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must follow protective actions as designated by the Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

4. Upon arrival at the scene, the LAFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LAFD Senior Officer will direct firefighting operations as the acting IC until EM formally assumes command.

TA-16

ATTACHMENT D

CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-16 is provided below.

TABLE D-1

TA-16

EMERGENCY EQUIPMENT

FIRE CONTROL EQUIPMENT

ABC and/or BC rated fire extinguishers are located at or in:

- Tank-truck garage (TA-16-1507)
- Control Building (TA-16-389)
- High Explosives Wastewater Treatment Facility (TA-16-1508)
- Each of the vehicles used to transport explosives

Description of General Capabilities:
The fire extinguishers may be used by any employee in the event of a small fire. For larger fires the Los Alamos Fire Department are alerted. LANL workers are trained not to fight a fire involving explosives.

Three fire hydrants are located in the vicinity of the unit and a water spigot is located at the TA-16-388 Flash Pad.

Description of General Capabilities:
The fire hydrants will supply water at adequate volume and pressure to satisfy the requirement of 40 CFR § 264.32.

SPILL CONTROL EQUIPMENT

Portable berms to contain spills are stored in an all-weather cabinet near the center of the TA-16 Burn Ground, at TA-16-386, and next to the TA-16-389 control building.

Description of General Capabilities:
Spill control equipment is available for use at the open burning unit in the event of a small spill.

COMMUNICATION EQUIPMENT

Telephones are located inside the TA-16-389 control building, at TA-16-1508, and at the railroad gate at the entrance to the TA-16 Burn Ground.

Personnel working at the TA-16 Burn Ground are assigned a site-specific pager for emergencies and lightning warnings.

Personnel working at the site have access to two-way radios.

Description of General Capabilities:
Telephones for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the use of two-way radios and pagers.

A fire alarm pull station is located at TA-16-1508.

Description of General Capabilities:
Manually-operated fire alarms may be activated by any employee in the event of a fire to notify Emergency Operations Center. If fire danger level is "High", Los Alamos Fire Department presence may be required on-site during the burn.

DECONTAMINATION EQUIPMENT

Eyewash stations are located in the tank-truck garage and in TA-16-1508. A portable eyewash is available in the immediate area of TA-16-388, when workers will be handling liquids or dusty materials.

Description of General Capabilities:
Eyewashes may be used by personnel who receive an accidental chemical splash to the eyes. Specific MSDSs can be obtained prior to working with hazardous waste to determine if the application of water is indicated for decontamination. MSDSs are also maintained to provide information during emergency response.

PERSONAL PROTECTIVE EQUIPMENT

Appropriate personal protective equipment (PPE) will be worn, when necessary, to protect from hazards found in the workplace under normal conditions. PPE includes respirators, coveralls, and safety glasses that are available for TA-16 personnel during waste-handling operations.

All vehicles are equipped with first-aid kits.

Description of General Capabilities:
First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations.

ATTACHMENT E

INSPECTION PLAN

If waste remains in storage for greater than or equal to 1 year:

1. The Permittees shall perform a visual inspection of the container at initial receipt and at least once every 12 months.

2. If a defect(s) is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no later than 5 days. If defect(s) are not completely repaired within 5 days, the Permittees shall remove the associated waste and the container shall not be used until the defect(s) have been repaired.

The Permittees shall minimize exposure of hazardous waste to the atmosphere in the process of waste transference in or out of containers.

E.9 INSPECTION SCHEDULE AND REQUIREMENTS FOR THE OPEN BURNING UNIT

In accordance with 40 CFR §§ 264.15(b) and 264.602, the open burning unit is inspected according to the schedule provided below. Inspection frequencies are adequate based on the deterioration rates of equipment/systems and the probability of harm to human health or the environment if failure of the equipment/systems occurs, or any operator error goes undetected between inspections.

E.9.1 On Day of Treatment

Inspections will be conducted every day of operation (i.e., every day that open burning treatment occurs). For inspections conducted on the day of treatment at the TA-16-388 Flash Pad, the following items will be addressed, as appropriate:

1. General IRF information (Items 1-7)
2. (Un)loading area
3. Open burning unit area

E.9.2 Weekly

The following items will be inspected at least weekly regardless of whether treatment was conducted during that week. Weekly inspections will address the following items, as appropriate:

1. General IRF information (Items 1-7)
2. Communications equipment
3. Warning signs
4. Security
5. Work surfaces/floors/roads
6. Spill/fire equipment

7. Eyewashes/safety showers

8. Wind sock

9. (Un)loading area

10. Run-on/off control

11. Open burning unit area

ATTACHMENT G.28 CLOSURE PLAN OPEN BURNING TREATMENT UNIT

TECHNICAL AREA 16-388 FLASH PAD

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

This closure plan describes the activities necessary to close one of the hazardous waste open burning treatment units at Technical Area (TA) 16 at the Los Alamos National Laboratory (LANL or the Facility), hereinafter referred to as the "TA-16-388 Flash Pad" or "the unit". The information provided in this closure plan addresses the closure requirements specified in the Code of Federal Regulations (CFR), Title 40, Part 265, Subparts G and P for the thermal treatment units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act. Closure of the open burning treatment unit will be completed in accordance with Section 4.1 of this closure plan.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

TA-16 is located in the southwestern quadrant of the Facility at the West end of the Pajarito Plateau near the foothills of the Jemez Mountains. It is managed by the owner/operator's high explosives engineering personnel who are responsible for the safe treatment, storage, and handling of explosives waste and explosives-contaminated wastes generated by the explosives production facilities at LANL.

2.1 Description of the Unit and the Wastes Treated at the Unit

The TA-16 Burn Ground is located in the northeast corner of TA-16. It is located on the mesa and drains to the north, east, and south and is bordered on the northern side by Cañon de Valle and on the southern side by Water Canyon.

The OB unit, known as the TA-16-388 Flash Pad, consists of a 22-foot (ft) by 22-ft concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft from the pad perimeter. Inset one foot from the edge of the concrete pad along the two sides and back is a 3-ft-high, 8-inch-thick, integrally-poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel cover that covers the unit when not in use (Figure G.28-1). The unit is surrounded by a chain-link fence and brick retaining wall. An entry gate is located directly in front of the loading area.

Three 5-ft long forced air propane burners with adjustable mounts are mounted on the concrete wall. These propane burners provide the heat source for treatment activities at the unit. A burner is mounted outside the wall on each side and the back of the pad. One to three burners can be used, depending on the amount and configuration of the material to be treated. Most treatment events utilize two burners. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr). Therefore, the output of each burner is dependent on how many are used for a burn. Usually, they are operated at approximately 2 million BTU/hr. This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy explosives, typically to a temperature above 400 degrees centigrade (ºC) (see Section 2.2.3). The burners and other components are maintained, modified, and/or replaced, as needed to ensure proper operation and treatment effectiveness.

The TA-16-388 Flash Pad is used to treat dry explosives; wet explosives; and waste that is contaminated with explosives to destroy the characteristic of reactivity (D003). Descriptions of waste streams that may be treated by OB at the unit are discussed in Section 2.4.1 of this permit modification request. The maximum treatment capacity of the TA-16-388 Flash Pad is 200 pounds (lbs) of explosives for each treatment; however, burns are usually much smaller to assure that all materials are sufficiently heated to destroy the explosives. The maximum treatment capacity for contaminated liquids (e.g., solvent) is approximately 100 gallons. However, the amount of liquid waste treated per burn is adjusted to the amount of liquid that can be treated in a single day. This amount is usually 5 to 30 gallons, considerably less than the maximum treatment capacity. Additionally, the treatment quantity is limited to the quantity of waste treated and does not include the quantity of fuel (i.e. propane) or the weight of metal equipment when a large piece of equipment is treated for explosives contamination.

The TA-16-388 Flash Pad is used exclusively for OB waste treatment operations, and no other activities. Following waste placement at the unit, open burning operations are conducted from Building 16-389 (the control building). Operations at the unit require visual surveys and post-burn covering of the unit. This practice minimizes the potential for precipitation contacting untreated hazardous waste, if any exists.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

The maximum treatment capacity of explosives waste at the TA-16-388 Flash Pad was 1,000 pounds per burn or 50 gallons per burn until 2012, when it was reduced to 200 pounds per burn. Additionally, large pieces of equipment that are flashed at the unit may weigh in excess of 10,000 pounds. Only the estimated quantity of explosives is counted as the quantity treated by OB.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

The TA-16-388 Flash Pad will be closed to meet the following performance standards (40 CFR § 265.111):

- minimize the need for further maintenance;
- control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters, or to the atmosphere; and
- comply with the closure requirements of 40 CFR Part 265 Subparts G and P.

This will be accomplished through one of two methods:

a) ensure that contaminated media do not contain concentrations of hazardous constituents that are greater than the clean-up levels established in the *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation* (updated 2012) (NMED, 2012), and in LANL's *Screening Level Ecological Risk Assessment Methods* (LANL, 2012a) (as updated and approved by the NMED). For soils, the cleanup levels shall be established based on residential use; or

b) conduct a human health and ecological risk evaluation utilizing the screening levels described above and utilizing the objectives set forth in the *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012).

If the owner/operator is unable to achieve any one of the risk-based clean closure standards in (a) or (b) above, they must:

- control the migration of hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not pose an unacceptable risk to human health and the environment; and
- control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate,

contaminated run-off, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere.

The owner/operator shall demonstrate that the unit does not pose an unacceptable risk by complying with the post closure requirements in 40 CFR § 265.117 as well as conduct the following to protect human health and the environment:

- maintain the integrity and effectiveness of the unit by making repairs necessary to correct the effects of erosion, animal intrusion, or other events that compromise the unit;
- maintain surface water controls to prevent run-on and run-off from eroding or otherwise causing damage;
- conduct corrective action as necessary to protect human health and the environment;
- maintain fencing, security signs and locks;
- maintain training, operating, inspection, and monitoring, and other required records; and
- submit an annual report to the NMED providing the results of the required inspections, sampling results, and a summary of any needed repairs and whether repairs were effective.

Closure of the unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly managed as waste; 2) closure has been completed in accordance with the closure plan and been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the NMED.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the TA-16-388 Flash Pad. The following section provides the schedule of closure activities (see also Table G.28-1 in this closure plan).

Closure activities will begin according to the requirements in 40 CFR § 265.112 (d)(2). However, pursuant to 40 CFR § 265.112(e), removing hazardous wastes decontaminating or dismantling equipment, in accordance with an approved closure plan, may be conducted at any time before or after notification of closure.

The owner/operator shall complete the records review (review) and structural assessment (assessment), as described in Sections 5.1.1 and 5.1.2 of this closure plan, and shall notify the Department at least 20 days prior to the scheduled assessment so the Department may have the opportunity to participate in the assessment. The notification shall include the date on which the owner/operator expects to conduct the assessment.

The owner/operator shall complete all closure activities, including submittal of a final closure certification report to the Department for review and approval, in accordance with this closure plan (*see* 40 CFR § 265.113(b)). In the event that this timeframe cannot be met, the owner/operator may request from the Department an extension in accordance with 40 CFR § 265.113(c)(2) (*see* 40 CFR § 265.113(b)(1)(i)).

4.3 Amendment of the Closure Plan

The owner/operator may amend this closure plan in accordance with the requirements in 40 CFR § 265.112(c), which is incorporated herein by reference. If the results of the review or assessment require any changes to this closure plan (*e.g.*, the sampling and analysis plan), the owner/operator shall submit an amended closure plan to the Department, for review and approval, in accordance with this Section (4.3).

5.0 CLOSURE PROCEDURES

Closure activities at the unit shall include: a physical review of the unit and a review of the unit's records; proper management and disposal of hazardous waste residues, if applicable, contaminated surfaces and equipment associated with the unit; sampling to verify the closure performance standards in Section 4.1 of this closure plan have been achieved; and submittal of a final closure certification report. The following sections describe more specifically these closure activities applicable to the unit.

5.1 Records Review and Structural Assessment

Before starting closure decontamination and sampling activities, the Operating and Inspection Records for the unit will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations. Specific results of the records review and structural assessment will be included in the closure certification report.

5.1.1 Records Review

The Facility Operating Record (including, but not limited to, inspection and contingency plan implementation records) shall be reviewed at the time of closure and in accordance with the schedule in Section 4.2 of this closure plan. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern listed in Table G.28-2;

b. update the above-mentioned list as necessary;

c. update the estimated quantity of waste treated in Section 3.0; and

d. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

The owner/operator shall determine whether any spills or releases, defects, deterioration, damage, or hazards (*e.g.*, damage to the concrete pad or other unit materials) affecting waste containment or treatment occurred or developed during the operational life of the unit during which hazardous waste was treated. If the records indicate any such incidents, the owner/operator shall amend this closure plan (*see* Section 4.3) in order to update the sampling and analysis plan (SAP) (*see* Section 6.0) to incorporate the locations of these incidents as additional sampling locations. All additional sampling procedures, as applicable, shall be included in the amended closure plan.

5.1.2 Structural Assessment

The structural assessment is an assessment of the unit's physical condition. The assessment will include inspecting the unit's concrete pad (for any existing cracks or conditions that indicate a potential for release of hazardous constituents) and assessing the unit for evidence of any releases. If the assessment reveals any evidence of a release (*e.g.*, stains) or damage (*e.g.*, cracks, gaps, chips) to the pad, the owner/operator shall amend this closure plan (*see* Section 4.3) in order to update the SAP (*see* Section 6.0) to incorporate these additional sampling locations. All additional sampling procedures, as applicable, shall be included in the amended closure plan. This assessment will be documented with photographs and drawings, as necessary.

5.2 Decontamination and Removal of Structures and Equipment

In accordance with 40 CFR § 265.112(b)(4) (which is incorporated herein by reference), the unit's related equipment and materials (*e.g.*, concrete pad) will be decontaminated, or removed and managed according to Section 7.0 of this closure plan. The concrete pad and liner will remain at the unit and will be reused for other programmatic activities. All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the unit to meet the closure performance standards in Section 4.1.

5.2.1 Removal of Structures and Related Equipment

The burn tray, the three propane burners, and the metal retractable cover (and its mechanisms) will all be removed from the unit at closure (but after the structural assessment) and may be recycled.

5.2.2 Decontamination of Structures and Related Equipment

The unit's concrete pad will be decontaminated by hot water/steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms or other devices (*e.g.*, absorbent socks, plastic sheeting, wading pools) will collect excess wash water and provide containment during the decontamination process; however, no excess water is expected to be generated. If results of the solid concrete chip or soil samples (see Section 6.1) from below the pad indicate contamination from the unit, the entire concrete pad will be removed and disposed of according to Section 7.0.

No equipment at the unit is expected to be left in place. However, if equipment, identified during the assessment, is expected to be left in place, it will be decontaminated by pressure washing or hot water and sampled according to Section 6.1.

5.2.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution that consists of a surfactant detergent and water mixed in accordance with the manufacturers recommendations. The tools and equipment will be wiped down with the wash water solution and rinsed. Residue and disposable equipment will be containerized, characterized, and managed as waste in accordance with Section 7.0.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP identifies the specific sampling and analysis requirements for this unit and describes the sampling, analysis, and quality assurance/ quality control (QA/QC) methods that will be used to demonstrate that the owner/operator has met the closure performance standards in Section 4.1. The owner/operator shall comply with all the requirements in Section 6.0.

This SAP is designed to verify decontamination of surfaces, equipment, and materials; and determine whether a release of hazardous constituents to any environmental media has occurred. The SAP includes:

1) A list of hazardous constituents of concern (*see* Table G.28-2) for which soil and chip samples will be analyzed. This list includes all hazardous constituents defined as:

   a) any constituent identified in 40 CFR Part 261 Appendix VII that caused the United States Environmental Protection Agency (USEPA) to list a hazardous waste in 40 CFR Part 261 Subpart D;

   b) any constituent identified in 40 CFR Part 261, Appendix VIII; or

   c) any constituent identified in 40 CFR Part 264 Appendix IX, perchlorate, and nitrates.

2) The list of hazardous constituents of concern shall be utilized to select the analytical methods capable of detecting those constituents.

3) A site plan for verification and soil samples. The site plan includes Figure G.28-2 depicting the boundaries of the unit and verification and soil sampling locations. The locations include ten grab sample locations that represent locations immediately around the unit, locations of known spills, or other releases of hazardous waste or hazardous constituents during operation of the unit, and locations where run-off likely occurred from the unit.

4) The type of samples to be collected (*e.g.*, wipe, soil, surface water) and the rationale for the selection of the sample type.

5) Sampling methods including a description of the approved EPA sampling methods and procedures that will be used to collect each type of sample as specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) (EPA, 1986).

6) A description of the approved EPA SW-846 laboratory analytical methods that will be used to measure hazardous constituent concentrations (see Table G.28-4).

7) description of the quality assurance and quality control (QA/QC) procedures that include, but are not limited to:

   a) field duplicates, trip blanks, equipment blanks;

   b) a description of methods for decontamination of re-usable sampling equipment; and

   c) a description of all sample preservation, handling, labeling, and chain-of-custody procedures.

6.1 Sampling Activities

Sampling activities will be conducted in order to demonstrate that unit-related equipment and soils in and around the unit meet the closure performance standards in Section 4.1. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

- All metal equipment will be flashed prior to shipment off-site.
- The concrete pad will be hot water/steam cleaned or pressure washed.
- Soil samples will be collected from locations in and around the unit from the sample locations depicted in Figure G.28-2.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the procedures identified in this SAP which incorporates guidance from the EPA (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures. Before samples are collected, the sampling plan must be approved by the area Explosives Safety Officer. The Explosives Safety Officer will evaluate the area to determine the potential for detonable explosives or explosives contamination, and whether or not any extracted samples may be released from the area without initial internal explosives analysis.

6.2.1 Surface Water and Groundwater Sampling

Surface water sampling and groundwater sampling are included as part of the TA-16-388 Flash Pad closure activities because compliance for these media are demonstrated as part of compliance with the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES). Sample locations, analytical suites, and sampling schedules for the groundwater monitoring network at LANL are identified in the LANL Interim Facility-Wide Groundwater Monitoring Plan (IFGMP) for the 2013 Monitoring Year, October 2012-September 2013 (LANL, 2012b). The IFGMP is a document that is updated annually with approval by NMED in accordance with the March 1, 2005 (and modified in 2008) Compliance Order on Consent.

6.2.2 Soil Sampling

Soil samples will be collected from 10 locations surrounding the unit. Ten samples will be collected from the top two inches of soil and ten samples will be collected from a 6-10 inch depth. The soil sample locates are based on areas of potential deposition from air to soil and areas of potential storm water runoff.

Soil samples will be collected using a non-ferrous spade, scoop, auger, trowel, or other tool as specified in approved methods for the type of analyte to be sampled (*i.e.*, EPA 1996 or 2002). The sample collection process will be completed in accordance with American Society for Testing and Materials (ASTM), Active Standard D4823-95 (2008) Standard Guide for Core Sampling and ASTM D5633-04 (2008) for scoop sampling. Global positioning system (GPS) data utilizing Trimble GeoExplorer Unit will be collected for each sample location.

Soil sample analysis will include the following:

- 10 surface (0-2 inch depth) samples and 2 subsurface samples (6-10 inch depth) at TA-16 to be analyzed for:
    - Target analyte list (TAL) metals analysis 24 analytes using *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)* Methods 6010B, 6020 (inductively coupled plasma – mass spectrometry), and 7471A (cold-vapor technique for mercury), collected in a 250 milliliter (mL) polyethylene container;
    - Dioxins/Furans analysis for 26 target compounds using SW-846 Method 8290A (high resolution gas chromatography/mass spectrometry (HRGC/MS)), collected in two 125 mL glass containers;
    - High explosives analysis for 24 target compounds using SW-846 Method 8321A (high performance liquid chromatography/thermospray/mass spectrometry) with a modification to add explosives compounds generated specifically at LANL, collected in a 500 mL amber glass container;

- Analysis for 89 target semi-volatile organic compounds (SVOCs) using SW-846 Method 8270C (GC/MS), collected in a 500 mL amber glass container;
- Analysis for 88 target volatile organic compounds (VOCs) using SW-846 Method 8260B (GC/MS), collected in a 125 mL amber glass container; and
- Perchlorate anion (ClO_4^-) using SW-846 Method 6850 (HPLC/electrospray ionization/MS), collected in a 250 mL polyethylene container.

- Field quality control samples: One field duplicate soil sample will be collected for each analytical suite. A single trip blank for VOC analysis will be submitted per day per shipping cooler.

The samples will be shipped to and analyzed by a LANL-contracted independent analytical laboratory using the methods described above. Results from the sample collection activity will be submitted with the closure certification report.

6.2.3 Solid Chip Sampling

Solid chip samples will be collected from and analyzed to verify if residual hazardous constituents remain on the concrete pad and side walls of the unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 centimeters or to an alternate depth specified in the assessment. The material will be transferred to an appropriate container and the holding time and the preservation techniques to be used for each analysis will be selected from those listed on Table G.28-5. A total of three chip samples will be collected and analyzed for:

- High explosives analysis for 24 target compounds using SW-846 Method 8321A (high performance liquid chromatography/thermospray/mass spectrometry) with a modification to add explosives compounds generated specifically at LANL, collected in a 500 mL amber glass container; and
- Analysis for 89 target semi-volatile organic compounds (SVOCs) using SW-846 Method 8270C (GC/MS), collected in a 500 mL amber glass container.

6.2.4 Cleaning of Sampling Equipment

A disposable sampler is considered clean only when directly removed from a factory-sealed wrapper. Reusable decontamination equipment, including protective clothing and tools, and sampling equipment used during closure activities will be scraped, as necessary, to remove residue, cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel and sample management personnel until the samples are relinquished to the analytical laboratory. Chain of custody protocols will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. Any deviations from the sampling plan will be noted in the sample logbook and reported in the closure certification report. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.28-5 presents the requirements in SW-846 (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

The samples are maintained at appropriate temperatures after collection and throughout the shipping process. All samples are chilled to 2 degrees Celsius before shipment occurs. Samples are then wrapped, placed in the DOT approved shipping container with ample blue ice to hold the required temperature. Temperature blanks are placed in the cooler and sealed with custody tape. Off-site transportation of samples will occur via contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers. All shipments are sent overnight delivery. Once received, the analytical laboratory verifies that the custody tape is still intact and measures the temperature of the cooler. All the information is recorded and presented in the analytical data package. For all discrepancies the sender is notified for resolution.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Table G.28- 2. These constituents have been determined to be applicable constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that were managed or treated at the unit over its operational history. If new information is discovered during the records review, this closure plan shall be amended to include additional constituents for sampling and analysis. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.28-4. Analytes, test methods and instrumentation, estimated quantitation limits, and rationale for metals and organic analyses are presented in Table G.28-4. If any of the information from these tables has changed at the time of closure, the owner/operator will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control/records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.28-4 is based on the following considerations:

a. the physical form of the waste;

b. constituents of interest;

c. required detection limits (*e.g.*, regulatory thresholds); and

d. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with quality assurance (QA)/quality control (QC) procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and the potential for sample contamination associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that will be collected include trip blanks, and field duplicates. Table G.28-6 presents a summary of the field QC sample types, applicable analyses, frequency, and acceptance criteria. Field QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. Field QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory Quality Control Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures described in EPA SW-846 are the tools employed to measure the degree to which these QA objectives are met, and include method blank, matrix spike, and laboratory duplicate samples. The results for analytical laboratory QC samples will be reported along with the regular sample analyses.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

By removing any hazardous waste or hazardous waste constituents during closure, the owner/operator may become a generator of hazardous waste. The owner/operator shall control, handle, characterize, and dispose of all wastes generated during closure activities in accordance with this Section (7.0), Facility waste management procedures, and in compliance with applicable state, federal, and local requirements (*see* 40 CFR § 265.114). These wastes may include, but are not limited to:

(a) demolition debris;

(b) concrete;

(c) containerized waste;

(d) personnel protective equipment;

(e) soil;

(f) decontamination wash water; and

(g) decontamination waste.

The different types of wastes generated at closure, including the unit's decontaminated structures and related equipment, and their disposition options (*e.g.*, reuse, recycling, or disposal) are listed in Table G.28-3 of this closure plan.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the unit, the owner/operator shall submit, by registered mail, a closure certification report for Department review and approval. The Report shall document that the unit has been closed in compliance with the specifications in this closure plan. The Report shall summarize all activities conducted during closure including, but not limited to:

a) the results of the records review and structural assessment;

b) the results of all investigations;

c) remediation waste management;

d) decontamination;

e) decontamination verification and soil sampling activities; and

f) results of all chemical analyses and other characterization activities.

The owner/operator shall submit the closure certification report to the Department no later than 60 days after completion of closure of the unit. The Department may require interim reports that document the progress of closure. The certification must be signed by the owner/operator and by an independent professional engineer registered in the State of New Mexico (*see* 40 CFR § 265.115).

The report shall document the unit's closure and contain, at a minimum, the following information:

a) a copy of the certification pursuant to 40 CFR § 265.115;
b) any variance, and the reason for the variance, from the activities approved in this closure plan;
c) documentation of the records review and structural assessment conducted;
d) a summary of all sampling results, showing:
    1. sample identification;
    2. sampling location;
    3. data reported;
    4. detection limit for each analyte;
    5. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
    6. identification of analytical procedure;
    7. identification of analytical laboratory;
e) a QA/QC statement on analytical data validation and decontamination verification;
f) the location of the file of supporting documentation, including:
    1. field logbooks;
    2. laboratory sample analysis reports;
    3. QA/QC documentation; and
    4. chain-of-custody forms;
g) storage or disposal location of hazardous waste resulting from closure activities;
h) a copy of the Human Health and Ecological Risk Assessment Reports, if a site-specific risk assessment was conducted pursuant to Section 4.1 for the unit; and
i) a certification statement supporting the accuracy of the closure certification report.

Documentation supporting the independent registered professional engineer's certification must be furnished to the Department before the closure of the unit is approved.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

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

EPA, 2000. US Environmental Protection Agency, Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, Authorization to Discharge under the NPDES, NPDES Permits No. NMR05A734 and NMR05A735, issued to the University of California and the DOE, respectively. Effective December 23, 2000.

EPA, 2002. *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment*," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

LANL, 2012a. *Ecorisk Database (Release 3.1)*, on CD, ERID-228726, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2012b. *Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012-September 2013*. Los Alamos National Laboratory document LA-UR-12-21331, EP2012-0092. Los Alamos National Laboratory, Los Alamos, New Mexico. August 2012.

NMED, 2012. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation.* February 2012, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.28-1

Closure Schedule for the Technical Area 16-388 Open Burning Treatment Unit

Activity	**Maximum Time Required**
Notify the Department of initiation of closure	Day 0
Remove all waste including hazardous and solid waste	No later than Day 90
Complete records review and structural assessment	After removal of all waste and before decontamination
Complete all closure activities	No later than Day 180
Submit final closure certification report to the Department	No later than Day 240

Table G.28-2

Hazardous Waste Constituents of Concern at the TA-16-388 Open Burning Treatment Unit[a]

Category	**EPA Hazardous Waste Numbers**	**Specific Constituents**
High explosives and associated compounds	D003	HMX, RDX, TNT, PETN, TATB, Tetryl, and mixtures of explosives including; ANFO, Composition B, Cyclotol, IMX-101, PBX 9404, PBX 9407, PBX 9501, PBX 9502, PBX 9601, X0233, X0533, XTX 8003, XTX 8004, LX-02, LX-07, LX-10, and LX-14
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Semi-volatile Organic Compounds	D030, D036, F004	2,4-Dinitrotoluene, Nitrobenzene
Volatile Organic Compounds	F002, F003, F004, F005	Acetone, Ethanol, Benzene, MEK, Methylene Chloride, Toluene, MIBK, Xylene, Ethyl Acetate, Methanol
Other constituents of concern		Dioxins/Furans, Perchlorate, and kerosene

[a] Based on the unit operating record.
ANFO = Ammonium nitrate/Fuel oil
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
HMX = cyclotetramethylenetetranitramine (octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine)
RDX = cyclonite (cyclo-1,3,5-trimethylene-2,4,6-trinitramine)
MEK= methyl ethyl ketone (2-butanone)
TNT = 2,4,6-trinitrotoluene
MIBK = methyl isobutyl ketone (4-methyl-2-pentanone)
TATB = 1,3,5-triamino-2,4,6-trinitrobenzene

Table G.28-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Decontamination water	Non-regulated liquid waste	High Explosives Waste Treatment Facility (HEWTF) or sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Firebrick	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Metal covers/trays	Non-regulated solid waste	Recycled
	Hazardous waste	Treated if necessary to remove explosives and recycled.
Soil and tuff	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Recycled, salvaged, or sent to a Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded concrete	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded sampling and	Non-regulated solid waste	Subtitle D landfill

Table G.28-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
decontamination equipment	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.28-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Analytical Technique	Estimated Quantitation Limits [b] (mg/kg)	Rationale
Metal Analysis				
Aluminum	6010B	ICP-AES	20	Determine the environmentally available metal concentration in the soil samples following strong acid digestion.
Antimony	6010B	ICP-AES	0.03	
Arsenic	6020	ICP-MS	1.5	
Barium	6010B	ICP-AES	0.5	
Beryllium	6020	ICP-MS	0.1	
Cadmium	6010B	ICP-AES	0.03	
Calcium	6010B	ICP-AES	30	
Chromium	6010B	ICP-AES	0.5	
Cobalt	6010B	ICP-AES	0.5	
Copper	6010B	ICP-AES	1	
Iron	6010B	ICP-AES	30	
Lead	6010B	ICP-AES	1	
Magnesium	6010B	ICP-AES	50	
Manganese	6010B	ICP-AES	1.0	
Mercury	7471A	CVAA	0.01	
Nickel	6020	ICP-MS	0.4	
Potassium	6010B	ICP-AES	30	
Selenium	6020	ICP-AES	1.5	
Silver	6020	ICP-MS	0.01	
Sodium	6010B	ICP-AES	20	
Thallium	6020	ICP-MS	0.2	
Vanadium	6010B	ICP-AES	0.5	
Zinc	6010B	ICP-AES	1	
Organic Analysis				
VOCs	8260B	GC/MS	0.001 to 0.005	Determine the solvent-extractable VOCs concentration in the soil samples.
SVOCs	8270C	GC/MS	0.033 to 0.33	Determine the solvent-extractable SVOCs concentration in the soil samples.
Other Analysis				
Dioxins/Furans	8290	HRGC/MS	0.00001 to 0.0003	Determine the solvent extractable dioxin/furan concentration in the soil samples.

Table G.28-4

Summary of Analytical Methods

Analyte	**EPA *SW-846* Analytical Method [a]**	**Analytical Technique**	**Estimated Quantitation Limits [b] (mg/kg)**	**Rationale**
Perchlorate [ClO_4^-]	6850	HPLC/ESI/MS	0.002 mg/kg	Determine the water-soluble [ClO_4^-] concentration in the soil samples.
High Explosives	8321A [c]	HPLC/TS/MS	0.5 to 2.0	Determine the solvent-extractable high explosives concentrations in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846.*

[b] Estimated quantitation limits listed for all methods are based LANL contract-required quantitation limits for subcontractor analytical laboratory services.

[c] Instrumentation published in Method SW-846-8321A can be used to identify the required analytes that would not be detected using Method SW-846-8330, thus a LANL-specific modification is used for Method SW-846-8321A to analyze for explosives compounds.

CVAA = Cold-vapor atomic absorption spectroscopy
ESI/MS = Electrospray ionization/mass spectrometry
GC/MS = Gas chromatography/mass spectrometry
HPLC = High performance liquid chromatography
HRGC/MS = High resolution gas chromatography/mass spectrometry
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
ICP/MS = Inductively coupled plasma/mass spectrometry
SVOC = Semivolatile organic compound(s)
TS/MS = Thermospray/mass spectrometry
VOC = Volatile organic compound(s)
mg/kg = milligrams per kilogram

Table G.28-5

Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analytical Suite	Container Type and Materials	Preservation	Holding Time
	Metals		
	Solid Media: 250 - mL polyethylene		
	Solid Media: 250 - mL polyethylene	Solid Media: Cool to 4 °C	
	Volatile Organic Compounds		
	Solid Media: 125 - mL Glass Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
	Semi-Volatile Organic Compounds		
	Solid Media: 500 - mL Amber Glass	Solid Media: Cool to 4 °C	
	Other Analysis		
Dioxins/Furans	2 - 125 mL Glass	Solid Media: Cool to 4 °C	30 days
Perchlorate [ClO_4^-]	250 - mL polyethylene	Solid Media: Protect from temperature extremes	28 days
High Explosives	500 – mL Amber Glass	Solid Media: Cool to 4 °C	14 days

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius TAL = Target Analyte List

mL = milliter TCLP = Toxicity Characteristic Leaching Procedure

Table G.28-6

Recommended Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Trip Blank	VOCs	One set per shipping cooler containing samples to be analyzed for VOCs	Verify that external VOC contamination from bottle handling and analytical processes, independent of field sampling processes, has not occurred
Field Duplicate	All suites	One field duplicate for each analytical suite	Relative percent difference less than or equal to 20 percent
Cooler Temperature Blank	All suites	Included with each shipping cooler	Verify temperature preservation requirements have been maintained during sample transport

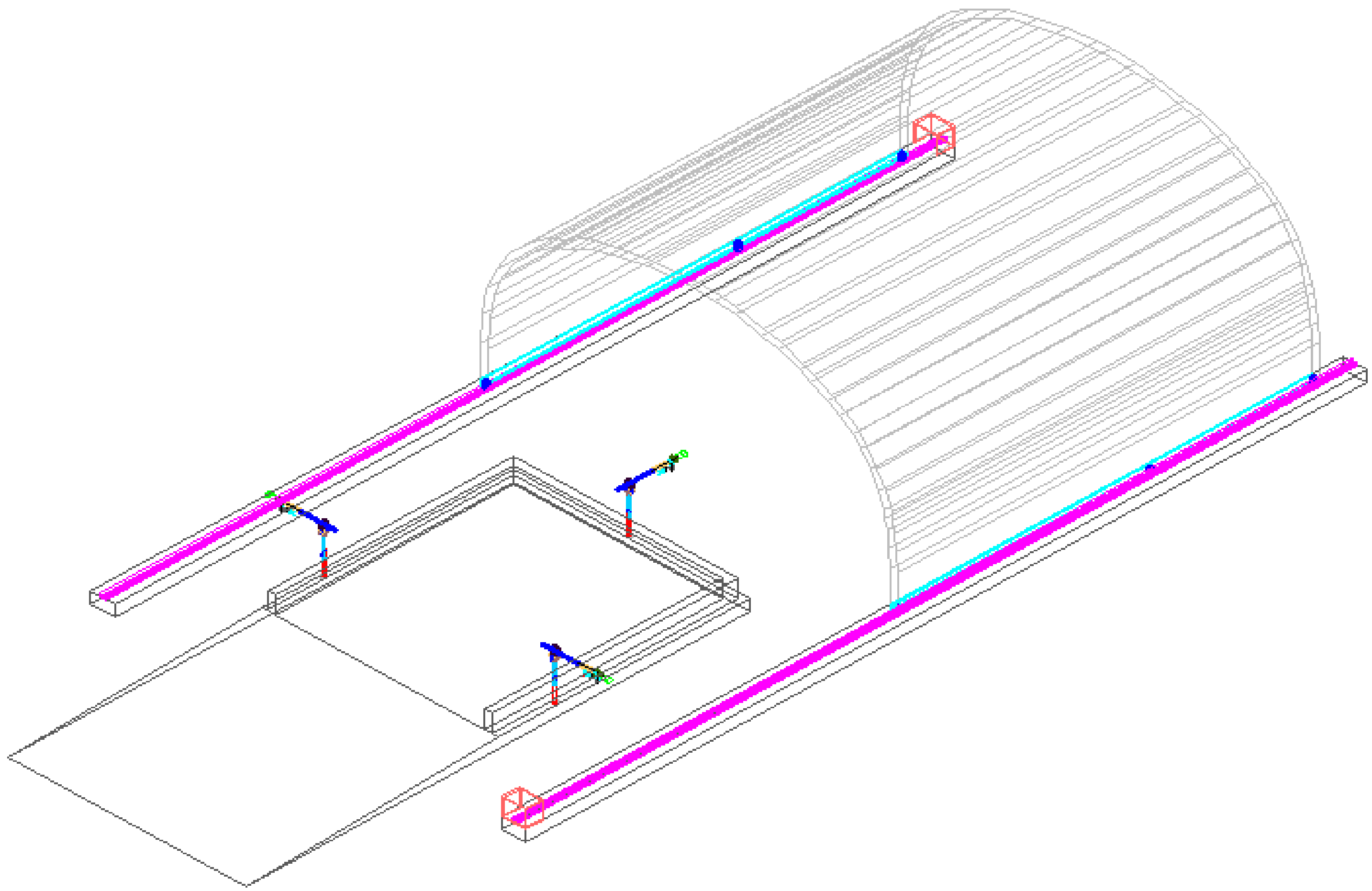


Figure G.28-1: Technical Area 16-388 Flash Pad

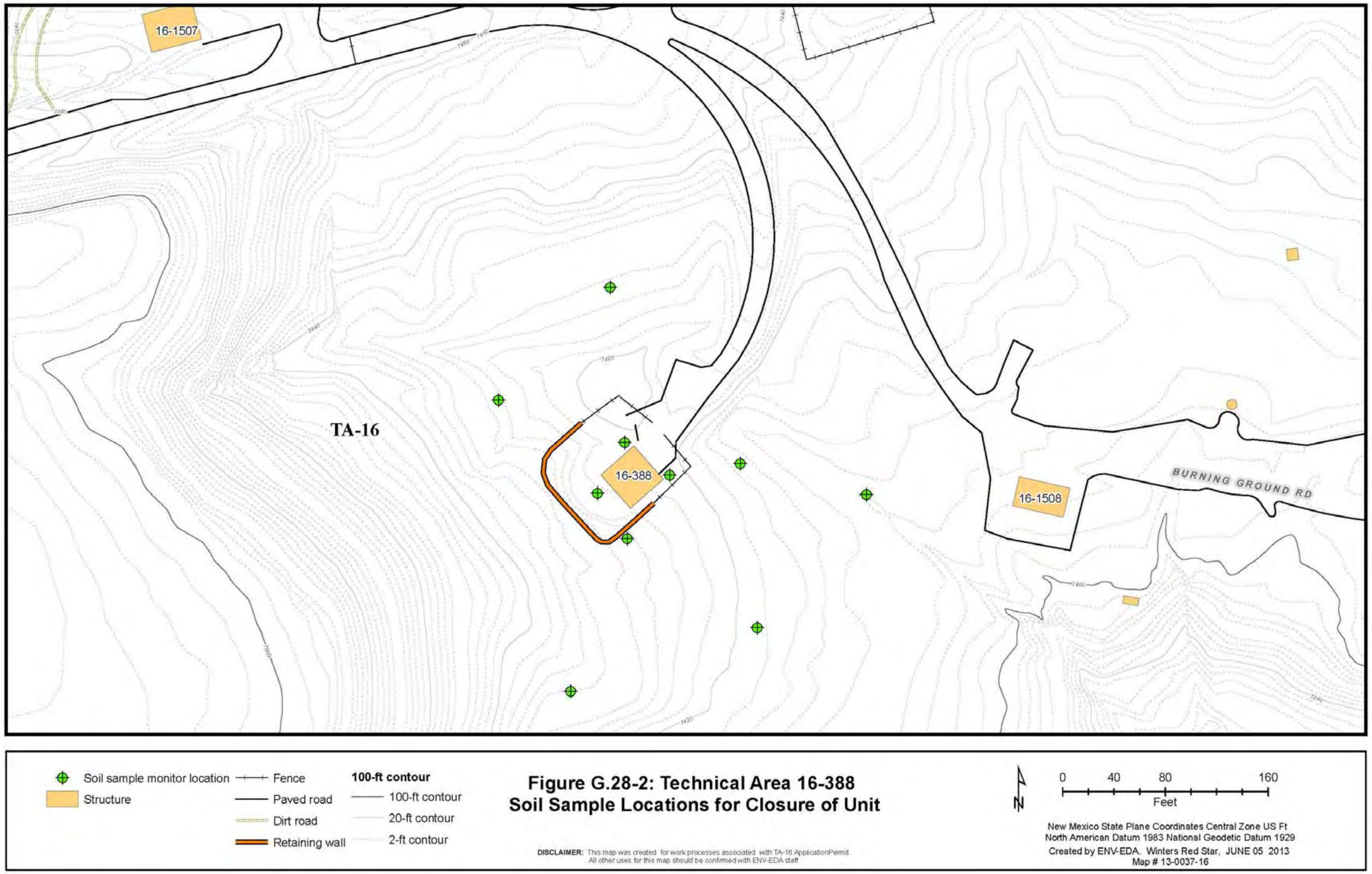


Figure G.28-2: Technical Area 16-388 Soil Sample Locations for Closure of Unit

ATTACHMENT I

COMPLIANCE SCHEDULE

Compliance Schedule

This Compliance Schedule briefly lists particular requirements, in chronological order of submittal, specified in the Permit and their associated due dates. The complete requirements are found in the referenced Permit Sections.

Permit Section	Requirement	Due date
Submittals Due After Permit Issuance		
2.11.3	Contingency Plan distribution	Within 5 days of the effective date of this Permit
1.4.1	Documentation to either close or permit the interim status units.	Within 180 days of the effective date of this Permit
1.10	Establish the Information Repository	Within 180 days of the effective date of this Permit
1.12	Post the Community Relations Plan on the Permittees' web site and implement that Plan	Within 180 days of the effective date of this Permit
1.12	Community Relations Plan	Post on LANL's web site within 180 days of the effective date of this Permit
Annual Submittals		
2.9	Annual report regarding the waste minimization program	Every December 1^{st}
1.12	Interested parties quire and compilation of comments and responses	Post on LANL's web site every September 1^{st}
1.17	Notice of demolition activities	On or before September 30 of each year
Other Submittals		
2.12.5	Biennial Report	March 1^{st} of each even numbered year

Permit Section	Requirement	Due date
6.4	Open burning alternative treatment assessment	On or before the 8th anniversary of the effective date for the open burning treatment unit
6.5.1	Open burning treatment unit soil sampling and analysis plan	December 1, of each sampling year (years 2, 5, and 8)

ATTACHMENT J

HAZARDOUS WASTE MANAGEMENT UNITS

TABLE J-1

Active Portion of the Facility

Includes units permitted to store and treat hazardous waste, interim status units, and the Material Disposal Areas.

Process codes and associated process descriptions:

- S01-storage in containers
- S02-storage in tanks
- S99-other storage
- D80-landfill
- T04 – treatment in tanks
- X01*-open burning
- X01**-open detonation

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-3-29	S01	18,500 gal	Includes Room 9010 and portions of Room 9020 and 9030 Located in Wing 9 of the basement of Building 29 Total square footage – 3,040	Indoor
TA-14-23	X01*	50 lbs HE/burn	Near Structure TA-14-23 Interim Status Unit	NA
TA-14-23	X01**	20 lbs HE/ detonation	Near Structure TA-14-23 Interim Status Unit	NA
TA-16-388	X01*	6,000 lbs/year 200 lbs or 50 gallons /burn	Flash Pad Total square footage - 484 ~~Interim Status Unit not authorized to treat hazardous waste and undergoing closure~~	Outdoor (associated with a open burn unit)

ATTACHMENT N

REPLACEMENT FIGURES

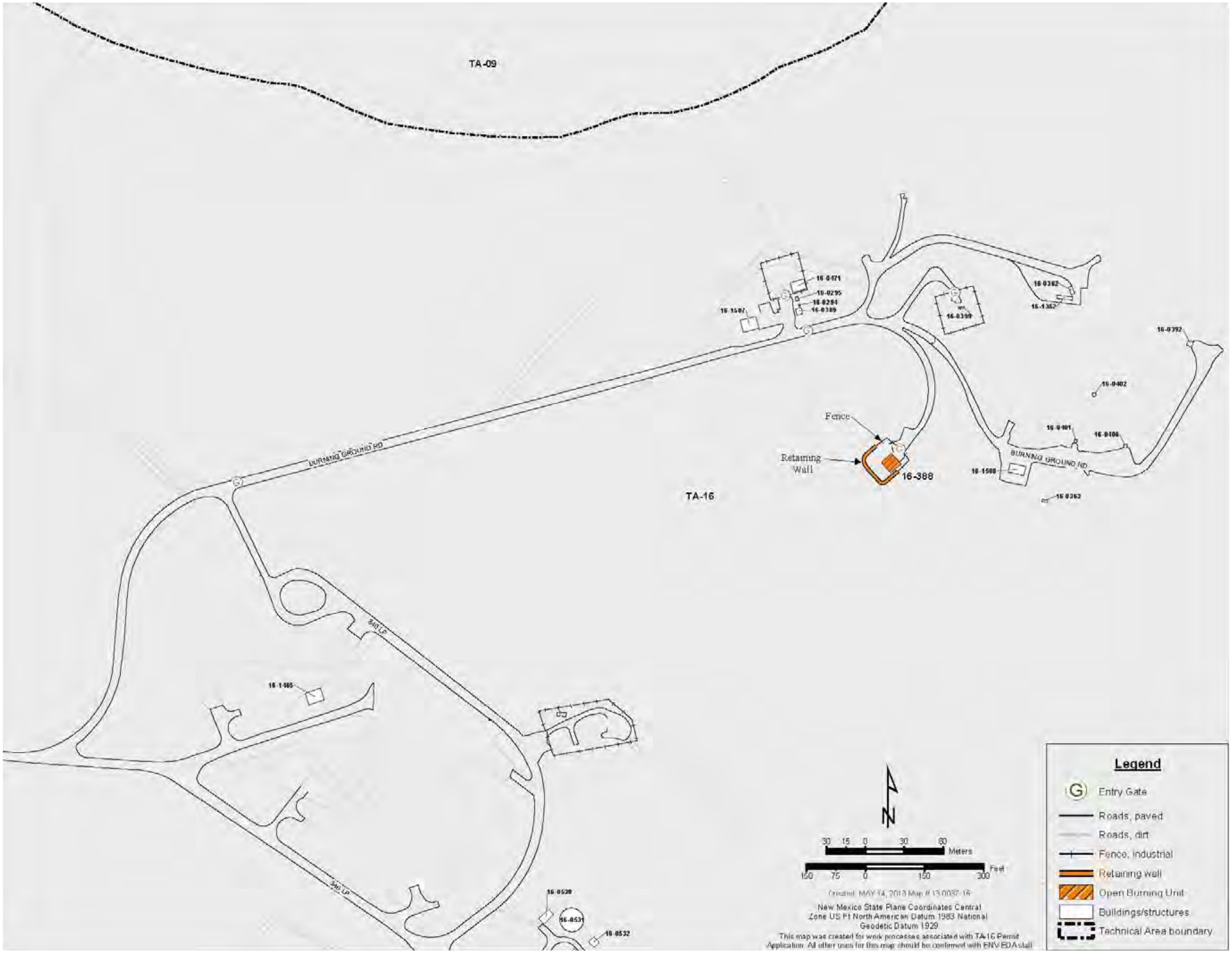


Figure 5: TA-16 Security Fences, Entry Gates, and Entry Stations

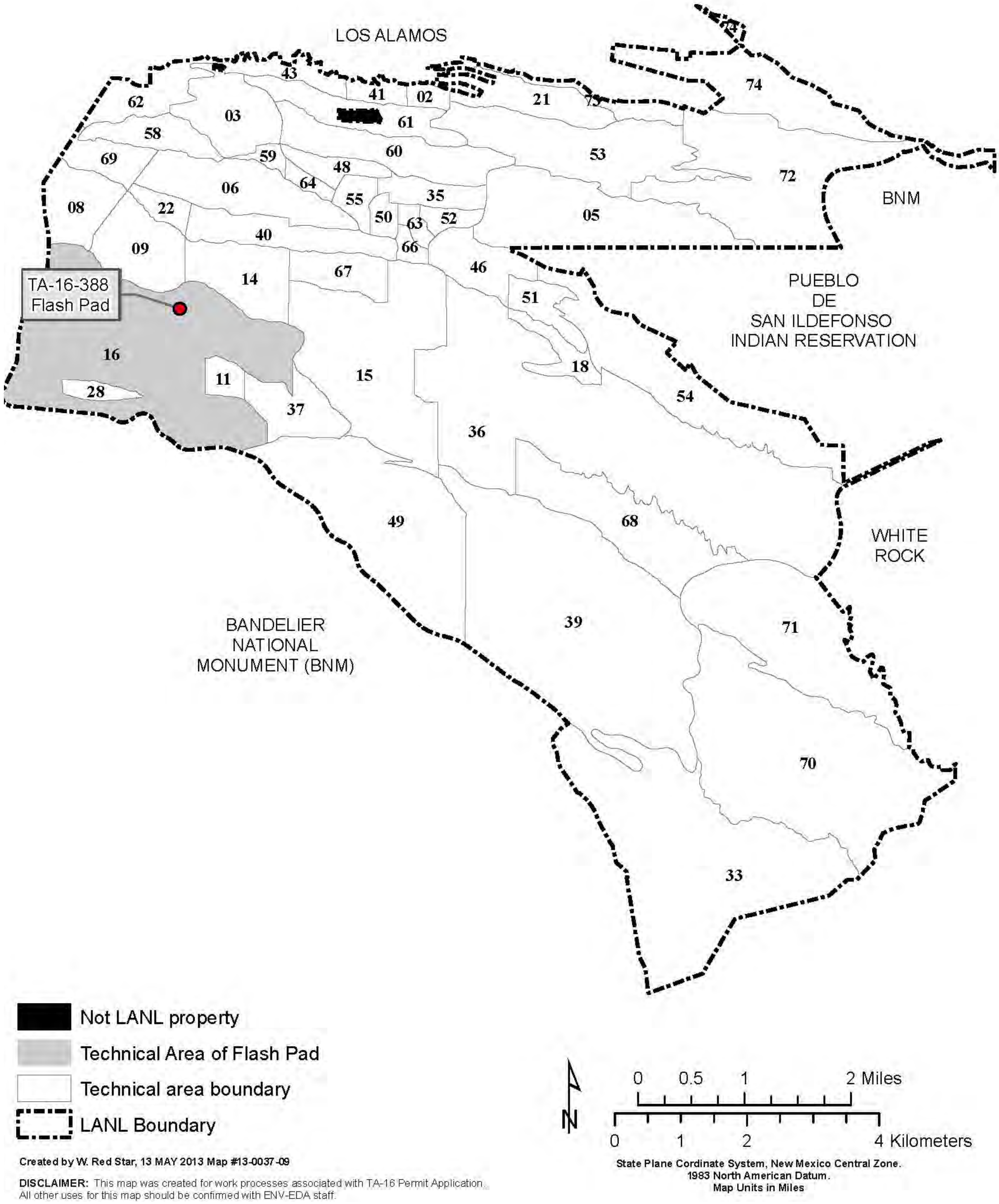


Figure 16: TA-16 Location Map

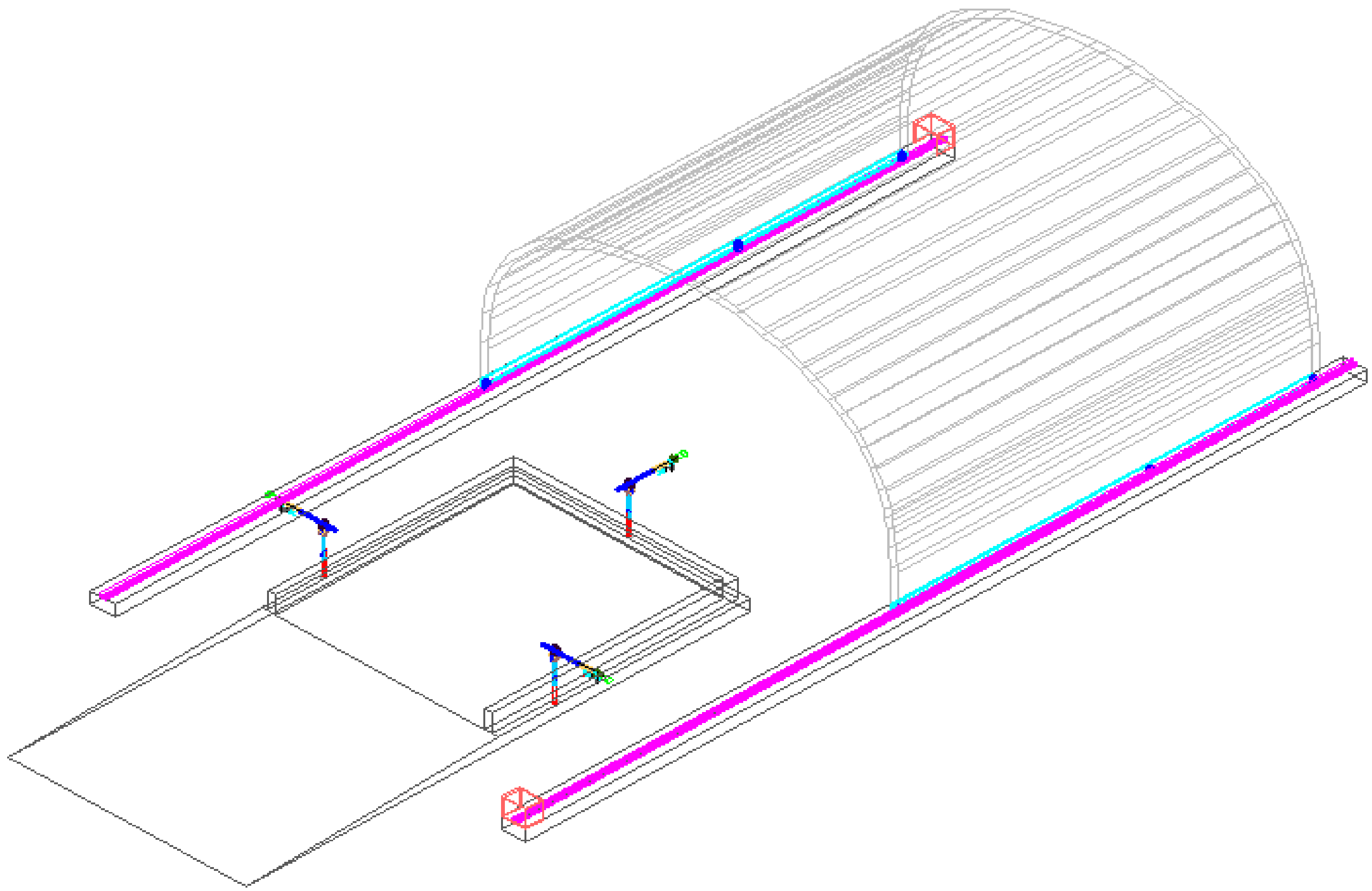


Figure 17: Diagram of the TA-16-388 Flash Pad

Attachment E

Treatment Justification for Open Burning Activities at Los Alamos National Laboratory

LA-UR-13-24180

Treatment Justification for Open Burning Waste Treatment Activities at Technical Area 16

(TA-16-388 Flash Pad)

Revision 0

LA-UR-13-24180

Prepared by:

Los Alamos National Laboratory
Waste Management Programs Group
Los Alamos, New Mexico 87545

[This page has been left intentionally blank.]

Table of Contents

List of Tables

List of Figures

1.0 INTRODUCTION

Open burning (OB) historically has been used at Los Alamos National Laboratory (LANL) for the safe destruction of detonable quantities of explosives waste and explosives-contaminated waste. Because these wastes are considered hazardous under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act (NMHWA), OB has been conducted in treatment units operated under RCRA interim status requirements found in Title 40 of the Code of Federal Regulations, Part 265, Subpart 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."

The United States Environmental Protection Agency (EPA), Region III, published draft guidance for the permitting and operation of OB and open detonation (OD) treatment units (EPA, 2002). In the draft permitting guidelines the EPA acknowledged that,

> "Because 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."

Future on-site treatment operations will require a RCRA permit, for which the U.S. Department of Energy (DOE) and the Los Alamos National Security, LLC (LANS), collectively the Permittees, are submitting a permit modification request in accordance with New Mexico Environment Department (NMED) requirements and following the approach presented in the EPA Region III draft *Permitting Guidelines*. According to the EPA draft *Permitting Guidelines,* the selection and appropriateness of OB treatment must be based upon the following:

- site specific safety,
- transportation hazard potential,
- off-site treatment options, and
- feasibility of alternative technology considerations.

In accordance with the fourth bullet above, the purpose of this document is to identify and evaluate alternatives to OB for the treatment of explosive waste streams at LANL, as part of the Permittees justification for seeking a permit for continued on-site treatment of some of its explosive waste streams.

1.1 OVERALL CONCEPTUAL APPROACH

The Permittees decision to seek a permit for on-site treatment is based on a careful, ongoing review of the alternatives to managing all of its explosive waste streams. The overall explosives waste management approach has been and is currently based on the following hierarchy of consideration.

1. Pollution prevention and waste minimization activities are identified and implemented to the maximum extent practicable, based on safety concerns, funding, programmatic effectiveness, etc., in order to eliminate and/or reduce the volume of explosives wastes and explosives-contaminated waste that must be treated and disposed. These efforts, and their effectiveness to date, will be discussed in Section 2.2.
2. Next, explosives-contaminated wastes are reviewed waste stream-by-waste stream in order to identify candidates that could be safely transported off-site to permitted facilities for treatment and disposal. As a result, most wastes that can safely and securely be shipped off-site are being shipped off-site; but, as discussed in Section 2.2.2, the effort to identify new opportunities for low-risk off-site shipment of waste streams is ongoing. This effort is discussed in Section 3 of this report.
3. For the remaining explosives waste streams that cannot be safely or efficiently transported off-site to permitted facilities, alternative technologies will be identified in this report in order to compare their ability (relative to OB) to treat the remaining explosives waste streams on-site . This effort, and the findings and conclusions, will be discussed in Sections 4 and 5 of this report.

2.0 BACKGROUND INFORMATION

This section describes explosive waste streams at LANL that are currently treated by OB under interim status, as well as the current waste minimization and waste management practices. The Permittees treat waste by OB with strict adherence to safety principles and rigorous operating procedures. The Permittees are currently applying for a RCRA permit in order to continue this practice at LANL's one remaining OB unit, which has historically operated under RCRA interim status.

2.1 FACILITY AND UNIT DESCRIPTIONS

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 an area of 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 all 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.

Historically, OB has been conducted in several RCRA interim status units: the TA-16 Incinerator, the TA-16-387 Flash Pad, the filter beds at TA-16-401 & 406, the TA-16-394 Solvent Tray, the TA-14-23 Q-site Burn Cage, the TA-16-399 Burn Tray and the TA-16-388

Flash Pad. Over time, operations have been reduced to a single OB unit. OB at LANL is now conducted only on the TA-16-388 Flash Pad at the TA-16 Burn Ground in the northeast corner of TA-16, which is located in the southwestern portion of LANL. TA-16 is situated on a broad mesa that is bounded on the north by Cañon 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. Elevation 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 set on a secondary containment area. The base of the flash pad is 12 in thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 in below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft from the pad perimeter. Inset 1 ft from the edge of the concrete pad along the two sides and back is a 3 ft-high, 8 in-thick, integrally-poured concrete wall. The pad is slanted down toward the back concrete wall. The area around the TA-16-388 Flash Pad is relatively level and is equipped with a retractable steel cover that covers the unit 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, the average quantity per burn is approximately 50 pounds. Most treatment events are conducted in the morning, when the wind is generally the lowest of the day, and only one burn is conducted per day. Most OB treatment events are conducted in approximately 30 minutes, and LANL conducts an average of approximately 38 burns per year.

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 generated primarily from explosives processing operations, such as machining and pressing; research and development activities, including pilot scale explosives production; decommissioning and demolition activities; and corrective action activities. They typically consist of off-specification explosives wastes, excess explosives waste, and other explosives-contaminated solid wastes (e.g., rags, glass, metal and wood). These wastes exhibit the characteristic of reactivity, as defined in 40 CFR §261.23. Explosives waste and explosives-contaminated waste meet the definition of reactive in 40 CFR §261.23 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 treatment are discussed below and summarized in Table 2-1:

- <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 from explosives machining and pressing processes. 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. The explosives machining waste stream generally makes up 80-95% of all waste treated at the TA-16 Burn Ground, and is the most routinely-generated waste stream treated by OB at LANL.

- <u>Excess explosives</u> - This waste stream includes excess explosives that may be in the form of flakes, granules, crystals, powders, pressings, plastic bonded putties, rubberized solids, or extrudable solids. Other materials that may be present in this waste stream include packaging materials used to store the explosives, such as 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. The excess explosives waste stream, on average, makes up 5-15% of the total waste treated at the TA-16-388 Flash Pad; however, generation of this waste stream is not as predictable as that of explosives machining waste. This waste stream is the second most common waste stream treated by OB at LANL.
- <u>Explosives-contaminated combustible debris</u> - 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 that 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, fluorinerts or trichloroethylene. Explosives-contaminated combustible debris are treated rarely and in small amounts, and make up <1% of the waste treated through OB at the TA-16-388 Flash Pad.
- <u>Explosives- contaminated solvent waste</u> - This waste stream consists of dimethyl sulfoxide (DMSO) that contains dissolved explosives. It is generated primarily by dissolving explosives and polymers as part of research and development activities. Explosives-contaminated solvent waste is treated rarely and quantifies as <1% of the waste treated at the TA-16-388 Flash Pad.
- <u>Explosives-contaminated noncombustible debris</u> - This waste stream consists of explosives-contaminated equipment, 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 (e.g. processing equipment, ductwork or pipes) that is typically recycled after treatment or consists of sand or carbon that has been contaminated through water filtration. This is the waste stream that is the most difficult to predict. 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. Explosives-contaminated noncombustible debris make up 1-3% of the waste treated at the TA-16-388 Flash Pad. Any oil present within the equipment is drained, and the equipment is then disassembled and/or steam cleaned if it can be done safely. (Note: the weight listed in Table 2-1 is the weight of the equipment, debris, or sand, not of the explosives content that is suspected to contaminate the equipment or debris.)

Table 2-1 Explosives Waste Streams Treated at the TA-16 Burn Ground (2005-2012)

Year	Explosives Machining Waste (lbs.)	Excess Explosives (lbs.)	Explosives-Contaminated Combustible Debris (lbs.)	Explosives-Contaminated Solvents (lbs.)	Explosives-Contaminated Non-Combustible Debris (lbs.)	Total Waste Treated (lbs.)
2005	2636	1	209	0	495	3341
2006	3666	0	57	270	0	3993
2007	2194	7	40	66	0	2306
2008	918	108	2	33	0	1061
2009	1711	0.5	16.5	3	0	1731
2010	1696	3647	2	0	0	5345
2011	1292	320	15	0	0	1627
2012	2555	600	0	0	73	3228

2.1.2 CURRENT WASTE GENERATION RATES

Table 2-1 lists, by waste stream, the quantities of explosives waste treated at the TA-16 Burn Ground from 2005 through 2012. Waste minimization and pollution prevention activities have reduced the routine generation of many 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.

2.2 POLLUTION PREVENTION AND WASTE MINIMIZATION

This first step in LANL's overall waste management hierarchy focuses heavily on waste elimination, recycling, and reuse. LANL has expended considerable effort to eliminate, minimize, and/or reclaim/reuse its wastes, and has made significant progress over the past decade in reducing the amount of explosives wastes that must be treated on- and off-site. Since 2007, LANL personnel involved with 27 different explosive R&D, testing, training, and operations projects have received pollution prevention awards at both the local and national level within DOE. Through waste minimization efforts, quantities of routinely generated explosives waste streams that must be treated and disposed have been reduced dramatically. These efforts to find reuse, recycle, and elimination opportunities for explosives waste streams will continue. However, the need for treatment of LANL's remaining explosive wastes, as an essential component to risk reduction, cannot ever be eliminated entirely.

2.2.1 POLLUTION PREVENTION PRACTICES IMPLEMENTED

In many cases, process improvements to explosives production and research activities at LANL have resulted in significant reduction in volume and types of explosive waste generated, thereby reducing the amount and types of wastes that must be treated by OB. Some of these process improvements are described below:

- Current LANL policies and procedures require generators of explosives-contaminated combustible debris 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 that must be treated on-site, is treated on-site. Non-detonable combustibles are treated and disposed off-site through incineration. As a result of these segregation practices, treatment of explosives-contaminated debris by OB has decreased from approximately 200 pounds (lbs.) per year to less than 20 lbs. per year for the last five years. This waste stream generation rate is not expected to increase in the future.

- Some explosives parts can now be pressed into their near-final shapes which reduces the amount of explosives machining waste generated. For example, when a cone shape was needed for an explosive experiment in the past, the explosive was pressed into a cylinder, which then had to be machined down to a cone. In that process, approximately 1/3 of the volume of the cylinder was discarded as waste. New mold designs allow for pressing a cone directly so that the shape requires only minimal finishing through machining.

- Alternative uses are now found for explosive pieces that do not meet quality specifications (e.g. use as fuel for open detonation processes), rather than treating them as waste.

- Explosives-contaminated debris is now transported to the TA-16-388 Flash Pad using reusable containers rather than disposable plastic bags as was done previously. While this option is not viable for some of the other waste streams, extra waste generation is avoided for explosives-contaminated combustible debris in this step.

- In 2005, LANL began to operate a solvent recovery system for the process generating the highest quantity of explosives-contaminated solvents treated on-site by OB. After recovery, the solvents are reused in experimental processes, rather than disposed. This project has eliminated the generation of explosives-contaminated listed solvent waste.

- Explosives-contaminated oils and solvents that are contaminated with less than 25% explosives are shipped off-site for treatment/disposal. Below 25%, the explosive in the solution is not considered an explosive hazard (DOE, 2012).

- The waste treatment operator now segregates or combines waste 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 flashed, when possible, to meet DOE *Standard for Explosives Safety* (DOE, 2012) release requirements. The waste fluids are collected in a sump and pumped to the High Explosives Wastewater Treatment Plant.

- 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.

- All OB waste treatment activities have been consolidated at the TA-16-388 Flash Pad. Other OB units used in the past (the TA-14-23, Q-site Burn Cage and the TA-16-399 Burn Tray) have been taken out of service. These units are being proposed for closure under RCRA interim status requirements pending NMED approval.

- Plastics are steam cleaned when possible, and disposed of as non-hazardous waste off-site.

2.2.2 ANTICIPATED WASTE GENERATION PRACTICES AND CONTINUAL IMPROVEMENT

The waste minimization efforts described above have significantly reduced the quantity of waste that is treated on-site through OB. However, as is apparent in Table 2-1 and Figure 1, following a general decline from 2005 through 2008, waste treatment quantities have varied considerably over the succeeding years. Routine on-site treatment of waste by OB at LANL appears to be stabilizing at approximately 2,200 pounds per year of routinely generated waste. However, risk reduction efforts at LANL increased the overall amounts of waste needing treatment in specific years, and will occasionally increase the annual quantity of waste to be treated in the future.

Explosives inventory reduction efforts already underway will continue to reduce the explosives waste inventory at LANL. These efforts have included the increased shipment of explosives off-site for reuse or disposal, as well as on-site reuse and on-site treatment of excess explosives as necessary. Potential use of the explosives currently in storage at LANL is the first choice in reduction efforts. Explosives are only treated when other options have not proved viable. Excess explosives (mostly in the form of powders and granules) were treated through OB at LANL in recent years during specific inventory reduction (risk reduction) campaigns. Annual waste treatment quantities increased due to these campaigns in 2008, 2010, and 2012 while routinely generated waste quantities continue to reflect ongoing production, manufacturing, and research programs at LANL.

Generation of the explosives-contaminated non-combustible debris waste stream has been minimal over the past decade. This is expected to change as LANL continues to reduce risk by decommissioning and demolishing aging infrastructure. As explosives processing buildings are decommissioned in the future (approximately 155,000 square feet), the quantity of explosives-contaminated equipment, ductwork, or pipes requiring treatment will increase. The quantity of generation of this waste stream is dependent on these activities and will fluctuate according to changes in funding for decommissioning and demolition activities.

LANL will continue to need the ability to treat explosives-contaminated equipment and demolition debris by OB because many of the explosives-contaminated equipment items and surfaces cannot be cleaned with steam or solutions. Demolition of explosives-processing buildings that contain internal and external piping, voids in walls and floors, ventilation systems, porous surfaces, sumps and drains will produce a waste stream of debris that will require on-site treatment before being shipped off-site for disposal.

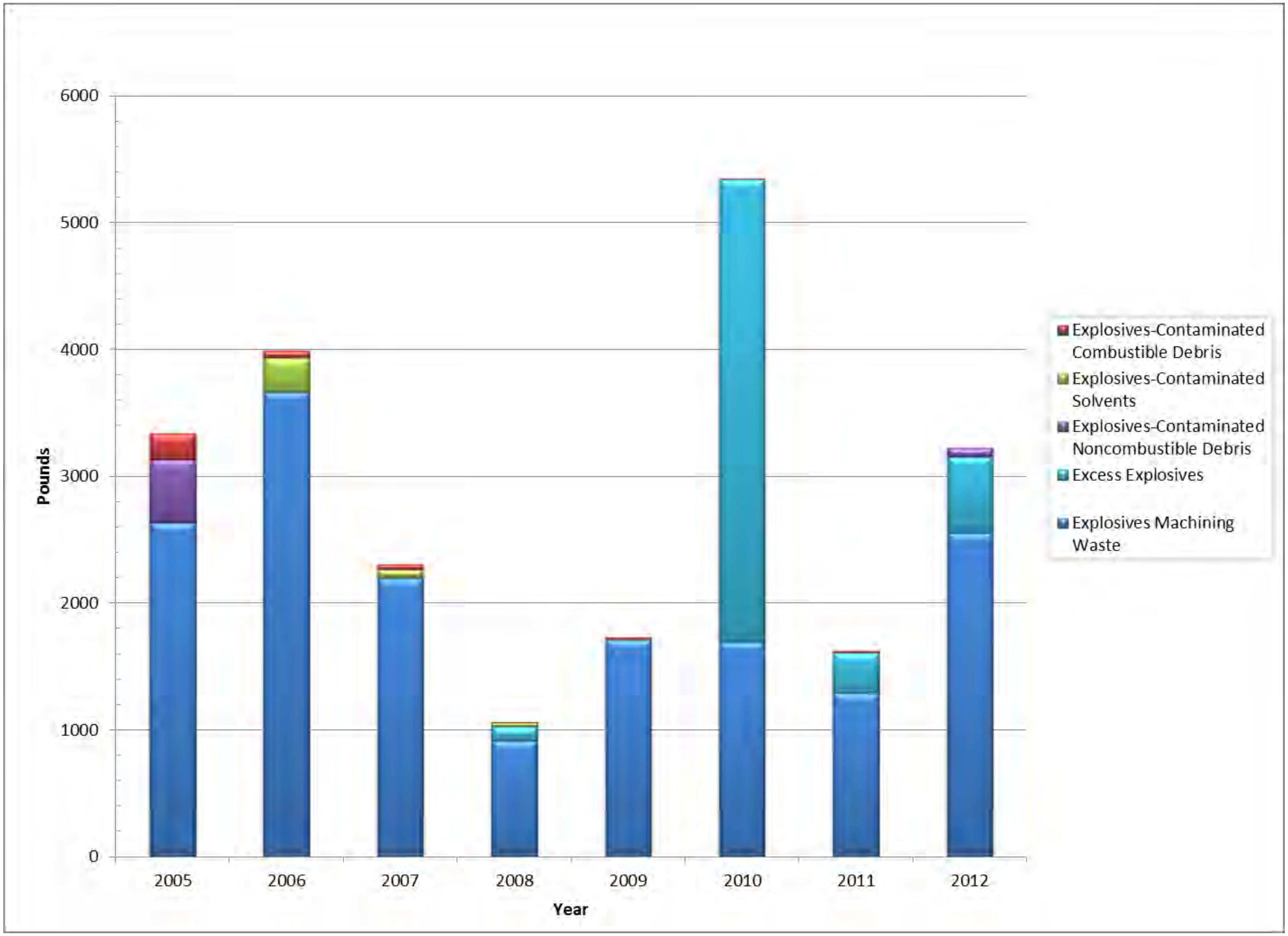


Figure 1. Waste Streams Treated by Open Burning at LANL

2.3 SAFETY PRINCIPLES

The DOE has an active role in research and development of explosives formulations, explosives synthesis, charge geometry, and explosives assemblies for national defense. DOE and its operating organizations maintain explosives safety standards that fully address potential risks. Maintaining worker and public safety is paramount in all 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 Explosives Safety* (DOE, 2012) for safe explosives operations, facility configuration, maintenance, and other activities related to treatment, storage, and disposal. All LANL explosives operations are planned and executed in accordance with the "Cardinal Rule" for safety established by the Department of Defense Explosives Safety Board (DoD, 2005): *Limit exposure to a minimum number of people, for a minimum amount of time, to the minimum amount of explosives consistent with safe, reliable and efficient operations*.

Safety and security are important concerns in every decision to treat explosives waste on- or off-site. Each on-site waste treatment activity at LANL is carefully planned to minimize worker exposure and handling of explosives. Personnel that are trained in explosives handling and familiar with the explosives' characteristics conduct the on-site waste treatment operations. This reduces the potential for compromise of the energetic material and the likelihood of serious injury or death. LANL explosives waste streams vary widely in form and constituents. On-site explosives professionals are familiar with the specific types of explosives waste generated at LANL and the processes that generate them. Therefore, historically, LANL has found it safer to treat these wastes on-site than to ship them off-site, where the waste must be further handled and transported on public roads.

Likewise, safety concerns have been critically important in LANL's past decisions regarding waste storage. Explosive wastes must be stored for a time in order to accumulate sufficient quantities for treatment or disposal, whether on- or off-site. Rigorous administrative processes are used to maintain explosives safety at LANL. For example, a specific process is used to maintain an accurate running inventory in each explosives work area that addresses materials as well as waste. 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. Historically, LANL has used multiple generator accumulation locations to accumulate explosive wastes in smaller quantities, in order to prevent propagation of accidental explosions.

As energetic materials age or are subjected to testing, the resulting waste can become unstable and develop properties that are unpredictable. Aged, sensitive, or otherwise-unstable explosives wastes are prohibited from transportation on public highways and roads, in accordance with United States Department of Transportation (DOT) regulations (49 CFR Part 173, Subpart C, §173.53). Currently, explosives wastes are accumulated on-site in compliance with generator accumulation requirements. Waste storage hazards are minimized by performing OB treatment on-site as often as needed in order to avoid accumulating excess waste inventory and exceeding the work areas' explosives safety limits.

Any decision to increase the types or quantities of explosives waste streams shipped off-site, or to adopt other on-site treatment technologies, would require additional storage areas and/or longer-term storage of explosives waste streams. Therefore, the additional safety hazards due to requiring additional storage will have to be taken into account when comparing treatment alternatives.

2.4 CONTINUED OPEN BURNING

Many of the specific wastes generated at LANL are not in pristine condition, have been subjected to insult, or are generated from unique processes. However, there have been zero safety incidents in the past 30 years. On-site treatment decreases the handling of waste required by workers. OB operations are conducted by explosives personnel that have experience handling such specialized wastes.

Continuation of OB allows treatment of explosives waste streams at LANL in a safe manner. LANL treats explosives waste streams that are prohibited by DOT regulations to be packaged and shipped on public roads, as well as explosives-contaminated noncombustible D&D debris.

Air monitoring and soil samples were collected near the TA-16-388 Flash Pad. The results of air modeling studies and soil sampling were used to evaluate the risks to human health and the environment from OB operations. The baseline risk assessment determined there was no unacceptable risk to human health and ecological receptors from LANL's open burning activities (LANL, 2013, Attachments F and H). The public is essentially prevented from contact with or access to explosives transported for on-site treatment by OB at LANL.

The TA-16-388 Flash Pad is currently operated under Interim Status. In order to continue to operate, the LANL Hazardous Waste Facility Permit would be modified, which could take as long as 2 to 3 years. The unit would continue to be operated under interim status until a permit is issued, thereby avoiding downtime and delays which would cause potentially hazardous accumulation of un-reacted wastes on-site.

3.0 OFF-SITE TREATMENT

Section 2 described 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 Section 1.1, the next step in LANL's waste management hierarchy is to review the remaining explosives-contaminated wastes stream-by-stream, in order to identify candidate wastes that could be safely transported off-site to permitted facilities for treatment and disposal. Most wastes that can now safely and securely be shipped off-site are already being shipped off-site; nonetheless, LANL continues to review its explosives wastes on an ongoing basis in order to identify additional opportunities for increased off-site shipment if and when they become available.

As stated above, LANL currently ships a number of its energetic (i.e., explosive) wastes off-site to RCRA-permitted commercial treatment facilities. LANL is currently shipping bulk propellants, munitions containing propellants, and some excess explosives to off-site facilities for treatment and disposal when the waste meets the facility's waste acceptance criteria (WAC), off-site disposal is economically feasible, and the waste can be safely transported (for example, explosives-contaminated oils and solvents that are contaminated with less than 25% explosives). Off-site shipments in the last five years include the following:

- 3,200 pounds of rocket motors containing perchlorate based propellants, and
- 1,570 pounds of prilled ammonium nitrate (managed off-site as chemical waste).

The above listed waste that was shipped off-site was not a suitable candidate for treatment by OB. In order to be sent to off-site permitted commercial treatment facilities, any energetic (i.e., explosive) waste candidates must meet the following requirements:

- the treatment facility's WAC, where they would be treated in order to comply with applicable Land Disposal Restriction (LDR) requirements;
- Department of Transportation (DOT) requirements; and
- 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).

Off-site treatment decreases the overall quantity of explosives waste that must be treated on-site. However, wastes awaiting shipment must be accumulated and stored on-site until the treatment facility approves the waste shipment.

3.1 CURRENT OFF-SITE TREATMENT OPTIONS

Options for waste treatment off-site are limited, but are always considered for both existing waste streams and new explosives waste that are characterized. There are currently three commercial facilities capable of accepting and/or treating some of the explosives waste streams generated at LANL:

- Clean Harbors, Colfax Facility;
- General Dynamics Ordnance and Tactical Systems, Main Office and Disposal Facility; and
- Veolia ES Technical Solutions-Trade Waste Incineration (Veolia-TWI).

The following is a summary of the three commercial facilities discussed above:

- 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, 2011).
- 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, 2013).
- 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, 2013). The facility includes a magazine that is used to store up to 100,000 pounds of 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.

At this time, LANL has contracts with Veolia-TWI and the Clean Harbors, Colfax Facility.

3.1.1 WASTE ACCEPTANCE CRITERIA

Off-site commercial treatment, storage, and disposal facilities (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 off-site are also subject to the availability of appropriate storage and treatment capacity at the receiving facility. Waste 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).

3.1.2 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 off-site commercial facilities. In most 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 at 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 and either 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; and
- explosives that fail to pass specified sensitivity, stability and burning tests.

All explosives waste streams that have not been previously shipped off-site must be tested, classified, and assigned proper shipping names and an EX ID number 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. Testing and classification may take several months. Any explosives waste streams that fail the required testing series cannot be assigned numbers and cannot be transported on public roads 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 lieu of an EX ID number. A commercial facility has to be 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. The commercial facilities that LANL could send explosives waste to usually only deal in commercial or highly characterized explosives. A new explosive may not be in the facility's permit.

Therefore, LANL will always need to maintain on-site waste treatment capability to safely disposition those materials which are forbidden from transport by DOT, for various reasons as described above.

3.1.3 FEDERAL REQUIREMENTS FOR TRANSFER OF WEAPONS MATERIALS AND EXPLOSIVES MATERIALS TO COMMERCIAL FACILITIES

Federal security and property requirements for classified waste and military munitions (as applicable) add to the complexity of handling, transporting, and treating explosives wastes generated at LANL. Many of the explosives waste streams, when unreacted, may contain classified components, compositions, or features. These components or features can complicate LANL's ability to treat an explosive hazardous waste off-site, and may significantly delay (or prohibit altogether) transportation of that waste to an off-site facility for treatment. Likewise, some explosive items may be controlled property according to DOE or DoD requirements, and may not be eligible for release to an off-site disposal facility, even for purposes of destruction.

3.2 PUBLIC AND WORKER SAFETY ISSUES WITH OFF-SITE SHIPMENT

Each of the available off-site facilities is located at some distance from LANL. The Clean Harbors, Colfax Facility is located 842 miles east of LANL; the General Dynamics Ordnance and Tactical Systems, Carthage, is located approximately 800 miles east of LANL; and the Veolia-Trade Waste Incineration facility is located 1,084 miles northeast of LANL. Transportation of this 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 treated on-site at LANL. By treating on-site, LANL can control the transportation of the waste by controlling the traffic in the area, the speed at which it can travel, and by limiting the area within which the waste is moved. Treatment of waste on-site decreases the potential for the public to be exposed to these hazards. On-site treatment also decreases the handling of waste required by workers. Packaging and transport for on-site treatment is conducted by explosives personnel that have experience handling the specific wastes generated at LANL. As stated previously, many of them are not in pristine condition, have been subjected to insult, and/or are generated from unique processes. Shipment off-site places these wastes in the hands of personnel who are less knowledgeable and experienced with these particular waste streams.

Transporting waste for hundreds of miles via motor carrier also increases the off-site human and environmental impact, including overall emissions from vehicles that transport the wastes to treatment and/or disposal facilities. The distance transported raises the risk of transportation incidents, theft, or diversion.

Most treatment/disposal facilities require a minimum volume per shipment, as specified in the facility's waste acceptance criteria. Quantities of explosives waste streams generated at LANL have been generally decreasing, however, generation rates are not consistent because they are based on programmatic activities from year to year. Wastes treated on-site are currently treated within days or weeks of generation. Without these capabilities, the shippable wastes would have to be accumulated until the minimum volume accepted by the off-site treatment facility was reached or a lesser quantity for transport may 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.

3.3 SECURITY CONSIDERATIONS FOR OFF-SITE TREATMENT

As part of its national security mission, the Permittees will continue to experiment and develop explosive formulations and assemblies that may be related to threat reduction, homeland security, and enhanced surety projects. During times of heightened security risk, LANL has prohibited the shipment of explosives waste for security reasons. Off-site shipment also increases the potential risk of transportation-related incidents, theft, or diversion. These concerns will affect the selection of alternatives for treating such non-shippable wastes on-site.

3.4 SUMMARY OF OFF-SITE TREATMENT CONCERNS

Although increasing the amounts and types of explosive waste streams shipped off-site for treatment and disposal would further reduce the overall quantity of explosives waste treated on-site, increased off-site treatment and disposal is not recommended at this time, for the following reasons which are discussed throughout this section.

- Off-site treatment is already employed whenever practicable.
- Shipping off-site violates the "Cardinal Rule" for safety established by the Department of Defense Explosives Safety Board: *Limit exposure to a minimum number of people, for a minimum amount of time, to the minimum amount of explosives consistent with safe, reliable and efficient operations*.
- Shipping off-site means having to store the waste until it can be shipped, if it can be shipped. Explosives may deteriorate or become unsuitable for transport while waiting for disposal approval.
- Additional storage requirements would pose greater permitting liability and increased hazards to accumulate effective shipment quantities.
- Under any scenario, on-site treatment at LANL will still be required to treat the excess explosives, non-shippable and classified wastes, and noncombustible debris wastes that cannot be shipped off-site for disposal without prior treatment.

4.0 ON-SITE TREATMENT THROUGH ALTERNATIVE TECHNOLOGY

The third step in LANL's waste management hierarchy is to address the remaining wastes that must be treated on-site. Currently, those wastes are treated through OB or OD. The following sections of this chapter describe how alternative technologies to OB were identified for treatment of current and future explosives wastes, and how potentially viable candidates were compared to OB.

4.1 EVALUATION APPROACH

In accordance with the approach outlined in the EPA Region III draft *Permitting Guidelines*, the following approach was used.

1. Identify and categorize alternative treatment technologies, including OB, to treat explosives-contaminated waste on site.
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 using a rigorous set of evaluation criteria.

4.2 TECHNOLOGY IDENTIFICATION AND INITIAL SCREENING

This section documents the Permittees' efforts to identify potential candidates as alternatives to OB for on-site treatment of energetic wastes. It reports the current status of each candidate as well as its applicability to the LANL waste streams of interest.

Alternatives to OB treatment 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 attention paid to wastes from explosives research and development.

4.2.1 IDENTIFICATION OF CANDIDATE TECHNOLOGIES

In an effort to exercise due diligence in considering all possible alternatives, the Permittees 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, 2013), recent reviews of alternatives conducted by various Department of Defense (DoD) facilities and programs (see, for example, Naval Air Warfare Center Weapons Division (NAVAIR-WD, 2004); Global Demilitarization Symposium (JOCG 2010, 2011), Strategic Environmental Research and Development Program (ETSCP, 2006 and SERDP, 2013) and from private industry (Eldorado Engineering, 2013).

4.2.2 PRE-SCREENING AND INITIAL SCREENING

In order to create a short list of applicable, commercially-available technologies for detailed evaluation, it was necessary to pre-screen the initial candidate list to eliminate methods or technologies that are inapplicable to the explosive waste streams at LANL, and those that, by themselves, are pre- or post-processing steps in a treatment train rather than primary treatment processes. Therefore, treatment technologies that were identified as pre-treatment (or other strictly-demilitarization activities), mitigation methods, or in-situ techniques were omitted from LANL's initial list of candidate technologies. The rationale is described further below.

Demilitarization/pre-treatment methods. Demilitarization/pre-treatment methods are not applicable to OB 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 only 1-2% of LANL's explosives waste streams and are treated by OD.

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 (sometimes, earth fill has been placed atop an OD shot for this purpose). As such, mitigation technologies are not applicable to the five LANL 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 five LANL explosives waste streams discussed here, which do not include explosives-contaminated environmental media.

After prescreening, a list of potential technologies that could treat explosives contaminated waste to meet LDRs was compiled. Table 4-1 is a comprehensive list of potential alternative treatment technologies with a brief description of each.

Table 4-1 Initial Technology Candidate List

Technology	Description
Chemical Conversion	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.
Co-firing in Boilers	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.
Contained Burn #1, Confined Burn Facility	Explosives-contaminated wastes are treated in blast-reinforced chambers. In some cases additional fuel must be added to the waste stream (such as kerosene). 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 units are currently in use by law enforcement agencies nationwide. The waste is ignited using a squib and allowed to burn of its own accord.
Contained Burn #2, Energetic-Contaminated Waste	This technology is designed for wastes contaminated with small amounts of explosive material. It 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 in some cases (e.g. kerosene).
Contained Detonation	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. Residuals may transform into toxic or more complex compounds than those created when treating the same waste by OB or OD.
Contaminated Waste Processor	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.
Flashing Furnace	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.

Table 4-1 Initial Technology Candidate List (continued)

Technology	Description
Incinerator, Fluidized Bed	Fluidized bed incineration uses an enclosed incinerator in which explosives wastes are injected 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.
Incinerator, Plasma Arc	Plasma arc incineration uses molten slag (soil with iron fluxing agent) which destroys inorganic compounds. The technology encapsulates inorganic toxic solid wastes in the molten slag which 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).
Incinerator, Rotary Kiln	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, 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.
Open Detonation	Open detonation (OD) involves the detonation of explosive wastes in an open air environment. This technology is best suited for small or large pieces of explosives.
Oxidation, Cerium-catalyzed	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.
Oxidation, Base Hydrolysis	Base hydrolysis oxidation heats waste to mild temperatures (90 to 150 degrees Celsius) and usually elevated pressures (200 pounds per square inch 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.
Oxidation, Molten Salt	Molten salt oxidation technology consists of introducing the explosives waste and oxidizing air into a vessel containing a bed of molten salts. The salt oxidizes the organic components of the waste stream to carbon dioxide and steam. The inorganic portion of the waste stream is contained in a molten bed of salt. The molten salt technology must be maintained at 500-1100 degrees Celsius. This technology requires a pre-treatment step of size reduction (e.g., shredding, milling, grinding, sizing) prior to molten salt treatment and a homogeneous waste stream for the feed.

Table 4-1 Initial Technology Candidate List (continued)

Technology	Description
Oxidation, Supercritical Water (Hydrothermal Oxidation)	Supercritical water oxidation uses the outcome of the base hydrolysis treatment and treats the solution in a high pressure high temperature tubular flowing reactor. The pressure and temperature exceed the critical point of water where extreme oxidation occurs resulting in a breakdown of the waste solution into nitrogen, carbon dioxide and carbon and carbon/nitrogen products. This treatment method can treat organic waste streams that contain no plastic materials. The feed materials must be flowable such as base hydrolysate.

4.2.3 INITIAL SCREENING

The initial screening, summarized in Table 4-2, used the following criteria to determine which, if any, of the initial candidates could be viable technology alternatives to OB for on-site treatment:

- Which of the explosives waste streams (and/or what percentage of all of the explosives wastes) can be effectively treated with this technology?
- What are the limitations of the technology with regard to 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)?
- Is the technology a viable alternative to OB? 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 technologies should be considered (not technologies that are still in the bench- or pilot-scale or demonstration phase of development).

Through this screening process, it was determined that five of the candidate alternative technologies could treat various portions of LANL's explosives waste streams. These technologies are: contained burn in a confined burn facility, contained detonation, a flashing furnace, open detonation, and rotary kiln incineration. Incineration and OB are the only technologies that will adequately treat explosives machining waste (the most commonly treated waste stream at the TA-16-388 Flash Pad) because the waste stream is wet and requires a continuous controlled flame to be treated effectively.

The initial screening process resulted in one other key finding. Based on this evaluation, it was determined that there is no single alternative technology, other than open burning, that is capable of treating all of the explosives contaminated waste streams that exist at LANL.

4.3 EVALUATION OF POTENTIAL ALTERNATIVE TECHNOLOGIES FOR ON-SITE TREATMENT

A focused evaluation of the remaining five alternative technologies was then conducted in order to determine if a combination of alternative treatment technologies could replace OB for wastes that must be treated on-site. The technologies were evaluated against OB using the following criteria:

- the percentage of LANL's OB 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

Table 4-2 Comparison of Alternative Technologies To Open Burning Waste Treatment

Treatment Technology	RCRA Permit Consideration	Waste Streams that can be Treated by Technology	LANL Waste Stream Applicability: Engineering Assessment Relative to OB	Viable Alternative to OB Treatment of LANL Waste Streams
Chemical Conversion	Treatment is not applicable to LANL waste streams	None	None: • Creates a secondary waste stream • Not suitable for any explosive waste streams routinely generated	NO Not suitable for any explosive waste streams routinely generated
Co-firing in Boilers	Treatment is not applicable to LANL waste streams	None	None: • Not suitable for any explosive waste streams routinely generated • Limited to explosives that are soluble in Fuel Oil #2	NO Not suitable for any explosive waste streams routinely generated
Contained Burn Facility	Subpart X (Subpart O if a controlled flame is used)	Excess explosives (small sized only)	Approximately 7% of waste streams could be processed safely. • Limited by the size of explosives • Cannot treat wet machining waste which would require a controlled flame to evaporate water and dry the explosives. To treat this waste stream, waste would have to be allowed to dry prior to treatment. Thus, staging/storage under controlled conditions for indeterminate periods of time is required. • Secondary waste streams created are scrubber waste and bag house dust	YES – but only in combination with other technologies

Table 4-2 Comparison of Alternative Technologies to Open Burning Waste Treatment (continued)

Treatment Technology	RCRA Permit Consideration	Waste Streams that can be Treated by Technology	LANL Waste Stream Applicability: Engineering Assessment Relative to OB	Viable Alternative to OB Treatment of LANL Waste Streams
Contained Burn for Explosives-Contaminated Wastes	Subpart X	Explosives-contaminated combustible debris	Less than 1% of waste streams theoretically could be processed safely: • Limited to explosives-contaminated combustible debris • Cannot treat wet machining waste which would require a controlled flame to evaporate water. To treat this waste stream, waste would have to be allowed to dry prior to treatment. Thus, staging/storage under controlled conditions for indeterminate periods of time is required.	NO Limited to explosives-contaminated combustible debris
Contained Detonation	Subpart X	Explosives-contaminated combustible debris (smaller)	Less than 5% of waste streams theoretically could be processed: • 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 withstand	YES - but only in combination with other technologies
Contaminated Waste Processor	Need for Subpart X Permit questioned	Explosives-contaminated combustible debris	Less than 1% of waste streams theoretically could be processed safely: • Limited to combustible debris	NO Limited to combustible debris
Flashing Furnace	Subpart X (Subpart O if a controlled flame is used)	Explosives-contaminated non-combustible debris	Explosives contaminated D&D waste streams could be processed safely: • Limited to noncombustible debris such as contaminated metal plate	YES - but only in combination with another technology

Table 4-2 Comparison of Alternative Technologies to Open Burning Waste Treatment (continued)

Treatment Technology	RCRA Permit Consideration	Waste Streams that can be Treated by Technology	LANL Waste Stream Applicability: Engineering Assessment Relative to OB	Viable Alternative to OB Treatment of LANL Waste Streams
Incineration, Fluidized Bed	Subpart O	Explosives machining waste (no filters)	Approximately 70% of waste streams theoretically could be processed: • Single combustion zone safety considerations - as waste slurry dries, the potential for explosion increases. • Limited to treating powders, liquids and slurries • Cannot treat most bulk explosives or noncombustible debris • Secondary waste streams include ash and scrubber residues	NO Has not been engineered to process waste safely
Incineration, Plasma Arc	Subpart O	Explosives-contaminated solvents, excessive explosives (powdered only)	Less than 5% of waste streams theoretically could be processed: • Limited to bulk explosives and solvent waste • Secondary waste streams created are ash, scrubber residue and slag	NO Limited to bulk explosives and solvent waste)
Incineration, Rotary Kiln	Subpart O	Explosives machining waste, excessive explosives (powdered only)	Approximately 95% of waste streams could be processed safely: • 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 • High volume process – not capable of meeting 99.99% destruction and removal efficiency (DRE) if operated in batch mode.	YES - but only in combination with other technologies

Table 4-2 Comparison of Alternative Technologies to Open Burning Waste Treatment (continued)

Treatment Technology	RCRA Permit Consideration	Waste Streams that can be Treated by Technology	LANL Waste Stream Applicability: Engineering Assessment Relative to OB	Viable Alternative to OB Treatment of LANL Waste Streams
Open Detonation	Subpart X	Explosives-contaminated combustible debris	Approximately 7% of waste streams theoretically could be processed safely: • Limited to bulk explosives and combustible debris	YES - but only in combination with other technologies
Oxidation, Cerium-catalyzed	Subpart X	Explosives-contaminated solvents	Less than 1% of waste streams theoretically could be processed safely: • Limited to solvent waste stream	NO Limited to solvent waste stream
Oxidation, Base Hydrolysis /Supercritical Water	Treatment is not applicable to LANL waste streams	None	None: • Limited to some organic waste streams with no plastic	NO Not suitable for any explosive waste streams routinely generated
Oxidation, Molten Salt	Subpart O	Explosives machining Waste (no filters)	Approximately 70% of waste streams theoretically could be processed: • Subject to scale-up engineering requiring extensive time and funding • Limited to homogenous waste like machining waste with no filters • Incompatible with chlorine in explosives binders	NO Only in combination with other technologies following an extensive development phase

- whether the technology meets RCRA regulatory guidelines.

The results of the focused evaluation are included in Table 4-3. Based on this evaluation, there is no combination of the five alternative treatment technologies that would be capable of treating all of the LANL explosives waste streams currently treated by OB. The most suitable combination of technologies would be incineration, a flashing furnace and OB.

4.4 SUMMARY – ON-SITE TREATMENT

As stated previously, there is no way to completely eliminate the need for a permitted OB unit at LANL. To achieve the maximum reduction in the overall volume of waste that will still require treatment by OB, a combination of technologies would be necessary, namely incineration (rotary kiln incinerator) and a flashing furnace used together with OB.

Under this scenario, an incinerator would be installed to treat machining waste, explosives-contaminated combustible debris and explosives-contaminated solvent waste, and a flashing furnace to treat noncombustible debris. OB would be used only to treat excess explosives and noncombustible debris items that are too large for the flashing furnace. On-site waste accumulation would be necessary in order to create the minimum quantities required for treatment runs, depending on the capacities of each unit and the desire to perform treatment runs on similar wastes whenever possible.

A RCRA permit would be required for each of the new treatment units (the incinerator and the flashing furnace) prior to construction and operation, as well as for the existing OB unit. The LANL Hazardous Waste Facility Permit would have to be modified to add these treatment units. The Permittees assume it would be able to continue to operate its OB unit under interim status until the OB-unit permit modification was approved.

Alternatively, a vendor with a mobile flashing furnace could be contracted to bring this equipment on-site one or more times per year to treat accumulated waste on a campaign-by-campaign basis. The equipment would be moved to other facilities in between treatment campaigns at LANL. Wastes would have to be accumulated or stored on-site until amounts were sufficient to bring the vendor back on-site. The Permittees would need to seek and obtain a RCRA permit modification that would allow an outside vendor to operate mobile equipment on the LANL facility during these treatment campaigns.

In either case, one or more additional RCRA storage units will require permitting, so wastes could be accumulated safely for treatment runs. This scenario would require multiple small generator accumulation areas spread across multiple explosives areas at LANL so wastes can be moved from generation to storage with the highest degree of safety. However, as discussed above, these storage situations would compromise the Permittees' ability to minimize

Table 4-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning

Criteria	**Open Burning**	**Contained Burn Facility**	**Incineration, Rotary Kiln**	**Flashing Furnace**	**Open detonation (OD)**	**Contained detonation**
Percentage of Waste Streams Treated by Technology	100%	~7%	~95%	~3%	~7%	~5%
Waste Streams Treated	All	Excess explosives (small sized only)	Explosives machining waste (powdered only)	Explosives contaminated non-combustible debris	Explosives contaminated combustible debris	Explosives contaminated combustible debris (smaller debris only)
Proven Technology	Yes	Yes- although larger explosive pieces cannot be treated and does not treat types of machining waste, liquids or noncombustible debris 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. Technology is most efficient in continuous operation with an engineered waste stream with little deviation in composition.	Yes- although can only treat one explosives waste stream generated at LANL.	Yes- most waste streams that can be open detonated are treated with this method rather than open burning.	Yes – although the size and quantity of the waste is limited per treatment event. 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.

Table 4-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning (continued)

Criteria	Open Burning	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Open detonation (OD)	Contained detonation
Public Acceptance	Limited- Public opposition has been voiced concerning open burning.	Limited- Previous public opposition to operation of incinerators. Support of confined burn facilities during open burning permit process.	Limited- Historic public opposition led to the closure of a formerly permitted incinerator at LANL.	Unknown	Limited- Public concerns about contamination and opposition to noise have been voiced.	Unknown
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.	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 time. Residual ash is not expected.	Metal fragments, CO_2, H_2O, and N_2.	Metal fragments; pulverized gravel; air pollution control unit residue; major burn emissions including CO, CO_2, H_2O, NO_x N_2; and secondary combustion products due to residence time.

Table 4-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning (continued)

Criteria	Open Burning	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Open detonation (OD)	Contained detonation
Reliability and maintainability	Very reliable and maintenance is minimal. Maintenance of burn trays, propane burners, and electronic matches are minimal.	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's variable and unique explosive waste streams. A large volume of waste is normally necessary to keep the incinerator running constantly to meet the required DREs. A trial burn would be required to determine if the incinerator could run in batch mode, or if waste would have to be accumulated to provide for constant throughput.	The reliability and maintenance requirements are unknown at this time for LANL's variable and unique explosive waste streams.	Very reliable with experienced technicians. Requires minimal maintenance of pit area and run-on/run-off controls.	Smaller units have proven reliable. Larger units (100 pounds) experienced leaking seals, weld failures and weak points. Fragments may damage chamber and require increased maintenance.

Table 4-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning (continued)

Criteria	Open Burning	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Open detonation (OD)	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.	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 and no capability to confirm that 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.	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.	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.
Meet regulatory guidelines	Yes with applicable RCRA Hazardous waste permits for the	Yes with applicable RCRA Hazardous waste permits for the	Yes with applicable RCRA Hazardous waste permits for the	RCRA hazardous waste permit is not required by some states. New	Yes with applicable RCRA Hazardous waste permits for the	Yes with applicable RCRA Hazardous waste permits for the

Table 4-3 Focused Comparison of Applicable Waste Treatment Technologies to Open Burning (continued)

Criteria	Open Burning	Contained Burn Facility	Incineration, Rotary Kiln	Flashing Furnace	Open detonation (OD)	Contained detonation
	facility.	facility.	facility. A trial burn will be required to evaluate the emissions from the process and to demonstrate that the incinerator meets 99.99% DRE.	Mexico may require Subpart X (Miscellaneous Unit) Permit.	facility.	facility.

the number of people exposed to the minimum quantity of explosives for the minimum amount of time.

Therefore, pursuing this option would require LANL to design, permit and build two new treatment units and multiple storage units, rather than simply operate the single OB unit for which a permit is now being sought. Historical attempts to permit waste burning incinerators in New Mexico have mostly failed in the past. LANL's RCRA-permitted mixed waste incinerator closed before becoming fully operational, mainly due to intense public opposition. The time that would be required to obtain NMED approval for the additional treatment units is completely unknown.

Finally, selection of this alternative still would not eliminate the need for permitted OD and OB units at LANL. Excess explosives, classified wastes, and noncombustible debris items that are too large for the flashing furnace could not be managed by a rotary kiln incinerator.

5.0 CONCLUSIONS

In Section 2 of this alternatives assessment report, the Permittees 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 the last several years. This, in turn, has significantly reduced the amounts and types of explosives waste requiring treatment on-site. These efforts are effective and are continuing, but they cannot entirely eliminate the need for continued on-site OB treatment in the foreseeable future.

OB has been shown to be an effective treatment technology for current and anticipated future explosives waste streams that do not require open detonation. These waste streams include LANL's five explosive waste streams listed in Table 2-1. LANL's baseline risk assessment evaluated the effect of past OB operations at the current and past waste treatment units, and demonstrated that there has been no unacceptable risk to either human health or ecological receptors from past operations (LANL, 2013, Attachments F and H).

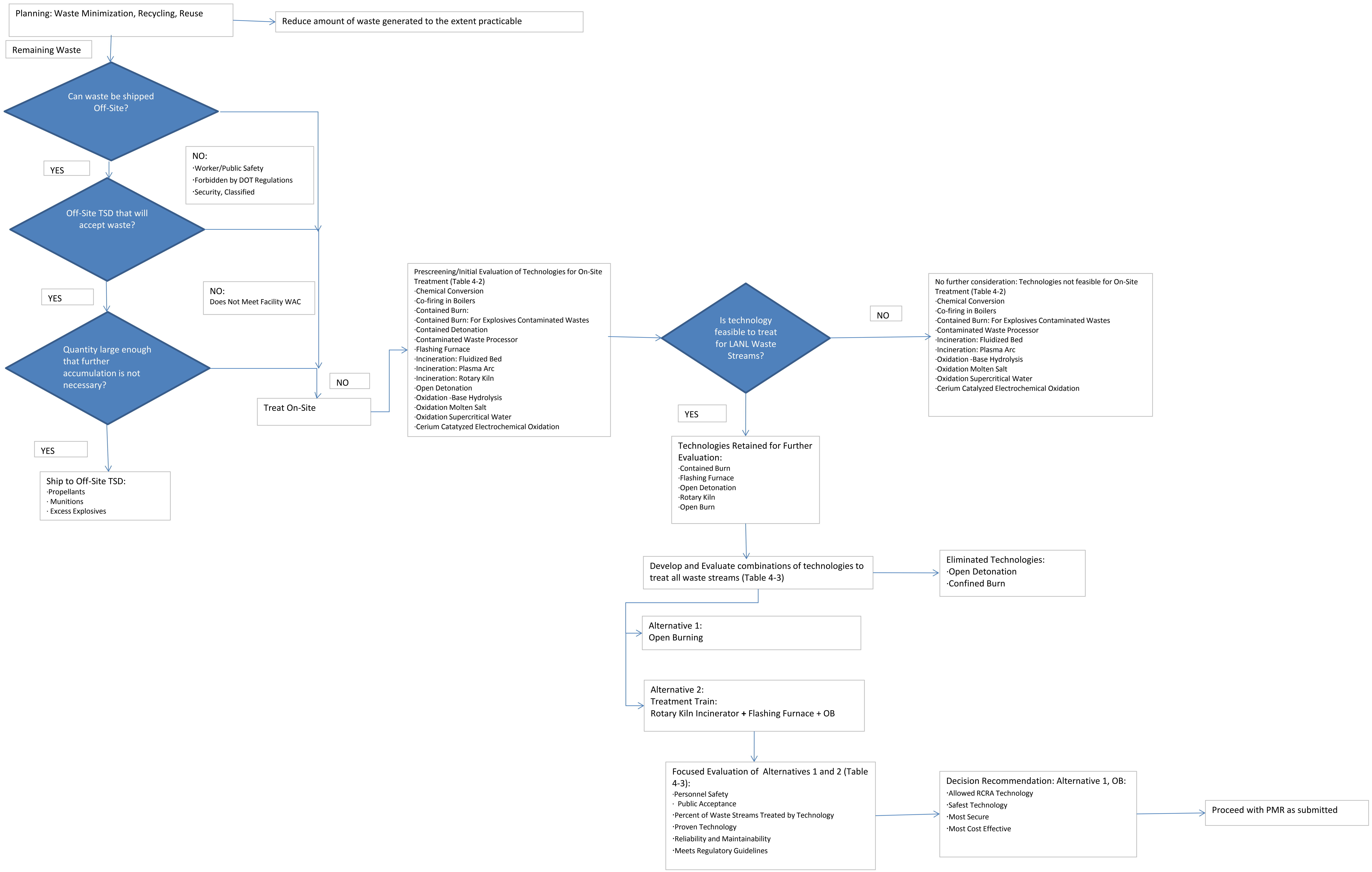
In Section 3 it was determined that there are no technically viable off-site alternatives to OB that can address every explosives waste generated at LANL, and that OB and OD would still be required. There are explosives waste streams generated at LANL that cannot be safely transported or securely disposed at off-site facilities. In accordance with 49 CFR §173.56 requirements, 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 number by the DOT Associate Administrator, before being shipped offsite. With the current backlog in the nationwide DOT registration system, this process would take multiple years to complete, requiring additional on-site storage. 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 2012) prior to leaving the explosives area.

In Section 4 it was determined that there is no alternative single treatment technology that can treat on-site all of the explosives wastes streams generated at LANL that are currently treated on-site by OB; therefore, multiple treatment technologies would have to be designed, permitted, constructed, and operated on-site 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). OB (to treat debris that is too large for the flashing furnace and to treat excess explosives) will still be required. All three thermal treatment units would require RCRA permits. It is certain that LANL would experience strong public opposition should the Permittees attempt to seek Subpart O and Subpart X permits. In addition to permitting challenges, LANL and the DOE would also anticipate major obstacles if they requested Federal funds to replace OB, given LANL's 30 year history of safe operation. Additionally, EPA states, *Generally, for existing units it is preferable to continue future OB operations at the same location (i.e., reduce the overall foot print of OB impacts although corrective actions and design and operational information may be warranted). The alternative is to close the existing unit and potentially impact a new OB unit location that has not been affected by historical OB/OD operations* (EPA, 2002).

The addition of multiple new treatment units to the facility is not a feasible option compared to the use of the existing OB unit because of the uncertainties associated with permitting complex treatment units (such as an incinerator and flashing furnace), the potential need to stockpile explosives waste to meet minimum treatment quantity requirements for the new treatment units (which would increase worker risk), the need to expose workers to uncharacterized explosives wastes (packaging, storage, preparation for processing), the siting of new explosives operations, and the historic public opposition to the use of incineration to treat any waste stream.

Based on this analysis, OB remains the safest, securest, and most cost-effective alternative for treatment of explosives contaminated waste. The logic for this decision is illustrated in Figure 2.

Figure 2: Evaluation of Potential Alternatives for Treating Explosives Contaminated Waste Streams



6.0 REFERENCES

Clean Harbors, 2013. Transportation and Disposal, Colfax, Louisiana Facts, Clean Harbors, Colfax, LLC. 3725 Highway 471, Colfax LA 71417. http://www.cleanharbors.com

Defense Technical Information Center, 2013. http://dsearch.dtic.mil/search?site=default_collection&q=open+burning+alternatives&client=dticol_frontend&proxystylesheet=dticol_frontend&proxyreload=1&filter=0&tlen=200&getfields=*&btnG.x=0&btnG.y=0

Department of Defense, 2005. Explosives Safety Management and the DoD Explosives Safety Board, Directive 6055.9E.

DOE, 2012. DOE Standard Explosives Safety. DOE-STD-1212-2012, U.S. Department of Energy, Washington, DC 20585. June 2012.

El Dorado Engineering, 2013. http://www.eldoradoengineering.com/thermal.htm

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

EPA, 2002. Draft Final Open Burning/Open detonation Permitting Guidelines.

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

General Dynamics Demilitarization Capabilities, 2013. http://www.gdots.com/Munitions/MunitionServices.html

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

LANL, 2013. Attachment F. Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations for Los Alamos National Laboratory, Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad). LA-UR-13-24178. Los Alamos National Laboratory, Los Alamos, New Mexico. June 2013.

LANL, 2013. Attachment H. Technical Area 16 Burn Ground Human-Health and Ecological Risk Screening Assessment, Los Alamos National Laboratory Permit Modification Request for Open Burning Unit at Technical Area 16 (TA-16-388 Flash Pad). LA-UR-13-24177. Los Alamos National Laboratory, Los Alamos, New Mexico. June 2013.

Lusardi, Sybil. 2008. Environmental Assessment for the Installation and Operation of the T-10 Contained Detonation Chamber at Picatinny Arsenal, New Jersey. US Army ARDEC, METC Energetics, Warheads and Manufacturing Technology Directorate (AMSRD-AAR-MEE-P), Picatinny Arsenal, NJ, July 2008.

Strategic Environmental Research and Development Program, 2013. http://www.serdp.org.

VEOLIA ES, 2013. http://www.veoliaes.com/content/Veolia/en/services.

Attachment F

Soil Sampling Results Summary Report For the Technical Area (TA) 16 Burn Ground

LA-UR-13-24179

Soil Sampling Results Summary Report for the

Technical Area (TA) 16 Burn Ground

Operated by:

Los Alamos National Security, LLC

Los Alamos National Laboratory

Los Alamos, New Mexico 87544

Owned by:

U.S. Department of Energy

National Nuclear Security Administration

Office of Los Alamos Site Operations

Los Alamos, New Mexico 87544

May 2013

LA-UR-13-24179

Introduction

Open burning (OB) hazardous waste treatment operations requiring a permit under the Resource Conservation and Recovery Act (RCRA) are conducted at the Los Alamos National Laboratory (LANL) in one location, where two OB Units (TA-16-399 Burn Tray and the TA-16-388 Flash Pad) are currently located. This report describes the soil sampling techniques, analytical methods, and results for the soil sampling activities conducted on August 13, 2012 and March 27, 2013 at the TA-16 Burn Ground. The purpose of the sampling events is to provide additional information in support of drafting a permit modification request to add the TA-16-388 Flash Pad to the LANL Hazardous Waste Facility Permit issued in November 2010 by the New Mexico Environment Department (NMED). The TA-16-399 Burn Tray will be closed under RCRA interim status.

The soil sampling was conducted as part of monitoring to assess the potential for contamination from the treatment operations at the two burn units and to determine if constituents from historic operations are present within the soil around both the units that could potentially adversely affect human health or the environment. Although analytically quantifying the specific contamination from operations at the open burning treatment units 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 a risk analysis to be used 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 for determining future closure requirements.

The units have been in use for open burning operations from 1951 to the present, and have been historically used for the open burning treatment of explosives hazardous waste. Other high explosives processing activities and waste treatment activities have occurred within the TA-16 Burn Ground area, but these units have only been used for 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).

Site Locations and Background

TA-16 is located in the southwestern quadrant of the Facility at the west end of the Pajarito Plateau near the foothills of the Jemez Mountains. Elevation ranges from approximately 7,700 feet (ft) at the west end of the TA to approximately 6,800 ft at the lower east end. Topography is varied, ranging from steep canyon walls to sloping mesa tops. The TA-16 Burn Ground is located in the northeastern section of this area on one of these mesa tops.

The matrix at the TA-16 Burn Grounds includes heterogeneous soil, debris, vegetation, and rocks. Soil was collected within potential run-off areas as well as from locations with the potential for greater deposition from air to soil. Sampling events did not include rocks, debris, or vegetation. At each sample location soil was collected from the surface to a depth of 2 inches.

The OB units at LANL are located at the TA-16 Burn Grounds and consist of TA-16-388 Flash Pad and TA-16-399 Burn Tray. The OB units are managed by LANL high explosives treatment personnel who are responsible for the safe treatment, storage, and handling of explosives contaminated wastes generated by the explosives research and development facilities at LANL.

The TA-16-388 Flash Pad consists of a 22-ft by 22-ft concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad. The pad is also equipped with a retractable steel roof that covers the unit when not in use. The TA-16-388 Flash Pad is used to treat dry explosives; wet explosives; and waste that is contaminated with explosives to remove the characteristic of reactivity (D003).The TA-16-388 Flash Pad is used exclusively for OB waste treatment operations.

TA-16-399 Burn Tray is a 4-ft-wide by 16-ft-long steel tray supported by 1.5-ft- high legs and is lined with firebricks. The tray is installed on a concrete pad that is surrounded by earthen berms. The tray was used to treat dry explosives, wet explosives, and waste that may have been contaminated with explosives to remove the characteristic of reactivity (D003). The TA-16-399 is no longer operational and is undergoing closure.

Description of Sampling Events and Techniques

Thirty-seven surface samples (0-1 ft depths) were collected in 2009 from 37 locations across the TA-16 Burn Ground (see Figure 1), primarily from locations where potential deposition was most likely to occur. All samples collected were analyzed for dioxins/furans and 31 of the samples collected were analyzed for metals. One of the samples (Sample number- 09RCRA462) collected during the 06/08/09 sampling event served as the background sample. Sample analysis for metals included SW-846-6010B, 6020 and 7471A and SW-846 8290 for dioxins/furans. Analyses for this sampling event did not include explosives, perchlorates, semi-volatile organic compounds (SVOCs) or volatile organic compounds (VOCs). Results from these soil sampling events are discussed and assessed within the 2010 *Human-Health Risk Assessment for the TA-16 Burn Ground* (LANL, 2010).

As part of the ongoing soil monitoring activities, on August 13, 2012 twelve surface soil samples (0-2 inch depths) were collected and results for these samples are discussed in this report. An additional five samples were collected in support of closure of the TA-16-399 Burn Tray. Results for these are not included herein. Locations were selected to be near the 2009 soil sampling locations (see Figure 1), within areas of topographic lows, and locations with greater potential for deposition from air to soil (see Figure 1).

Based on results from the August 13, 2012 sampling event, on March 27, 2013, seven additional soil samples were collected (Figure 1). Locations were selected to surround the 2012 soil sample location 9.

Soil samples for both the 2012 and 2013 soil sampling events utilized the American Society for Testing and Materials (ASTM), Active Standard D4823-95 (2008) Standard Guide for Core Sampling. Global positioning system (GPS) data was collected using a Trimble GeoExplorer unit. Soil samples were collected using a Teflon scoop. Samples were analyzed using methods specified in the next section of this report.

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-846-8321A and SW-846-8321A-MOD)
- Metals (SW-846-6010B, 6020 and 7471A)
- Dioxins/Furans (SW-846-8290)
- SVOCs (SW-846-8270C)
- VOCs (SW-846-8260B)
- Perchlorates (SW-846-6850)

Complete analytical results are included in Attachment 1.

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
  - NQ – No qualification
  - R – The affected results were not analyzed with a valid 5-point calibration curve and/or a standard at the reporting limit.
  - E – Over calibration.
- For Metals
  - 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
  - N– compound analyzed for, but not detected; reported value equals the CRQL
  - *– A quality control analyte recovery is outside of specified acceptance criteria
- 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
  - N- compound analyzed for, but not detected; reported value equals the CRQL
  - *- A quality control analyte recovery is outside of specified acceptance criteria
- 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
  - N- compound analyzed for, but not detected; reported value equals the CRQL
  - *- A quality control analyte recovery is outside of specified acceptance criteria
- For Perchlorate

- 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
- NQ – No qualification

Summary of Results

Results from the 2009 sampling event indicated that no metals or dioxins/furans exceeded either the NMED Residential Soil Screening Levels (SSLs) (NMED, 2012) or the 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 (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 soil sample field locations 8 and 9 as shown on Figure 2. Soil sample location 9 had dioxin/furan levels that were an order of magnitude higher than the other locations. These samples are located very close to samples 6, 9 and 10 from the 2009 sampling, which did not have dioxin/furans present above the screening levels (Figure 2). One SVOC, Nitrosodimethylamine[N-], was above the soil screening level at all 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 (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 soil sample location 9 (Figure 1). 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 location 9 had similar levels for dioxins and furans and to determine if there were additional exceedances for other constituents of concern. It was found that at sample locations 2 and 4 immediately surrounding location 9, both samples exceeded their respective SSLs and the RSLs for dioxins and furans. There were no exceedances for SVOCs, metals, perchlorate, or explosives.

Conclusion

Constituents of concern were measured within the soil in and around the TA-16 Burn Ground to determine baseline soil concentrations at the units after more than 60 years of use, and to provide data for monitoring purposes. As mentioned in the preceding section, soil collected from two sampling locations exceeded the SSLs and RSLs for dioxins and furans in the 2012 sampling event and two samples exceeded the SSLs and RSLs for dioxins and furans for the 2013 sampling event. It is possible that these exceedances for the dioxin/furan congeners within the soil may be the result of forest fires that burned near LANL property at locations around TA-16 in 2011. Forest fires are known contributors to dioxin/furan contamination. Additional causes for the exceedances could be runoff from the road upstream from the elevated detections or a local soil disturbance during the installation of power poles in the vicinity of the exceedances. Soil samples collected in 2009 in the general area of locations 6, 9 and 10 did not have elevated dioxin/furan concentrations (Figure 2). In order to assess the potential for contamination from the ongoing treatment operations at the TA-16-388 Flash Pad and to continually re-examine constituent concentrations within the soil around the unit and determine if concentrations are at levels that could potentially adversely affect human health or the environment, future soil sample activities will be conducted at regular intervals and data will be compared to the previously collected soil data.

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.

EPA, 2012. *Regional Screening Levels. U.S. Environmental Protection Agency, Region 3, 6, and 9*. November 2012.

NMED, 2012. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation*. February 2012, New Mexico Environment Department, Santa Fe, New Mexico.

LANL, 2010. *Human-Health and Ecological Screening Assessment for the TA-16 Burn Ground, Revision 1. LA-UR-10-00086 (AR 32346)*. January 2010, Los Alamos National Laboratory, Los Alamos, NM.

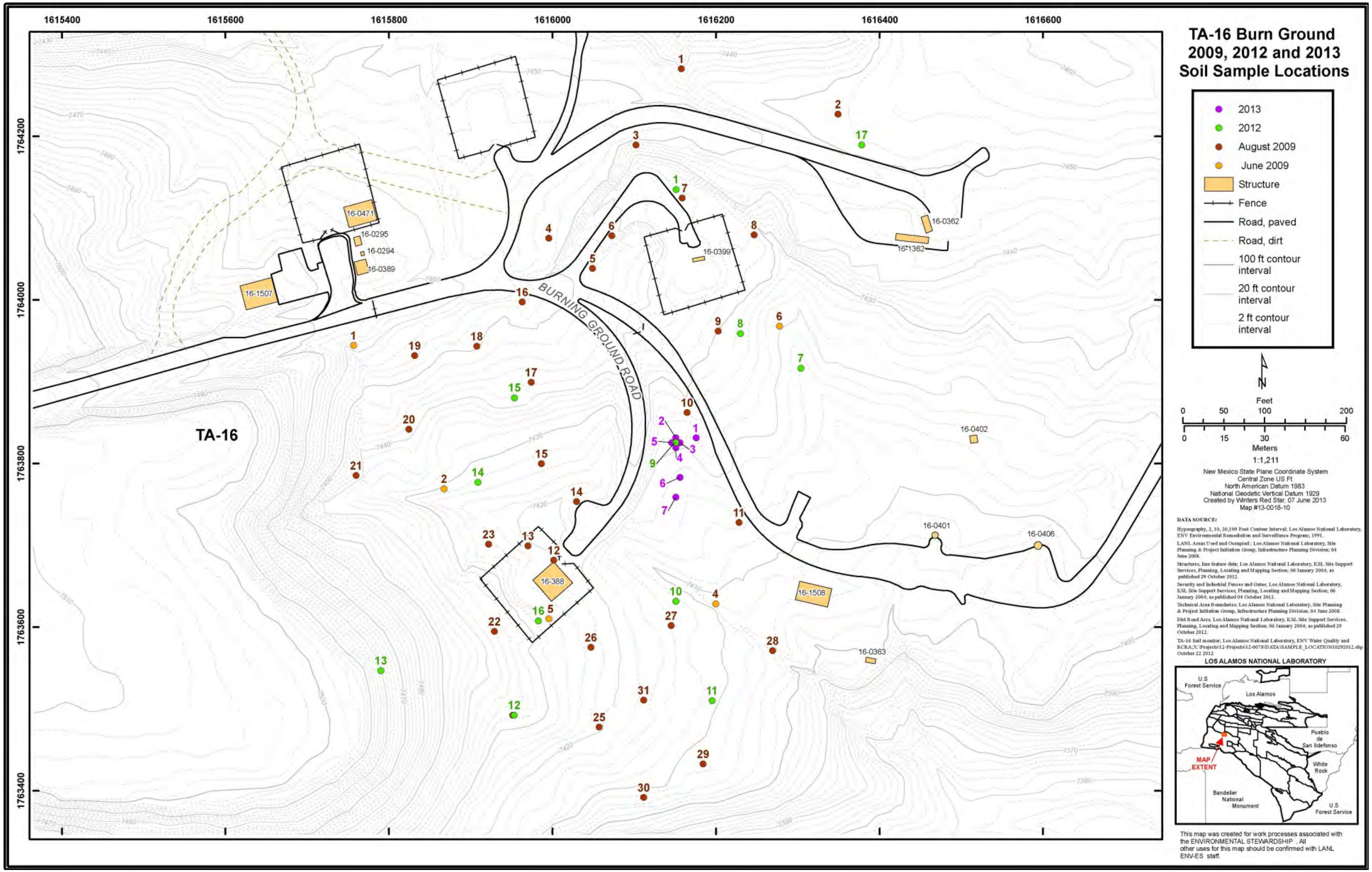


Figure 1. TA-16 Burn Ground 2009, 2012 and 2013 soil sample locations.

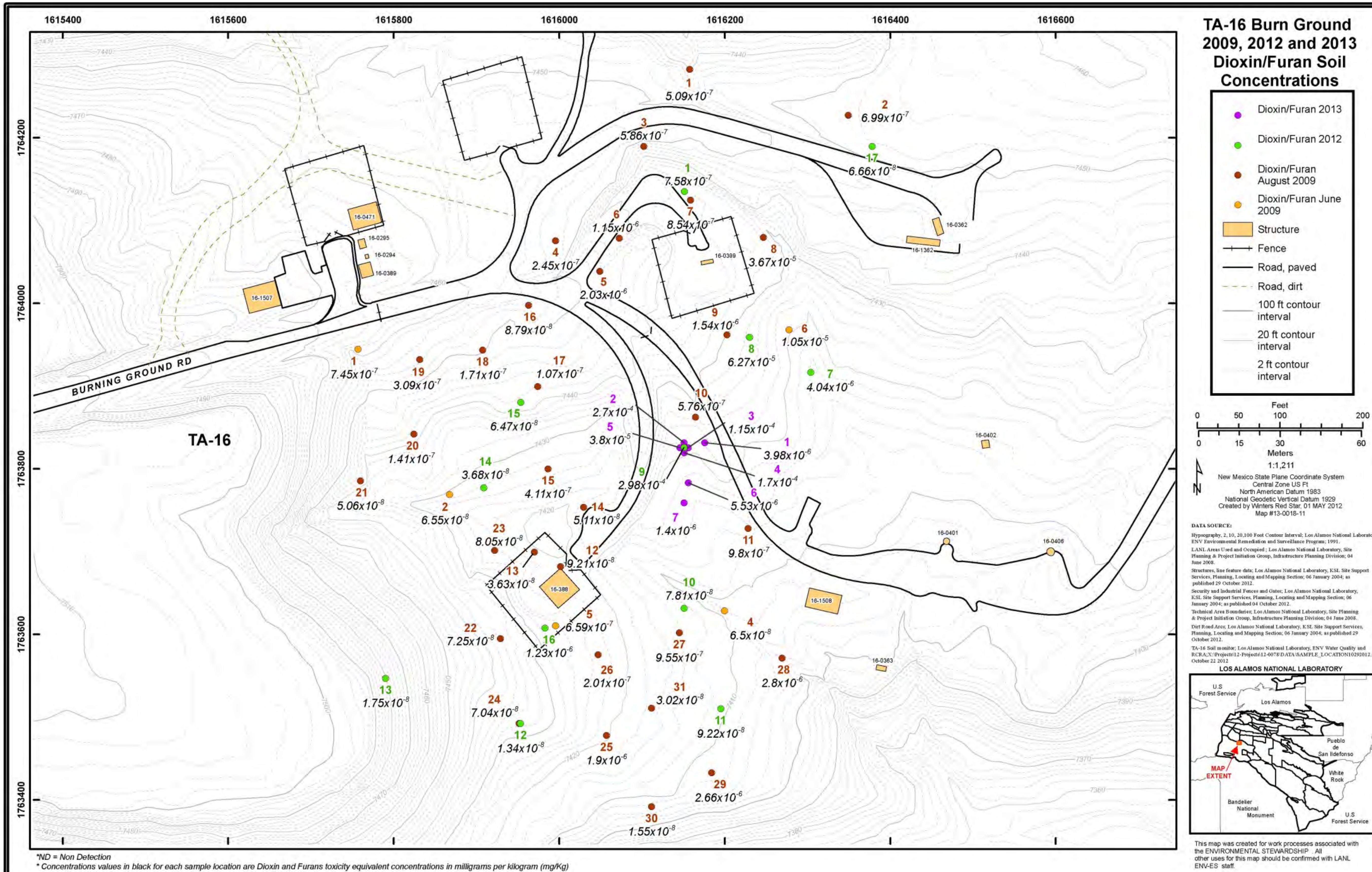


Figure 2. TA-16 Burn Ground 2009, 2012, and 2013 dioxin/furan soil concentrations.

Attachment 1

2012 and 2013 Data Tables

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17672	1	8/13/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17672	1	8/13/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17672	1	8/13/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17672	1	8/13/2012	83-32-9	Acenaphthene	0.0345	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17672	1	8/13/2012	208-96-8	Acenaphthylene	0.0345	U	U_LAB					
RE16-12-17672	1	8/13/2012	67-64-1	Acetone	0.0052	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17672	1	8/13/2012	Al	Aluminum	4390	J+	I6b	n	7.80E+04	7.7E+04		
RE16-12-17672	1	8/13/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17672	1	8/13/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17672	1	8/13/2012	62-53-3	Aniline	0.345	U	U_LAB	c		8.5E+02		
RE16-12-17672	1	8/13/2012	120-12-7	Anthracene	0.0345	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17672	1	8/13/2012	Sb	Antimony	1.04	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17672	1	8/13/2012	As	Arsenic	0.954	J	J_LAB	c	3.90E+00	3.9E+00		
RE16-12-17672	1	8/13/2012	103-33-3	Azobenzene	0.345	U	U_LAB	c		5.1E+01		
RE16-12-17672	1	8/13/2012	Ba	Barium	658	J-	I6a	n	1.56E+04	1.5E+04		
RE16-12-17672	1	8/13/2012	71-43-2	Benzene	0.00104	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17672	1	8/13/2012	56-55-3	Benzo(a)anthracene	0.0345	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17672	1	8/13/2012	50-32-8	Benzo(a)pyrene	0.0345	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17672	1	8/13/2012	205-99-2	Benzo(b)fluoranthene	0.0345	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17672	1	8/13/2012	191-24-2	Benzo(g,h,i)perylene	0.0345	U	U_LAB					
RE16-12-17672	1	8/13/2012	207-08-9	Benzo(k)fluoranthene	0.0345	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17672	1	8/13/2012	65-85-0	Benzoic Acid	0.483	J	J_LAB	n		2.4E+05		
RE16-12-17672	1	8/13/2012	100-51-6	Benzyl Alcohol	0.345	U	U_LAB	n		6.1E+03		
RE16-12-17672	1	8/13/2012	Be	Beryllium	0.603	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17672	1	8/13/2012	111-91-1	Bis(2-chloroethoxy)methane	0.345	U	U_LAB	n		1.8E+02		
RE16-12-17672	1	8/13/2012	111-44-4	Bis(2-chloroethyl)ether	0.345	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17672	1	8/13/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.345	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17672	1	8/13/2012	108-86-1	Bromobenzene	0.00104	U	U_LAB	n		3.0E+02		
RE16-12-17672	1	8/13/2012	74-97-5	Bromochloromethane	0.00104	U	U_LAB	n		1.6E+02		
RE16-12-17672	1	8/13/2012	75-27-4	Bromodichloromethane	0.00104	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17672	1	8/13/2012	75-25-2	Bromoform	0.00104	U	U_LAB	c		6.2E+02		
RE16-12-17672	1	8/13/2012	74-83-9	Bromomethane	0.00104	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17672	1	8/13/2012	101-55-3	Bromophenyl-phenylether[4-]	0.345	U	U_LAB					
RE16-12-17672	1	8/13/2012	78-93-3	Butanone[2-]	0.0052	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17672	1	8/13/2012	104-51-8	Butylbenzene[n-]	0.00104	U	U_LAB	n		3.9E+03		
RE16-12-17672	1	8/13/2012	135-98-8	Butylbenzene[sec-]	0.00104	U	U_LAB					
RE16-12-17672	1	8/13/2012	98-06-6	Butylbenzene[tert-]	0.00104	U	U_LAB					
RE16-12-17672	1	8/13/2012	85-68-7	Butylbenzylphthalate	0.345	U	U_LAB	c		2.6E+03		
RE16-12-17672	1	8/13/2012	Cd	Cadmium	0.519	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17672	1	8/13/2012	Ca	Calcium	1290	J+	I6b					
RE16-12-17672	1	8/13/2012	75-15-0	Carbon Disulfide	0.0052	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17672	1	8/13/2012	56-23-5	Carbon Tetrachloride	0.00104	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17672	1	8/13/2012	59-50-7	Chloro-3-methylphenol[4-]	0.345	U	U_LAB	n		6.1E+03		
RE16-12-17672	1	8/13/2012	106-47-8	Chloroaniline[4-]	0.345	U	U_LAB	c		2.4E+01		
RE16-12-17672	1	8/13/2012	108-90-7	Chlorobenzene	0.00104	U	U_LAB	n	3.76E+02	2.9E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17672	1	8/13/2012	124-48-1	Chlorodibromomethane	0.00104	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17672	1	8/13/2012	75-00-3	Chloroethane	0.00104	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17672	1	8/13/2012	67-66-3	Chloroform	0.00104	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17672	1	8/13/2012	74-87-3	Chloromethane	0.00104	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17672	1	8/13/2012	91-58-7	Chloronaphthalene[2-]	0.0345	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17672	1	8/13/2012	95-57-8	Chlorophenol[2-]	0.345	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17672	1	8/13/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.345	U	U_LAB					
RE16-12-17672	1	8/13/2012	95-49-8	Chlorotoluene[2-]	0.00104	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17672	1	8/13/2012	106-43-4	Chlorotoluene[4-]	0.00104	U	U_LAB	n		1.6E+03		
RE16-12-17672	1	8/13/2012	Cr	Chromium	5.06	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17672	1	8/13/2012	218-01-9	Chrysene	0.0345	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17672	1	8/13/2012	Co	Cobalt	2.08	J	I10a	n		2.3E+01		
RE16-12-17672	1	8/13/2012	Cu	Copper	11.7	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17672	1	8/13/2012	53-70-3	Dibenz(a,h)anthracene	0.0345	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17672	1	8/13/2012	132-64-9	Dibenzofuran	0.345	U	U_LAB	n		7.8E+01		
RE16-12-17672	1	8/13/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00104	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17672	1	8/13/2012	106-93-4	Dibromoethane[1,2-]	0.00104	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17672	1	8/13/2012	74-95-3	Dibromomethane	0.00104	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17672	1	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.00104	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17672	1	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.345	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17672	1	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.00104	U	U_LAB					
RE16-12-17672	1	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.345	U	U_LAB					
RE16-12-17672	1	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.00104	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17672	1	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.345	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17672	1	8/13/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.345	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17672	1	8/13/2012	75-71-8	Dichlorodifluoromethane	0.00104	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17672	1	8/13/2012	75-34-3	Dichloroethane[1,1-]	0.00104	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17672	1	8/13/2012	107-06-2	Dichloroethane[1,2-]	0.00104	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17672	1	8/13/2012	75-35-4	Dichloroethene[1,1-]	0.00104	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17672	1	8/13/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00104	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17672	1	8/13/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00104	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17672	1	8/13/2012	120-83-2	Dichlorophenol[2,4-]	0.345	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17672	1	8/13/2012	78-87-5	Dichloropropane[1,2-]	0.00104	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17672	1	8/13/2012	142-28-9	Dichloropropane[1,3-]	0.00104	U	U_LAB	n		1.6E+03		
RE16-12-17672	1	8/13/2012	594-20-7	Dichloropropane[2,2-]	0.00104	U	U_LAB					
RE16-12-17672	1	8/13/2012	563-58-6	Dichloropropene[1,1-]	0.00104	U	U_LAB					
RE16-12-17672	1	8/13/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00104	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17672	1	8/13/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00104	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17672	1	8/13/2012	84-66-2	Diethylphthalate	0.345	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17672	1	8/13/2012	131-11-3	Dimethyl Phthalate	0.345	U	U_LAB	n	6.11E+05			
RE16-12-17672	1	8/13/2012	105-67-9	Dimethylphenol[2,4-]	0.345	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17672	1	8/13/2012	84-74-2	Di-n-butylphthalate	0.345	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17672	1	8/13/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.345	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17672	1	8/13/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17672	1	8/13/2012	51-28-5	Dinitrophenol[2,4-]	0.69	U	U_LAB	n	1.22E+02	1.2E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17672	1	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.345	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17672	1	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17672	1	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.345	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17672	1	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17672	1	8/13/2012	117-84-0	Di-n-octylphthalate	0.345	U	U_LAB	n		7.3E+02		
RE16-12-17672	1	8/13/2012	122-39-4	Diphenylamine	0.345	U	U_LAB	n		1.5E+03		
RE16-12-17672	1	8/13/2012	100-41-4	Ethylbenzene	0.00104	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17672	1	8/13/2012	206-44-0	Fluoranthene	0.0345	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17672	1	8/13/2012	86-73-7	Fluorene	0.0345	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17672	1	8/13/2012	118-74-1	Hexachlorobenzene	0.345	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17672	1	8/13/2012	87-68-3	Hexachlorobutadiene	0.345	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17672	1	8/13/2012	77-47-4	Hexachlorocyclopentadiene	0.345	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17672	1	8/13/2012	67-72-1	Hexachloroethane	0.345	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17672	1	8/13/2012	591-78-6	Hexanone[2-]	0.0052	U	U_LAB	n		2.1E+02		
RE16-12-17672	1	8/13/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17672	1	8/13/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0345	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17672	1	8/13/2012	74-88-4	Iodomethane	0.0052	U	U_LAB					
RE16-12-17672	1	8/13/2012	Fe	Iron	11300	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17672	1	8/13/2012	78-59-1	Isophorone	0.345	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17672	1	8/13/2012	98-82-8	Isopropylbenzene	0.00104	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17672	1	8/13/2012	99-87-6	Isopropyltoluene[4-]	0.00104	U	U_LAB					
RE16-12-17672	1	8/13/2012	Pb	Lead	12	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17672	1	8/13/2012	Mg	Magnesium	1060	J	I10a					
RE16-12-17672	1	8/13/2012	Mn	Manganese	308	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17672	1	8/13/2012	Hg	Mercury	0.00717	J	J_LAB	n	1.56E+01	1.0E+01		
RE16-12-17672	1	8/13/2012	108-10-1	Methyl-2-pentanone[4-]	0.0052	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17672	1	8/13/2012	75-09-2	Methylene Chloride	0.0052	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17672	1	8/13/2012	91-57-6	Methylnaphthalene[2-]	0.0345	U	U_LAB	n		2.3E+02		
RE16-12-17672	1	8/13/2012	95-48-7	Methylphenol[2-]	0.345	U	U_LAB	n		3.1E+03		
RE16-12-17672	1	8/13/2012	106-44-5	Methylphenol[4-]	0.345	U	U_LAB	n		6.1E+03		
RE16-12-17672	1	8/13/2012	91-20-3	Naphthalene	0.0345	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17672	1	8/13/2012	Ni	Nickel	3.55	J+	I6b	n	1.56E+03	1.5E+03		
RE16-12-17672	1	8/13/2012	88-74-4	Nitroaniline[2-]	0.345	U	U_LAB	n		6.1E+02		
RE16-12-17672	1	8/13/2012	99-09-2	Nitroaniline[3-]	0.345	U	U_LAB					
RE16-12-17672	1	8/13/2012	100-01-6	Nitroaniline[4-]	0.345	U	U_LAB	c		2.4E+02		
RE16-12-17672	1	8/13/2012	98-95-3	Nitrobenzene	0.345	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17672	1	8/13/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17672	1	8/13/2012	88-75-5	Nitrophenol[2-]	0.345	U	U_LAB					
RE16-12-17672	1	8/13/2012	100-02-7	Nitrophenol[4-]	0.345	U	U_LAB					
RE16-12-17672	1	8/13/2012	62-75-9	Nitrosodimethylamine[N-]	0.345	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17672	1	8/13/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.345	U	U_LAB	c		6.9E-01		
RE16-12-17672	1	8/13/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17672	1	8/13/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17672	1	8/13/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17672	1	8/13/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.345	U	U_LAB	c		4.6E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17672	1	8/13/2012	87-86-5	Pentachlorophenol	0.345	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17672	1	8/13/2012	ClO4	Perchlorate	0.000599	J	J_LAB	n	5.48E+01	5.5E+01		
RE16-12-17672	1	8/13/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17672	1	8/13/2012	85-01-8	Phenanthrene	0.0345	U	U_LAB	n	1.83E+03			
RE16-12-17672	1	8/13/2012	108-95-2	Phenol	0.345	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17672	1	8/13/2012	K	Potassium	981	J	I10a					
RE16-12-17672	1	8/13/2012	103-65-1	Propylbenzene[1-]	0.00104	U	U_LAB	n		3.4E+03		
RE16-12-17672	1	8/13/2012	129-00-0	Pyrene	0.0345	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17672	1	8/13/2012	110-86-1	Pyridine	0.345	U	U_LAB	n		7.8E+01		
RE16-12-17672	1	8/13/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17672	1	8/13/2012	Se	Selenium	0.969	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17672	1	8/13/2012	Ag	Silver	0.845	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17672	1	8/13/2012	Na	Sodium	121	NQ	NQ					
RE16-12-17672	1	8/13/2012	100-42-5	Styrene	0.00104	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17672	1	8/13/2012	3058-38-6	TATB	3.29	NQ	NQ					
RE16-12-17672	1	8/13/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00104	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17672	1	8/13/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00104	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17672	1	8/13/2012	127-18-4	Tetrachloroethene	0.00104	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17672	1	8/13/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17672	1	8/13/2012	Tl	Thallium	0.0944	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17672	1	8/13/2012	108-88-3	Toluene	0.00104	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17672	1	8/13/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.0052	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17672	1	8/13/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.345	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17672	1	8/13/2012	71-55-6	Trichloroethane[1,1,1-]	0.00104	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17672	1	8/13/2012	79-00-5	Trichloroethane[1,1,2-]	0.00104	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17672	1	8/13/2012	79-01-6	Trichloroethene	0.00104	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17672	1	8/13/2012	75-69-4	Trichlorofluoromethane	0.00104	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17672	1	8/13/2012	95-95-4	Trichlorophenol[2,4,5-]	0.345	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17672	1	8/13/2012	88-06-2	Trichlorophenol[2,4,6-]	0.345	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17672	1	8/13/2012	96-18-4	Trichloropropane[1,2,3-]	0.00104	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17672	1	8/13/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00104	U	U_LAB	n		6.2E+01		
RE16-12-17672	1	8/13/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00104	U	U_LAB	n		7.8E+02		
RE16-12-17672	1	8/13/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17672	1	8/13/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17672	1	8/13/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17672	1	8/13/2012	V	Vanadium	10.6	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17672	1	8/13/2012	75-01-4	Vinyl Chloride	0.00104	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17672	1	8/13/2012	95-47-6	Xylene[1,2-]	0.00104	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17672	1	8/13/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00208	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17672	1	8/13/2012	Zn	Zinc	57.1	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17679	7	8/13/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17679	7	8/13/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17679	7	8/13/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17679	7	8/13/2012	83-32-9	Acenaphthene	0.0347	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17679	7	8/13/2012	208-96-8	Acenaphthylene	0.0347	U	U_LAB					
RE16-12-17679	7	8/13/2012	67-64-1	Acetone	0.00522	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17679	7	8/13/2012	Al	Aluminum	6830	NQ	NQ	n	7.80E+04	7.7E+04		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17679	7	8/13/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17679	7	8/13/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17679	7	8/13/2012	62-53-3	Aniline	0.347	U	U_LAB	c		8.5E+02		
RE16-12-17679	7	8/13/2012	120-12-7	Anthracene	0.0347	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17679	7	8/13/2012	Sb	Antimony	1.01	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17679	7	8/13/2012	As	Arsenic	1.01	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17679	7	8/13/2012	103-33-3	Azobenzene	0.347	U	U_LAB	c		5.1E+01		
RE16-12-17679	7	8/13/2012	Ba	Barium	1450	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17679	7	8/13/2012	71-43-2	Benzene	0.00104	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17679	7	8/13/2012	56-55-3	Benzo(a)anthracene	0.0347	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17679	7	8/13/2012	50-32-8	Benzo(a)pyrene	0.0347	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17679	7	8/13/2012	205-99-2	Benzo(b)fluoranthene	0.0347	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17679	7	8/13/2012	191-24-2	Benzo(g,h,i)perylene	0.0347	U	U_LAB					
RE16-12-17679	7	8/13/2012	207-08-9	Benzo(k)fluoranthene	0.0347	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17679	7	8/13/2012	65-85-0	Benzoic Acid	0.693	U	U_LAB	n		2.4E+05		
RE16-12-17679	7	8/13/2012	100-51-6	Benzyl Alcohol	0.347	U	U_LAB	n		6.1E+03		
RE16-12-17679	7	8/13/2012	Be	Beryllium	0.67	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17679	7	8/13/2012	111-91-1	Bis(2-chloroethoxy)methane	0.347	U	U_LAB	n		1.8E+02		
RE16-12-17679	7	8/13/2012	111-44-4	Bis(2-chloroethyl)ether	0.347	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17679	7	8/13/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.149	J	J_LAB	c	3.47E+02	3.5E+02		
RE16-12-17679	7	8/13/2012	108-86-1	Bromobenzene	0.00104	U	U_LAB	n		3.0E+02		
RE16-12-17679	7	8/13/2012	74-97-5	Bromochloromethane	0.00104	U	U_LAB	n		1.6E+02		
RE16-12-17679	7	8/13/2012	75-27-4	Bromodichloromethane	0.00104	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17679	7	8/13/2012	75-25-2	Bromoform	0.00104	U	U_LAB	c		6.2E+02		
RE16-12-17679	7	8/13/2012	74-83-9	Bromomethane	0.00104	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17679	7	8/13/2012	101-55-3	Bromophenyl-phenylether[4-]	0.347	U	U_LAB					
RE16-12-17679	7	8/13/2012	78-93-3	Butanone[2-]	0.00522	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17679	7	8/13/2012	104-51-8	Butylbenzene[n-]	0.00104	U	U_LAB	n		3.9E+03		
RE16-12-17679	7	8/13/2012	135-98-8	Butylbenzene[sec-]	0.00104	U	U_LAB					
RE16-12-17679	7	8/13/2012	98-06-6	Butylbenzene[tert-]	0.00104	U	U_LAB					
RE16-12-17679	7	8/13/2012	85-68-7	Butylbenzylphthalate	0.347	U	U_LAB	c		2.6E+03		
RE16-12-17679	7	8/13/2012	Cd	Cadmium	0.506	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17679	7	8/13/2012	Ca	Calcium	1520	NQ	NQ					
RE16-12-17679	7	8/13/2012	75-15-0	Carbon Disulfide	0.00522	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17679	7	8/13/2012	56-23-5	Carbon Tetrachloride	0.00104	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17679	7	8/13/2012	59-50-7	Chloro-3-methylphenol[4-]	0.347	U	U_LAB	n		6.1E+03		
RE16-12-17679	7	8/13/2012	106-47-8	Chloroaniline[4-]	0.347	U	U_LAB	c		2.4E+01		
RE16-12-17679	7	8/13/2012	108-90-7	Chlorobenzene	0.00104	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17679	7	8/13/2012	124-48-1	Chlorodibromomethane	0.00104	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17679	7	8/13/2012	75-00-3	Chloroethane	0.00104	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17679	7	8/13/2012	67-66-3	Chloroform	0.00104	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17679	7	8/13/2012	74-87-3	Chloromethane	0.00104	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17679	7	8/13/2012	91-58-7	Chloronaphthalene[2-]	0.0347	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17679	7	8/13/2012	95-57-8	Chlorophenol[2-]	0.347	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17679	7	8/13/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.347	U	U_LAB					
RE16-12-17679	7	8/13/2012	95-49-8	Chlorotoluene[2-]	0.00104	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17679	7	8/13/2012	106-43-4	Chlorotoluene[4-]	0.00104	U	U_LAB	n		1.6E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17679	7	8/13/2012	Cr	Chromium	7.69	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17679	7	8/13/2012	218-01-9	Chrysene	0.0347	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17679	7	8/13/2012	Co	Cobalt	3.4	NQ	NQ	n		2.3E+01		
RE16-12-17679	7	8/13/2012	Cu	Copper	9.26	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17679	7	8/13/2012	53-70-3	Dibenz(a,h)anthracene	0.0347	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17679	7	8/13/2012	132-64-9	Dibenzofuran	0.347	U	U_LAB	n		7.8E+01		
RE16-12-17679	7	8/13/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00104	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17679	7	8/13/2012	106-93-4	Dibromoethane[1,2-]	0.00104	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17679	7	8/13/2012	74-95-3	Dibromomethane	0.00104	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17679	7	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.00104	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17679	7	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.347	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17679	7	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.00104	U	U_LAB					
RE16-12-17679	7	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.347	U	U_LAB					
RE16-12-17679	7	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.00104	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17679	7	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.347	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17679	7	8/13/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.347	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17679	7	8/13/2012	75-71-8	Dichlorodifluoromethane	0.00104	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17679	7	8/13/2012	75-34-3	Dichloroethane[1,1-]	0.00104	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17679	7	8/13/2012	107-06-2	Dichloroethane[1,2-]	0.00104	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17679	7	8/13/2012	75-35-4	Dichloroethene[1,1-]	0.00104	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17679	7	8/13/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00104	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17679	7	8/13/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00104	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17679	7	8/13/2012	120-83-2	Dichlorophenol[2,4-]	0.347	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17679	7	8/13/2012	78-87-5	Dichloropropane[1,2-]	0.00104	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17679	7	8/13/2012	142-28-9	Dichloropropane[1,3-]	0.00104	U	U_LAB	n		1.6E+03		
RE16-12-17679	7	8/13/2012	594-20-7	Dichloropropane[2,2-]	0.00104	U	U_LAB					
RE16-12-17679	7	8/13/2012	563-58-6	Dichloropropene[1,1-]	0.00104	U	U_LAB					
RE16-12-17679	7	8/13/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00104	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17679	7	8/13/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00104	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17679	7	8/13/2012	84-66-2	Diethylphthalate	0.347	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17679	7	8/13/2012	131-11-3	Dimethyl Phthalate	0.347	U	U_LAB	n	6.11E+05			
RE16-12-17679	7	8/13/2012	105-67-9	Dimethylphenol[2,4-]	0.347	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17679	7	8/13/2012	84-74-2	Di-n-butylphthalate	0.347	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17679	7	8/13/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.347	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17679	7	8/13/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17679	7	8/13/2012	51-28-5	Dinitrophenol[2,4-]	0.693	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17679	7	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.347	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17679	7	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17679	7	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.347	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17679	7	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17679	7	8/13/2012	117-84-0	Di-n-octylphthalate	0.347	U	U_LAB	n		7.3E+02		
RE16-12-17679	7	8/13/2012	122-39-4	Diphenylamine	0.347	U	U_LAB	n		1.5E+03		
RE16-12-17679	7	8/13/2012	100-41-4	Ethylbenzene	0.00104	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17679	7	8/13/2012	206-44-0	Fluoranthene	0.0347	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17679	7	8/13/2012	86-73-7	Fluorene	0.0347	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17679	7	8/13/2012	118-74-1	Hexachlorobenzene	0.347	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17679	7	8/13/2012	87-68-3	Hexachlorobutadiene	0.347	U	U_LAB	n/c	6.11E+01	6.2E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17679	7	8/13/2012	77-47-4	Hexachlorocyclopentadiene	0.347	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17679	7	8/13/2012	67-72-1	Hexachloroethane	0.347	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17679	7	8/13/2012	591-78-6	Hexanone[2-]	0.00522	U	U_LAB	n		2.1E+02		
RE16-12-17679	7	8/13/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17679	7	8/13/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0347	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17679	7	8/13/2012	74-88-4	Iodomethane	0.00522	U	U_LAB					
RE16-12-17679	7	8/13/2012	Fe	Iron	12900	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17679	7	8/13/2012	78-59-1	Isophorone	0.347	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17679	7	8/13/2012	98-82-8	Isopropylbenzene	0.00104	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17679	7	8/13/2012	99-87-6	Isopropyltoluene[4-]	0.00104	U	U_LAB					
RE16-12-17679	7	8/13/2012	Pb	Lead	11.1	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17679	7	8/13/2012	Mg	Magnesium	1370	NQ	NQ					
RE16-12-17679	7	8/13/2012	Mn	Manganese	538	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17679	7	8/13/2012	Hg	Mercury	0.0113	J	J_LAB	n	1.56E+01	1.0E+01		
RE16-12-17679	7	8/13/2012	108-10-1	Methyl-2-pentanone[4-]	0.00522	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17679	7	8/13/2012	75-09-2	Methylene Chloride	0.00522	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17679	7	8/13/2012	91-57-6	Methylnaphthalene[2-]	0.0347	U	U_LAB	n		2.3E+02		
RE16-12-17679	7	8/13/2012	95-48-7	Methylphenol[2-]	0.347	U	U_LAB	n		3.1E+03		
RE16-12-17679	7	8/13/2012	106-44-5	Methylphenol[4-]	0.347	U	U_LAB	n		6.1E+03		
RE16-12-17679	7	8/13/2012	91-20-3	Naphthalene	0.0347	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17679	7	8/13/2012	Ni	Nickel	3.67	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17679	7	8/13/2012	88-74-4	Nitroaniline[2-]	0.347	U	U_LAB	n		6.1E+02		
RE16-12-17679	7	8/13/2012	99-09-2	Nitroaniline[3-]	0.347	U	U_LAB					
RE16-12-17679	7	8/13/2012	100-01-6	Nitroaniline[4-]	0.347	U	U_LAB	c		2.4E+02		
RE16-12-17679	7	8/13/2012	98-95-3	Nitrobenzene	0.347	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17679	7	8/13/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17679	7	8/13/2012	88-75-5	Nitrophenol[2-]	0.347	U	U_LAB					
RE16-12-17679	7	8/13/2012	100-02-7	Nitrophenol[4-]	0.347	U	U_LAB					
RE16-12-17679	7	8/13/2012	62-75-9	Nitrosodimethylamine[N-]	0.347	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17679	7	8/13/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.347	U	U_LAB	c		6.9E-01		
RE16-12-17679	7	8/13/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17679	7	8/13/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17679	7	8/13/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17679	7	8/13/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.347	U	U_LAB	c		4.6E+01		
RE16-12-17679	7	8/13/2012	87-86-5	Pentachlorophenol	0.347	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17679	7	8/13/2012	ClO4	Perchlorate	0.000623	J	J_LAB	n	5.48E+01	5.5E+01		
RE16-12-17679	7	8/13/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17679	7	8/13/2012	85-01-8	Phenanthrene	0.0347	U	U_LAB	n	1.83E+03			
RE16-12-17679	7	8/13/2012	108-95-2	Phenol	0.347	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17679	7	8/13/2012	K	Potassium	1260	NQ	NQ					
RE16-12-17679	7	8/13/2012	103-65-1	Propylbenzene[1-]	0.00104	U	U_LAB	n		3.4E+03		
RE16-12-17679	7	8/13/2012	129-00-0	Pyrene	0.0347	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17679	7	8/13/2012	110-86-1	Pyridine	0.347	U	U_LAB	n		7.8E+01		
RE16-12-17679	7	8/13/2012	121-82-4	RDX	0.55	NQ	NQ	n/c	5.82E+01	5.6E+01		
RE16-12-17679	7	8/13/2012	Se	Selenium	1.01	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17679	7	8/13/2012	Ag	Silver	4.56	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17679	7	8/13/2012	Na	Sodium	101	NQ	NQ					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17679	7	8/13/2012	100-42-5	Styrene	0.00104	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17679	7	8/13/2012	3058-38-6	TATB	1.88	NQ	NQ					
RE16-12-17679	7	8/13/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00104	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17679	7	8/13/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00104	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17679	7	8/13/2012	127-18-4	Tetrachloroethene	0.00104	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17679	7	8/13/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17679	7	8/13/2012	Tl	Thallium	0.0859	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17679	7	8/13/2012	108-88-3	Toluene	0.00104	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17679	7	8/13/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00522	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17679	7	8/13/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.347	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17679	7	8/13/2012	71-55-6	Trichloroethane[1,1,1-]	0.00104	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17679	7	8/13/2012	79-00-5	Trichloroethane[1,1,2-]	0.00104	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17679	7	8/13/2012	79-01-6	Trichloroethene	0.00104	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17679	7	8/13/2012	75-69-4	Trichlorofluoromethane	0.00104	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17679	7	8/13/2012	95-95-4	Trichlorophenol[2,4,5-]	0.347	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17679	7	8/13/2012	88-06-2	Trichlorophenol[2,4,6-]	0.347	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17679	7	8/13/2012	96-18-4	Trichloropropane[1,2,3-]	0.00104	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17679	7	8/13/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00104	U	U_LAB	n		6.2E+01		
RE16-12-17679	7	8/13/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00104	U	U_LAB	n		7.8E+02		
RE16-12-17679	7	8/13/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17679	7	8/13/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17679	7	8/13/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17679	7	8/13/2012	V	Vanadium	15.5	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17679	7	8/13/2012	75-01-4	Vinyl Chloride	0.00104	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17679	7	8/13/2012	95-47-6	Xylene[1,2-]	0.00104	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17679	7	8/13/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00209	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17679	7	8/13/2012	Zn	Zinc	65.7	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17680	8	8/13/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17680	8	8/13/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17680	8	8/13/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17680	8	8/13/2012	83-32-9	Acenaphthene	0.0352	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17680	8	8/13/2012	208-96-8	Acenaphthylene	0.0352	U	U_LAB					
RE16-12-17680	8	8/13/2012	67-64-1	Acetone	0.00529	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17680	8	8/13/2012	Al	Aluminum	10000	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17680	8	8/13/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17680	8	8/13/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17680	8	8/13/2012	62-53-3	Aniline	0.352	U	U_LAB	c		8.5E+02		
RE16-12-17680	8	8/13/2012	120-12-7	Anthracene	0.0352	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17680	8	8/13/2012	Sb	Antimony	1.05	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17680	8	8/13/2012	As	Arsenic	1.16	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17680	8	8/13/2012	103-33-3	Azobenzene	0.352	U	U_LAB	c		5.1E+01		
RE16-12-17680	8	8/13/2012	Ba	Barium	543	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17680	8	8/13/2012	71-43-2	Benzene	0.00106	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17680	8	8/13/2012	56-55-3	Benzo(a)anthracene	0.0352	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17680	8	8/13/2012	50-32-8	Benzo(a)pyrene	0.0352	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17680	8	8/13/2012	205-99-2	Benzo(b)fluoranthene	0.0352	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17680	8	8/13/2012	191-24-2	Benzo(g,h,i)perylene	0.0352	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17680	8	8/13/2012	207-08-9	Benzo(k)fluoranthene	0.0352	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17680	8	8/13/2012	65-85-0	Benzoic Acid	0.703	U	U_LAB	n		2.4E+05		
RE16-12-17680	8	8/13/2012	100-51-6	Benzyl Alcohol	0.352	U	U_LAB	n		6.1E+03		
RE16-12-17680	8	8/13/2012	Be	Beryllium	1.06	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17680	8	8/13/2012	111-91-1	Bis(2-chloroethoxy)methane	0.352	U	U_LAB	n		1.8E+02		
RE16-12-17680	8	8/13/2012	111-44-4	Bis(2-chloroethyl)ether	0.352	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17680	8	8/13/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.352	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17680	8	8/13/2012	108-86-1	Bromobenzene	0.00106	U	U_LAB	n		3.0E+02		
RE16-12-17680	8	8/13/2012	74-97-5	Bromochloromethane	0.00106	U	U_LAB	n		1.6E+02		
RE16-12-17680	8	8/13/2012	75-27-4	Bromodichloromethane	0.00106	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17680	8	8/13/2012	75-25-2	Bromoform	0.00106	U	U_LAB	c		6.2E+02		
RE16-12-17680	8	8/13/2012	74-83-9	Bromomethane	0.00106	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17680	8	8/13/2012	101-55-3	Bromophenyl-phenylether[4-]	0.352	U	U_LAB					
RE16-12-17680	8	8/13/2012	78-93-3	Butanone[2-]	0.00529	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17680	8	8/13/2012	104-51-8	Butylbenzene[n-]	0.00106	U	U_LAB	n		3.9E+03		
RE16-12-17680	8	8/13/2012	135-98-8	Butylbenzene[sec-]	0.00106	U	U_LAB					
RE16-12-17680	8	8/13/2012	98-06-6	Butylbenzene[tert-]	0.00106	U	U_LAB					
RE16-12-17680	8	8/13/2012	85-68-7	Butylbenzylphthalate	0.352	U	U_LAB	c		2.6E+03		
RE16-12-17680	8	8/13/2012	Cd	Cadmium	0.524	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17680	8	8/13/2012	Ca	Calcium	1870	NQ	NQ					
RE16-12-17680	8	8/13/2012	75-15-0	Carbon Disulfide	0.00529	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17680	8	8/13/2012	56-23-5	Carbon Tetrachloride	0.00106	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17680	8	8/13/2012	59-50-7	Chloro-3-methylphenol[4-]	0.352	U	U_LAB	n		6.1E+03		
RE16-12-17680	8	8/13/2012	106-47-8	Chloroaniline[4-]	0.352	U	U_LAB	c		2.4E+01		
RE16-12-17680	8	8/13/2012	108-90-7	Chlorobenzene	0.00106	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17680	8	8/13/2012	124-48-1	Chlorodibromomethane	0.00106	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17680	8	8/13/2012	75-00-3	Chloroethane	0.00106	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17680	8	8/13/2012	67-66-3	Chloroform	0.00106	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17680	8	8/13/2012	74-87-3	Chloromethane	0.00106	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17680	8	8/13/2012	91-58-7	Chloronaphthalene[2-]	0.0352	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17680	8	8/13/2012	95-57-8	Chlorophenol[2-]	0.352	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17680	8	8/13/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.352	U	U_LAB					
RE16-12-17680	8	8/13/2012	95-49-8	Chlorotoluene[2-]	0.00106	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17680	8	8/13/2012	106-43-4	Chlorotoluene[4-]	0.00106	U	U_LAB	n		1.6E+03		
RE16-12-17680	8	8/13/2012	Cr	Chromium	6.9	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17680	8	8/13/2012	218-01-9	Chrysene	0.0352	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17680	8	8/13/2012	Co	Cobalt	2.64	NQ	NQ	n		2.3E+01		
RE16-12-17680	8	8/13/2012	Cu	Copper	10.3	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17680	8	8/13/2012	53-70-3	Dibenz(a,h)anthracene	0.0352	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17680	8	8/13/2012	132-64-9	Dibenzofuran	0.352	U	U_LAB	n		7.8E+01		
RE16-12-17680	8	8/13/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00106	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17680	8	8/13/2012	106-93-4	Dibromoethane[1,2-]	0.00106	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17680	8	8/13/2012	74-95-3	Dibromomethane	0.00106	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17680	8	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.00106	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17680	8	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.352	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17680	8	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.00106	U	U_LAB					
RE16-12-17680	8	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.352	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17680	8	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.00106	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17680	8	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.352	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17680	8	8/13/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.352	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17680	8	8/13/2012	75-71-8	Dichlorodifluoromethane	0.00106	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17680	8	8/13/2012	75-34-3	Dichloroethane[1,1-]	0.00106	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17680	8	8/13/2012	107-06-2	Dichloroethane[1,2-]	0.00106	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17680	8	8/13/2012	75-35-4	Dichloroethene[1,1-]	0.00106	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17680	8	8/13/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00106	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17680	8	8/13/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00106	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17680	8	8/13/2012	120-83-2	Dichlorophenol[2,4-]	0.352	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17680	8	8/13/2012	78-87-5	Dichloropropane[1,2-]	0.00106	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17680	8	8/13/2012	142-28-9	Dichloropropane[1,3-]	0.00106	U	U_LAB	n		1.6E+03		
RE16-12-17680	8	8/13/2012	594-20-7	Dichloropropane[2,2-]	0.00106	U	U_LAB					
RE16-12-17680	8	8/13/2012	563-58-6	Dichloropropene[1,1-]	0.00106	U	U_LAB					
RE16-12-17680	8	8/13/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00106	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17680	8	8/13/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00106	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17680	8	8/13/2012	84-66-2	Diethylphthalate	0.352	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17680	8	8/13/2012	131-11-3	Dimethyl Phthalate	0.352	U	U_LAB	n	6.11E+05			
RE16-12-17680	8	8/13/2012	105-67-9	Dimethylphenol[2,4-]	0.352	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17680	8	8/13/2012	84-74-2	Di-n-butylphthalate	0.352	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17680	8	8/13/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.352	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17680	8	8/13/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17680	8	8/13/2012	51-28-5	Dinitrophenol[2,4-]	0.703	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17680	8	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.352	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17680	8	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17680	8	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.352	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17680	8	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17680	8	8/13/2012	117-84-0	Di-n-octylphthalate	0.352	U	U_LAB	n		7.3E+02		
RE16-12-17680	8	8/13/2012	122-39-4	Diphenylamine	0.352	U	U_LAB	n		1.5E+03		
RE16-12-17680	8	8/13/2012	100-41-4	Ethylbenzene	0.00106	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17680	8	8/13/2012	206-44-0	Fluoranthene	0.0352	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17680	8	8/13/2012	86-73-7	Fluorene	0.0352	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17680	8	8/13/2012	118-74-1	Hexachlorobenzene	0.352	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17680	8	8/13/2012	87-68-3	Hexachlorobutadiene	0.352	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17680	8	8/13/2012	77-47-4	Hexachlorocyclopentadiene	0.352	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17680	8	8/13/2012	67-72-1	Hexachloroethane	0.352	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17680	8	8/13/2012	591-78-6	Hexanone[2-]	0.00529	U	U_LAB	n		2.1E+02		
RE16-12-17680	8	8/13/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17680	8	8/13/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0352	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17680	8	8/13/2012	74-88-4	Iodomethane	0.00529	U	U_LAB					
RE16-12-17680	8	8/13/2012	Fe	Iron	9230	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17680	8	8/13/2012	78-59-1	Isophorone	0.352	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17680	8	8/13/2012	98-82-8	Isopropylbenzene	0.00106	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17680	8	8/13/2012	99-87-6	Isopropyltoluene[4-]	0.00106	U	U_LAB					
RE16-12-17680	8	8/13/2012	Pb	Lead	8.48	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17680	8	8/13/2012	Mg	Magnesium	1260	NQ	NQ					
RE16-12-17680	8	8/13/2012	Mn	Manganese	114	NQ	NQ	n	1.86E+03	1.8E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17680	8	8/13/2012	Hg	Mercury	0.016	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17680	8	8/13/2012	108-10-1	Methyl-2-pentanone[4-]	0.00529	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17680	8	8/13/2012	75-09-2	Methylene Chloride	0.00529	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17680	8	8/13/2012	91-57-6	Methylnaphthalene[2-]	0.0352	U	U_LAB	n		2.3E+02		
RE16-12-17680	8	8/13/2012	95-48-7	Methylphenol[2-]	0.352	U	U_LAB	n		3.1E+03		
RE16-12-17680	8	8/13/2012	106-44-5	Methylphenol[4-]	0.352	U	U_LAB	n		6.1E+03		
RE16-12-17680	8	8/13/2012	91-20-3	Naphthalene	0.0352	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17680	8	8/13/2012	Ni	Nickel	8.34	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17680	8	8/13/2012	88-74-4	Nitroaniline[2-]	0.352	U	U_LAB	n		6.1E+02		
RE16-12-17680	8	8/13/2012	99-09-2	Nitroaniline[3-]	0.352	U	U_LAB					
RE16-12-17680	8	8/13/2012	100-01-6	Nitroaniline[4-]	0.352	U	U_LAB	c		2.4E+02		
RE16-12-17680	8	8/13/2012	98-95-3	Nitrobenzene	0.352	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17680	8	8/13/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17680	8	8/13/2012	88-75-5	Nitrophenol[2-]	0.352	U	U_LAB					
RE16-12-17680	8	8/13/2012	100-02-7	Nitrophenol[4-]	0.352	U	U_LAB					
RE16-12-17680	8	8/13/2012	62-75-9	Nitrosodimethylamine[N-]	0.352	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17680	8	8/13/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.352	U	U_LAB	c		6.9E-01		
RE16-12-17680	8	8/13/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17680	8	8/13/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17680	8	8/13/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17680	8	8/13/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.352	U	U_LAB	c		4.6E+01		
RE16-12-17680	8	8/13/2012	87-86-5	Pentachlorophenol	0.352	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17680	8	8/13/2012	ClO4	Perchlorate	0.000594	J	J_LAB	n	5.48E+01	5.5E+01		
RE16-12-17680	8	8/13/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17680	8	8/13/2012	85-01-8	Phenanthrene	0.0352	U	U_LAB	n	1.83E+03			
RE16-12-17680	8	8/13/2012	108-95-2	Phenol	0.352	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17680	8	8/13/2012	K	Potassium	1280	NQ	NQ					
RE16-12-17680	8	8/13/2012	103-65-1	Propylbenzene[1-]	0.00106	U	U_LAB	n		3.4E+03		
RE16-12-17680	8	8/13/2012	129-00-0	Pyrene	0.0352	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17680	8	8/13/2012	110-86-1	Pyridine	0.352	U	U_LAB	n		7.8E+01		
RE16-12-17680	8	8/13/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17680	8	8/13/2012	Se	Selenium	0.972	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17680	8	8/13/2012	Ag	Silver	0.438	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17680	8	8/13/2012	Na	Sodium	86.8	NQ	NQ					
RE16-12-17680	8	8/13/2012	100-42-5	Styrene	0.00106	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17680	8	8/13/2012	3058-38-6	TATB	4.55	NQ	NQ					
RE16-12-17680	8	8/13/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00106	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17680	8	8/13/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00106	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17680	8	8/13/2012	127-18-4	Tetrachloroethene	0.00106	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17680	8	8/13/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17680	8	8/13/2012	Tl	Thallium	0.175	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17680	8	8/13/2012	108-88-3	Toluene	0.00106	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17680	8	8/13/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00529	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17680	8	8/13/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.352	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17680	8	8/13/2012	71-55-6	Trichloroethane[1,1,1-]	0.00106	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17680	8	8/13/2012	79-00-5	Trichloroethane[1,1,2-]	0.00106	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17680	8	8/13/2012	79-01-6	Trichloroethene	0.00106	U	U_LAB	n/c	8.77E+00	9.1E+00		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17680	8	8/13/2012	75-69-4	Trichlorofluoromethane	0.00106	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17680	8	8/13/2012	95-95-4	Trichlorophenol[2,4,5-]	0.352	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17680	8	8/13/2012	88-06-2	Trichlorophenol[2,4,6-]	0.352	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17680	8	8/13/2012	96-18-4	Trichloropropane[1,2,3-]	0.00106	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17680	8	8/13/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00106	U	U_LAB	n		6.2E+01		
RE16-12-17680	8	8/13/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00106	U	U_LAB	n		7.8E+02		
RE16-12-17680	8	8/13/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17680	8	8/13/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17680	8	8/13/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17680	8	8/13/2012	V	Vanadium	16.8	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17680	8	8/13/2012	75-01-4	Vinyl Chloride	0.00106	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17680	8	8/13/2012	95-47-6	Xylene[1,2-]	0.00106	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17680	8	8/13/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00211	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17680	8	8/13/2012	Zn	Zinc	26.4	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17681	9	8/13/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17681	9	8/13/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17681	9	8/13/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17681	9	8/13/2012	83-32-9	Acenaphthene	0.0353	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17681	9	8/13/2012	208-96-8	Acenaphthylene	0.0353	U	U_LAB					
RE16-12-17681	9	8/13/2012	67-64-1	Acetone	0.00531	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17681	9	8/13/2012	Al	Aluminum	6330	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17681	9	8/13/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17681	9	8/13/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17681	9	8/13/2012	62-53-3	Aniline	0.353	U	U_LAB	c		8.5E+02		
RE16-12-17681	9	8/13/2012	120-12-7	Anthracene	0.0353	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17681	9	8/13/2012	Sb	Antimony	1	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17681	9	8/13/2012	As	Arsenic	1.62	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17681	9	8/13/2012	103-33-3	Azobenzene	0.353	U	U_LAB	c		5.1E+01		
RE16-12-17681	9	8/13/2012	Ba	Barium	345	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17681	9	8/13/2012	71-43-2	Benzene	0.00106	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17681	9	8/13/2012	56-55-3	Benzo(a)anthracene	0.0353	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17681	9	8/13/2012	50-32-8	Benzo(a)pyrene	0.0353	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17681	9	8/13/2012	205-99-2	Benzo(b)fluoranthene	0.0353	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17681	9	8/13/2012	191-24-2	Benzo(g,h,i)perylene	0.0353	U	U_LAB					
RE16-12-17681	9	8/13/2012	207-08-9	Benzo(k)fluoranthene	0.0353	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17681	9	8/13/2012	65-85-0	Benzoic Acid	0.49	J	J_LAB	n		2.4E+05		
RE16-12-17681	9	8/13/2012	100-51-6	Benzyl Alcohol	0.353	U	U_LAB	n		6.1E+03		
RE16-12-17681	9	8/13/2012	Be	Beryllium	0.681	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17681	9	8/13/2012	111-91-1	Bis(2-chloroethoxy)methane	0.353	U	U_LAB	n		1.8E+02		
RE16-12-17681	9	8/13/2012	111-44-4	Bis(2-chloroethyl)ether	0.353	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17681	9	8/13/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.353	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17681	9	8/13/2012	108-86-1	Bromobenzene	0.00106	U	U_LAB	n		3.0E+02		
RE16-12-17681	9	8/13/2012	74-97-5	Bromochloromethane	0.00106	U	U_LAB	n		1.6E+02		
RE16-12-17681	9	8/13/2012	75-27-4	Bromodichloromethane	0.00106	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17681	9	8/13/2012	75-25-2	Bromoform	0.00106	U	U_LAB	c		6.2E+02		
RE16-12-17681	9	8/13/2012	74-83-9	Bromomethane	0.00106	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17681	9	8/13/2012	101-55-3	Bromophenyl-phenylether[4-]	0.353	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17681	9	8/13/2012	78-93-3	Butanone[2-]	0.00531	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17681	9	8/13/2012	104-51-8	Butylbenzene[n-]	0.00106	U	U_LAB	n		3.9E+03		
RE16-12-17681	9	8/13/2012	135-98-8	Butylbenzene[sec-]	0.00106	U	U_LAB					
RE16-12-17681	9	8/13/2012	98-06-6	Butylbenzene[tert-]	0.00106	U	U_LAB					
RE16-12-17681	9	8/13/2012	85-68-7	Butylbenzylphthalate	0.353	U	U_LAB	c		2.6E+03		
RE16-12-17681	9	8/13/2012	Cd	Cadmium	0.5	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17681	9	8/13/2012	Ca	Calcium	2150	NQ	NQ					
RE16-12-17681	9	8/13/2012	75-15-0	Carbon Disulfide	0.00531	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17681	9	8/13/2012	56-23-5	Carbon Tetrachloride	0.00106	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17681	9	8/13/2012	59-50-7	Chloro-3-methylphenol[4-]	0.353	U	U_LAB	n		6.1E+03		
RE16-12-17681	9	8/13/2012	106-47-8	Chloroaniline[4-]	0.353	U	U_LAB	c		2.4E+01		
RE16-12-17681	9	8/13/2012	108-90-7	Chlorobenzene	0.00106	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17681	9	8/13/2012	124-48-1	Chlorodibromomethane	0.00106	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17681	9	8/13/2012	75-00-3	Chloroethane	0.00106	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17681	9	8/13/2012	67-66-3	Chloroform	0.00106	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17681	9	8/13/2012	74-87-3	Chloromethane	0.00106	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17681	9	8/13/2012	91-58-7	Chloronaphthalene[2-]	0.0353	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17681	9	8/13/2012	95-57-8	Chlorophenol[2-]	0.353	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17681	9	8/13/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.353	U	U_LAB					
RE16-12-17681	9	8/13/2012	95-49-8	Chlorotoluene[2-]	0.00106	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17681	9	8/13/2012	106-43-4	Chlorotoluene[4-]	0.00106	U	U_LAB	n		1.6E+03		
RE16-12-17681	9	8/13/2012	Cr	Chromium	5.64	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17681	9	8/13/2012	218-01-9	Chrysene	0.0353	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17681	9	8/13/2012	Co	Cobalt	2.81	NQ	NQ	n		2.3E+01		
RE16-12-17681	9	8/13/2012	Cu	Copper	14.2	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17681	9	8/13/2012	53-70-3	Dibenz(a,h)anthracene	0.0353	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17681	9	8/13/2012	132-64-9	Dibenzofuran	0.353	U	U_LAB	n		7.8E+01		
RE16-12-17681	9	8/13/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00106	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17681	9	8/13/2012	106-93-4	Dibromoethane[1,2-]	0.00106	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17681	9	8/13/2012	74-95-3	Dibromomethane	0.00106	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17681	9	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.00106	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17681	9	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.353	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17681	9	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.00106	U	U_LAB					
RE16-12-17681	9	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.353	U	U_LAB					
RE16-12-17681	9	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.00106	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17681	9	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.353	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17681	9	8/13/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.353	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17681	9	8/13/2012	75-71-8	Dichlorodifluoromethane	0.00106	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17681	9	8/13/2012	75-34-3	Dichloroethane[1,1-]	0.00106	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17681	9	8/13/2012	107-06-2	Dichloroethane[1,2-]	0.00106	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17681	9	8/13/2012	75-35-4	Dichloroethene[1,1-]	0.00106	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17681	9	8/13/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00106	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17681	9	8/13/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00106	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17681	9	8/13/2012	120-83-2	Dichlorophenol[2,4-]	0.353	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17681	9	8/13/2012	78-87-5	Dichloropropane[1,2-]	0.00106	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17681	9	8/13/2012	142-28-9	Dichloropropane[1,3-]	0.00106	U	U_LAB	n		1.6E+03		
RE16-12-17681	9	8/13/2012	594-20-7	Dichloropropane[2,2-]	0.00106	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17681	9	8/13/2012	563-58-6	Dichloropropene[1,1-]	0.00106	U	U_LAB					
RE16-12-17681	9	8/13/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00106	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17681	9	8/13/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00106	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17681	9	8/13/2012	84-66-2	Diethylphthalate	0.353	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17681	9	8/13/2012	131-11-3	Dimethyl Phthalate	0.353	U	U_LAB	n	6.11E+05			
RE16-12-17681	9	8/13/2012	105-67-9	Dimethylphenol[2,4-]	0.353	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17681	9	8/13/2012	84-74-2	Di-n-butylphthalate	0.353	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17681	9	8/13/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.353	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17681	9	8/13/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17681	9	8/13/2012	51-28-5	Dinitrophenol[2,4-]	0.706	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17681	9	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.353	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17681	9	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17681	9	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.353	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17681	9	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17681	9	8/13/2012	117-84-0	Di-n-octylphthalate	0.353	U	U_LAB	n		7.3E+02		
RE16-12-17681	9	8/13/2012	122-39-4	Diphenylamine	0.353	U	U_LAB	n		1.5E+03		
RE16-12-17681	9	8/13/2012	100-41-4	Ethylbenzene	0.00106	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17681	9	8/13/2012	206-44-0	Fluoranthene	0.0353	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17681	9	8/13/2012	86-73-7	Fluorene	0.0353	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17681	9	8/13/2012	118-74-1	Hexachlorobenzene	0.353	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17681	9	8/13/2012	87-68-3	Hexachlorobutadiene	0.353	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17681	9	8/13/2012	77-47-4	Hexachlorocyclopentadiene	0.353	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17681	9	8/13/2012	67-72-1	Hexachloroethane	0.353	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17681	9	8/13/2012	591-78-6	Hexanone[2-]	0.00531	U	U_LAB	n		2.1E+02		
RE16-12-17681	9	8/13/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17681	9	8/13/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0353	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17681	9	8/13/2012	74-88-4	Iodomethane	0.00531	U	U_LAB					
RE16-12-17681	9	8/13/2012	Fe	Iron	10200	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17681	9	8/13/2012	78-59-1	Isophorone	0.353	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17681	9	8/13/2012	98-82-8	Isopropylbenzene	0.00106	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17681	9	8/13/2012	99-87-6	Isopropyltoluene[4-]	0.00106	U	U_LAB					
RE16-12-17681	9	8/13/2012	Pb	Lead	11.9	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17681	9	8/13/2012	Mg	Magnesium	1260	NQ	NQ					
RE16-12-17681	9	8/13/2012	Mn	Manganese	250	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17681	9	8/13/2012	Hg	Mercury	0.0142	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17681	9	8/13/2012	108-10-1	Methyl-2-pentanone[4-]	0.00531	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17681	9	8/13/2012	75-09-2	Methylene Chloride	0.00531	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17681	9	8/13/2012	91-57-6	Methylnaphthalene[2-]	0.0353	U	U_LAB	n		2.3E+02		
RE16-12-17681	9	8/13/2012	95-48-7	Methylphenol[2-]	0.353	U	U_LAB	n		3.1E+03		
RE16-12-17681	9	8/13/2012	106-44-5	Methylphenol[4-]	0.353	U	U_LAB	n		6.1E+03		
RE16-12-17681	9	8/13/2012	91-20-3	Naphthalene	0.0353	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17681	9	8/13/2012	Ni	Nickel	5.22	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17681	9	8/13/2012	88-74-4	Nitroaniline[2-]	0.353	U	U_LAB	n		6.1E+02		
RE16-12-17681	9	8/13/2012	99-09-2	Nitroaniline[3-]	0.353	U	U_LAB					
RE16-12-17681	9	8/13/2012	100-01-6	Nitroaniline[4-]	0.353	U	U_LAB	c		2.4E+02		
RE16-12-17681	9	8/13/2012	98-95-3	Nitrobenzene	0.353	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17681	9	8/13/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17681	9	8/13/2012	88-75-5	Nitrophenol[2-]	0.353	U	U_LAB					
RE16-12-17681	9	8/13/2012	100-02-7	Nitrophenol[4-]	0.353	U	U_LAB					
RE16-12-17681	9	8/13/2012	62-75-9	Nitrosodimethylamine[N-]	0.353	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17681	9	8/13/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.353	U	U_LAB	c		6.9E-01		
RE16-12-17681	9	8/13/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17681	9	8/13/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17681	9	8/13/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17681	9	8/13/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.353	U	U_LAB	c		4.6E+01		
RE16-12-17681	9	8/13/2012	87-86-5	Pentachlorophenol	0.353	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17681	9	8/13/2012	ClO4	Perchlorate	0.00173	J	J_LAB	n	5.48E+01	5.5E+01		
RE16-12-17681	9	8/13/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17681	9	8/13/2012	85-01-8	Phenanthrene	0.0353	U	U_LAB	n	1.83E+03			
RE16-12-17681	9	8/13/2012	108-95-2	Phenol	0.353	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17681	9	8/13/2012	K	Potassium	1790	NQ	NQ					
RE16-12-17681	9	8/13/2012	103-65-1	Propylbenzene[1-]	0.00106	U	U_LAB	n		3.4E+03		
RE16-12-17681	9	8/13/2012	129-00-0	Pyrene	0.0353	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17681	9	8/13/2012	110-86-1	Pyridine	0.353	U	U_LAB	n		7.8E+01		
RE16-12-17681	9	8/13/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17681	9	8/13/2012	Se	Selenium	1.01	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17681	9	8/13/2012	Ag	Silver	0.319	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17681	9	8/13/2012	Na	Sodium	71.2	NQ	NQ					
RE16-12-17681	9	8/13/2012	100-42-5	Styrene	0.00106	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17681	9	8/13/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17681	9	8/13/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00106	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17681	9	8/13/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00106	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17681	9	8/13/2012	127-18-4	Tetrachloroethene	0.00106	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17681	9	8/13/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17681	9	8/13/2012	Tl	Thallium	0.218	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17681	9	8/13/2012	108-88-3	Toluene	0.00106	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17681	9	8/13/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00531	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17681	9	8/13/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.353	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17681	9	8/13/2012	71-55-6	Trichloroethane[1,1,1-]	0.00106	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17681	9	8/13/2012	79-00-5	Trichloroethane[1,1,2-]	0.00106	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17681	9	8/13/2012	79-01-6	Trichloroethene	0.00106	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17681	9	8/13/2012	75-69-4	Trichlorofluoromethane	0.00106	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17681	9	8/13/2012	95-95-4	Trichlorophenol[2,4,5-]	0.353	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17681	9	8/13/2012	88-06-2	Trichlorophenol[2,4,6-]	0.353	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17681	9	8/13/2012	96-18-4	Trichloropropane[1,2,3-]	0.00106	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17681	9	8/13/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00106	U	U_LAB	n		6.2E+01		
RE16-12-17681	9	8/13/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00106	U	U_LAB	n		7.8E+02		
RE16-12-17681	9	8/13/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17681	9	8/13/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17681	9	8/13/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17681	9	8/13/2012	V	Vanadium	14.6	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17681	9	8/13/2012	75-01-4	Vinyl Chloride	0.00106	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17681	9	8/13/2012	95-47-6	Xylene[1,2-]	0.00106	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17681	9	8/13/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00212	U	U_LAB	n	8.14E+02	6.3E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17681	9	8/13/2012	Zn	Zinc	35.9	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17682	10	8/13/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17682	10	8/13/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17682	10	8/13/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17682	10	8/13/2012	83-32-9	Acenaphthene	0.036	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17682	10	8/13/2012	208-96-8	Acenaphthylene	0.036	U	U_LAB					
RE16-12-17682	10	8/13/2012	67-64-1	Acetone	0.00541	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17682	10	8/13/2012	Al	Aluminum	9090	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17682	10	8/13/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17682	10	8/13/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17682	10	8/13/2012	62-53-3	Aniline	0.36	U	U_LAB	c		8.5E+02		
RE16-12-17682	10	8/13/2012	120-12-7	Anthracene	0.036	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17682	10	8/13/2012	Sb	Antimony	1.01	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17682	10	8/13/2012	As	Arsenic	1.69	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17682	10	8/13/2012	103-33-3	Azobenzene	0.36	U	U_LAB	c		5.1E+01		
RE16-12-17682	10	8/13/2012	Ba	Barium	463	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17682	10	8/13/2012	71-43-2	Benzene	0.00108	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17682	10	8/13/2012	56-55-3	Benzo(a)anthracene	0.036	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17682	10	8/13/2012	50-32-8	Benzo(a)pyrene	0.036	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17682	10	8/13/2012	205-99-2	Benzo(b)fluoranthene	0.036	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17682	10	8/13/2012	191-24-2	Benzo(g,h,i)perylene	0.036	U	U_LAB					
RE16-12-17682	10	8/13/2012	207-08-9	Benzo(k)fluoranthene	0.036	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17682	10	8/13/2012	65-85-0	Benzoic Acid	0.499	J	J_LAB	n		2.4E+05		
RE16-12-17682	10	8/13/2012	100-51-6	Benzyl Alcohol	0.36	U	U_LAB	n		6.1E+03		
RE16-12-17682	10	8/13/2012	Be	Beryllium	0.815	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17682	10	8/13/2012	111-91-1	Bis(2-chloroethoxy)methane	0.36	U	U_LAB	n		1.8E+02		
RE16-12-17682	10	8/13/2012	111-44-4	Bis(2-chloroethyl)ether	0.36	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17682	10	8/13/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.36	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17682	10	8/13/2012	108-86-1	Bromobenzene	0.00108	U	U_LAB	n		3.0E+02		
RE16-12-17682	10	8/13/2012	74-97-5	Bromochloromethane	0.00108	U	U_LAB	n		1.6E+02		
RE16-12-17682	10	8/13/2012	75-27-4	Bromodichloromethane	0.00108	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17682	10	8/13/2012	75-25-2	Bromoform	0.00108	U	U_LAB	c		6.2E+02		
RE16-12-17682	10	8/13/2012	74-83-9	Bromomethane	0.00108	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17682	10	8/13/2012	101-55-3	Bromophenyl-phenylether[4-]	0.36	U	U_LAB					
RE16-12-17682	10	8/13/2012	78-93-3	Butanone[2-]	0.00541	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17682	10	8/13/2012	104-51-8	Butylbenzene[n-]	0.00108	U	U_LAB	n		3.9E+03		
RE16-12-17682	10	8/13/2012	135-98-8	Butylbenzene[sec-]	0.00108	U	U_LAB					
RE16-12-17682	10	8/13/2012	98-06-6	Butylbenzene[tert-]	0.00108	U	U_LAB					
RE16-12-17682	10	8/13/2012	85-68-7	Butylbenzylphthalate	0.36	U	U_LAB	c		2.6E+03		
RE16-12-17682	10	8/13/2012	Cd	Cadmium	0.505	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17682	10	8/13/2012	Ca	Calcium	1960	NQ	NQ					
RE16-12-17682	10	8/13/2012	75-15-0	Carbon Disulfide	0.00541	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17682	10	8/13/2012	56-23-5	Carbon Tetrachloride	0.00108	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17682	10	8/13/2012	59-50-7	Chloro-3-methylphenol[4-]	0.36	U	U_LAB	n		6.1E+03		
RE16-12-17682	10	8/13/2012	106-47-8	Chloroaniline[4-]	0.36	U	U_LAB	c		2.4E+01		
RE16-12-17682	10	8/13/2012	108-90-7	Chlorobenzene	0.00108	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17682	10	8/13/2012	124-48-1	Chlorodibromomethane	0.00108	U	U_LAB	c	1.21E+01	6.8E+00		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17682	10	8/13/2012	75-00-3	Chloroethane	0.00108	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17682	10	8/13/2012	67-66-3	Chloroform	0.00108	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17682	10	8/13/2012	74-87-3	Chloromethane	0.00108	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17682	10	8/13/2012	91-58-7	Chloronaphthalene[2-]	0.036	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17682	10	8/13/2012	95-57-8	Chlorophenol[2-]	0.36	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17682	10	8/13/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.36	U	U_LAB					
RE16-12-17682	10	8/13/2012	95-49-8	Chlorotoluene[2-]	0.00108	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17682	10	8/13/2012	106-43-4	Chlorotoluene[4-]	0.00108	U	U_LAB	n		1.6E+03		
RE16-12-17682	10	8/13/2012	Cr	Chromium	9.17	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17682	10	8/13/2012	218-01-9	Chrysene	0.036	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17682	10	8/13/2012	Co	Cobalt	4.71	NQ	NQ	n		2.3E+01		
RE16-12-17682	10	8/13/2012	Cu	Copper	8.17	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17682	10	8/13/2012	53-70-3	Dibenz(a,h)anthracene	0.036	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17682	10	8/13/2012	132-64-9	Dibenzofuran	0.36	U	U_LAB	n		7.8E+01		
RE16-12-17682	10	8/13/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00108	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17682	10	8/13/2012	106-93-4	Dibromoethane[1,2-]	0.00108	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17682	10	8/13/2012	74-95-3	Dibromomethane	0.00108	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17682	10	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.00108	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17682	10	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.36	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17682	10	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.00108	U	U_LAB					
RE16-12-17682	10	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.36	U	U_LAB					
RE16-12-17682	10	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.00108	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17682	10	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.36	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17682	10	8/13/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.36	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17682	10	8/13/2012	75-71-8	Dichlorodifluoromethane	0.00108	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17682	10	8/13/2012	75-34-3	Dichloroethane[1,1-]	0.00108	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17682	10	8/13/2012	107-06-2	Dichloroethane[1,2-]	0.00108	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17682	10	8/13/2012	75-35-4	Dichloroethene[1,1-]	0.00108	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17682	10	8/13/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00108	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17682	10	8/13/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00108	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17682	10	8/13/2012	120-83-2	Dichlorophenol[2,4-]	0.36	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17682	10	8/13/2012	78-87-5	Dichloropropane[1,2-]	0.00108	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17682	10	8/13/2012	142-28-9	Dichloropropane[1,3-]	0.00108	U	U_LAB	n		1.6E+03		
RE16-12-17682	10	8/13/2012	594-20-7	Dichloropropane[2,2-]	0.00108	U	U_LAB					
RE16-12-17682	10	8/13/2012	563-58-6	Dichloropropene[1,1-]	0.00108	U	U_LAB					
RE16-12-17682	10	8/13/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00108	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17682	10	8/13/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00108	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17682	10	8/13/2012	84-66-2	Diethylphthalate	0.36	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17682	10	8/13/2012	131-11-3	Dimethyl Phthalate	0.36	U	U_LAB	n	6.11E+05			
RE16-12-17682	10	8/13/2012	105-67-9	Dimethylphenol[2,4-]	0.36	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17682	10	8/13/2012	84-74-2	Di-n-butylphthalate	0.36	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17682	10	8/13/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.36	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17682	10	8/13/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17682	10	8/13/2012	51-28-5	Dinitrophenol[2,4-]	0.719	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17682	10	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.36	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17682	10	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17682	10	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.36	U	U_LAB	n	6.11E+01	6.1E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17682	10	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17682	10	8/13/2012	117-84-0	Di-n-octylphthalate	0.36	U	U_LAB	n		7.3E+02		
RE16-12-17682	10	8/13/2012	122-39-4	Diphenylamine	0.36	U	U_LAB	n		1.5E+03		
RE16-12-17682	10	8/13/2012	100-41-4	Ethylbenzene	0.00108	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17682	10	8/13/2012	206-44-0	Fluoranthene	0.036	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17682	10	8/13/2012	86-73-7	Fluorene	0.036	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17682	10	8/13/2012	118-74-1	Hexachlorobenzene	0.36	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17682	10	8/13/2012	87-68-3	Hexachlorobutadiene	0.36	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17682	10	8/13/2012	77-47-4	Hexachlorocyclopentadiene	0.36	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17682	10	8/13/2012	67-72-1	Hexachloroethane	0.36	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17682	10	8/13/2012	591-78-6	Hexanone[2-]	0.00541	U	U_LAB	n		2.1E+02		
RE16-12-17682	10	8/13/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17682	10	8/13/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.036	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17682	10	8/13/2012	74-88-4	Iodomethane	0.00541	U	U_LAB					
RE16-12-17682	10	8/13/2012	Fe	Iron	12800	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17682	10	8/13/2012	78-59-1	Isophorone	0.36	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17682	10	8/13/2012	98-82-8	Isopropylbenzene	0.00108	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17682	10	8/13/2012	99-87-6	Isopropyltoluene[4-]	0.00108	U	U_LAB					
RE16-12-17682	10	8/13/2012	Pb	Lead	12.7	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17682	10	8/13/2012	Mg	Magnesium	1710	NQ	NQ					
RE16-12-17682	10	8/13/2012	Mn	Manganese	264	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17682	10	8/13/2012	Hg	Mercury	0.0226	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17682	10	8/13/2012	108-10-1	Methyl-2-pentanone[4-]	0.00541	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17682	10	8/13/2012	75-09-2	Methylene Chloride	0.00541	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17682	10	8/13/2012	91-57-6	Methylnaphthalene[2-]	0.036	U	U_LAB	n		2.3E+02		
RE16-12-17682	10	8/13/2012	95-48-7	Methylphenol[2-]	0.36	U	U_LAB	n		3.1E+03		
RE16-12-17682	10	8/13/2012	106-44-5	Methylphenol[4-]	0.36	U	U_LAB	n		6.1E+03		
RE16-12-17682	10	8/13/2012	91-20-3	Naphthalene	0.036	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17682	10	8/13/2012	Ni	Nickel	7.04	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17682	10	8/13/2012	88-74-4	Nitroaniline[2-]	0.36	U	U_LAB	n		6.1E+02		
RE16-12-17682	10	8/13/2012	99-09-2	Nitroaniline[3-]	0.36	U	U_LAB					
RE16-12-17682	10	8/13/2012	100-01-6	Nitroaniline[4-]	0.36	U	U_LAB	c		2.4E+02		
RE16-12-17682	10	8/13/2012	98-95-3	Nitrobenzene	0.36	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17682	10	8/13/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17682	10	8/13/2012	88-75-5	Nitrophenol[2-]	0.36	U	U_LAB					
RE16-12-17682	10	8/13/2012	100-02-7	Nitrophenol[4-]	0.36	U	U_LAB					
RE16-12-17682	10	8/13/2012	62-75-9	Nitrosodimethylamine[N-]	0.36	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17682	10	8/13/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.36	U	U_LAB	c		6.9E-01		
RE16-12-17682	10	8/13/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17682	10	8/13/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17682	10	8/13/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17682	10	8/13/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.36	U	U_LAB	c		4.6E+01		
RE16-12-17682	10	8/13/2012	87-86-5	Pentachlorophenol	0.36	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17682	10	8/13/2012	ClO4	Perchlorate	0.00138	J	J_LAB	n	5.48E+01	5.5E+01		
RE16-12-17682	10	8/13/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17682	10	8/13/2012	85-01-8	Phenanthrene	0.036	U	U_LAB	n	1.83E+03			
RE16-12-17682	10	8/13/2012	108-95-2	Phenol	0.36	U	U_LAB	n	1.83E+04	1.8E+04		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17682	10	8/13/2012	K	Potassium	1760	NQ	NQ					
RE16-12-17682	10	8/13/2012	103-65-1	Propylbenzene[1-]	0.00108	U	U_LAB	n		3.4E+03		
RE16-12-17682	10	8/13/2012	129-00-0	Pyrene	0.036	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17682	10	8/13/2012	110-86-1	Pyridine	0.36	U	U_LAB	n		7.8E+01		
RE16-12-17682	10	8/13/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17682	10	8/13/2012	Se	Selenium	0.926	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17682	10	8/13/2012	Ag	Silver	0.815	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17682	10	8/13/2012	Na	Sodium	64.5	NQ	NQ					
RE16-12-17682	10	8/13/2012	100-42-5	Styrene	0.00108	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17682	10	8/13/2012	3058-38-6	TATB	2.72	NQ	NQ					
RE16-12-17682	10	8/13/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00108	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17682	10	8/13/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00108	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17682	10	8/13/2012	127-18-4	Tetrachloroethene	0.00108	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17682	10	8/13/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17682	10	8/13/2012	Tl	Thallium	0.196	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17682	10	8/13/2012	108-88-3	Toluene	0.00108	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17682	10	8/13/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00541	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17682	10	8/13/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.36	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17682	10	8/13/2012	71-55-6	Trichloroethane[1,1,1-]	0.00108	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17682	10	8/13/2012	79-00-5	Trichloroethane[1,1,2-]	0.00108	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17682	10	8/13/2012	79-01-6	Trichloroethene	0.00108	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17682	10	8/13/2012	75-69-4	Trichlorofluoromethane	0.00108	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17682	10	8/13/2012	95-95-4	Trichlorophenol[2,4,5-]	0.36	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17682	10	8/13/2012	88-06-2	Trichlorophenol[2,4,6-]	0.36	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17682	10	8/13/2012	96-18-4	Trichloropropane[1,2,3-]	0.00108	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17682	10	8/13/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00108	U	U_LAB	n		6.2E+01		
RE16-12-17682	10	8/13/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00108	U	U_LAB	n		7.8E+02		
RE16-12-17682	10	8/13/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17682	10	8/13/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17682	10	8/13/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17682	10	8/13/2012	V	Vanadium	26.1	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17682	10	8/13/2012	75-01-4	Vinyl Chloride	0.00108	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17682	10	8/13/2012	95-47-6	Xylene[1,2-]	0.00108	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17682	10	8/13/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00216	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17682	10	8/13/2012	Zn	Zinc	27.4	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17683	11	8/13/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17683	11	8/13/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17683	11	8/13/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17683	11	8/13/2012	83-32-9	Acenaphthene	0.035	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17683	11	8/13/2012	208-96-8	Acenaphthylene	0.035	U	U_LAB					
RE16-12-17683	11	8/13/2012	67-64-1	Acetone	0.00527	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17683	11	8/13/2012	Al	Aluminum	4450	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17683	11	8/13/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17683	11	8/13/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17683	11	8/13/2012	62-53-3	Aniline	0.35	U	U_LAB	c		8.5E+02		
RE16-12-17683	11	8/13/2012	120-12-7	Anthracene	0.035	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17683	11	8/13/2012	Sb	Antimony	1	U	U_LAB	n	3.13E+01	3.1E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17683	11	8/13/2012	As	Arsenic	1.04	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17683	11	8/13/2012	103-33-3	Azobenzene	0.35	U	U_LAB	c		5.1E+01		
RE16-12-17683	11	8/13/2012	Ba	Barium	297	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17683	11	8/13/2012	71-43-2	Benzene	0.00105	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17683	11	8/13/2012	56-55-3	Benzo(a)anthracene	0.035	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17683	11	8/13/2012	50-32-8	Benzo(a)pyrene	0.035	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17683	11	8/13/2012	205-99-2	Benzo(b)fluoranthene	0.035	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17683	11	8/13/2012	191-24-2	Benzo(g,h,i)perylene	0.035	U	U_LAB					
RE16-12-17683	11	8/13/2012	207-08-9	Benzo(k)fluoranthene	0.035	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17683	11	8/13/2012	65-85-0	Benzoic Acid	0.489	J	J_LAB	n		2.4E+05		
RE16-12-17683	11	8/13/2012	100-51-6	Benzyl Alcohol	0.35	U	U_LAB	n		6.1E+03		
RE16-12-17683	11	8/13/2012	Be	Beryllium	0.399	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17683	11	8/13/2012	111-91-1	Bis(2-chloroethoxy)methane	0.35	U	U_LAB	n		1.8E+02		
RE16-12-17683	11	8/13/2012	111-44-4	Bis(2-chloroethyl)ether	0.35	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17683	11	8/13/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.35	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17683	11	8/13/2012	108-86-1	Bromobenzene	0.00105	U	U_LAB	n		3.0E+02		
RE16-12-17683	11	8/13/2012	74-97-5	Bromochloromethane	0.00105	U	U_LAB	n		1.6E+02		
RE16-12-17683	11	8/13/2012	75-27-4	Bromodichloromethane	0.00105	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17683	11	8/13/2012	75-25-2	Bromoform	0.00105	U	U_LAB	c		6.2E+02		
RE16-12-17683	11	8/13/2012	74-83-9	Bromomethane	0.00105	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17683	11	8/13/2012	101-55-3	Bromophenyl-phenylether[4-]	0.35	U	U_LAB					
RE16-12-17683	11	8/13/2012	78-93-3	Butanone[2-]	0.00527	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17683	11	8/13/2012	104-51-8	Butylbenzene[n-]	0.00105	U	U_LAB	n		3.9E+03		
RE16-12-17683	11	8/13/2012	135-98-8	Butylbenzene[sec-]	0.00105	U	U_LAB					
RE16-12-17683	11	8/13/2012	98-06-6	Butylbenzene[tert-]	0.00105	U	U_LAB					
RE16-12-17683	11	8/13/2012	85-68-7	Butylbenzylphthalate	0.35	U	U_LAB	c		2.6E+03		
RE16-12-17683	11	8/13/2012	Cd	Cadmium	0.502	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17683	11	8/13/2012	Ca	Calcium	1130	NQ	NQ					
RE16-12-17683	11	8/13/2012	75-15-0	Carbon Disulfide	0.00527	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17683	11	8/13/2012	56-23-5	Carbon Tetrachloride	0.00105	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17683	11	8/13/2012	59-50-7	Chloro-3-methylphenol[4-]	0.35	U	U_LAB	n		6.1E+03		
RE16-12-17683	11	8/13/2012	106-47-8	Chloroaniline[4-]	0.35	U	U_LAB	c		2.4E+01		
RE16-12-17683	11	8/13/2012	108-90-7	Chlorobenzene	0.00105	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17683	11	8/13/2012	124-48-1	Chlorodibromomethane	0.00105	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17683	11	8/13/2012	75-00-3	Chloroethane	0.00105	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17683	11	8/13/2012	67-66-3	Chloroform	0.00105	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17683	11	8/13/2012	74-87-3	Chloromethane	0.00105	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17683	11	8/13/2012	91-58-7	Chloronaphthalene[2-]	0.035	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17683	11	8/13/2012	95-57-8	Chlorophenol[2-]	0.35	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17683	11	8/13/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.35	U	U_LAB					
RE16-12-17683	11	8/13/2012	95-49-8	Chlorotoluene[2-]	0.00105	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17683	11	8/13/2012	106-43-4	Chlorotoluene[4-]	0.00105	U	U_LAB	n		1.6E+03		
RE16-12-17683	11	8/13/2012	Cr	Chromium	6.57	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17683	11	8/13/2012	218-01-9	Chrysene	0.035	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17683	11	8/13/2012	Co	Cobalt	3.71	NQ	NQ	n		2.3E+01		
RE16-12-17683	11	8/13/2012	Cu	Copper	4.54	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17683	11	8/13/2012	53-70-3	Dibenz(a,h)anthracene	0.035	U	U_LAB	c	1.48E-01	1.5E-01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17683	11	8/13/2012	132-64-9	Dibenzofuran	0.35	U	U_LAB	n		7.8E+01		
RE16-12-17683	11	8/13/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00105	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17683	11	8/13/2012	106-93-4	Dibromoethane[1,2-]	0.00105	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17683	11	8/13/2012	74-95-3	Dibromomethane	0.00105	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17683	11	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.00105	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17683	11	8/13/2012	95-50-1	Dichlorobenzene[1,2-]	0.35	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17683	11	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.00105	U	U_LAB					
RE16-12-17683	11	8/13/2012	541-73-1	Dichlorobenzene[1,3-]	0.35	U	U_LAB					
RE16-12-17683	11	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.00105	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17683	11	8/13/2012	106-46-7	Dichlorobenzene[1,4-]	0.35	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17683	11	8/13/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.35	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17683	11	8/13/2012	75-71-8	Dichlorodifluoromethane	0.00105	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17683	11	8/13/2012	75-34-3	Dichloroethane[1,1-]	0.00105	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17683	11	8/13/2012	107-06-2	Dichloroethane[1,2-]	0.00105	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17683	11	8/13/2012	75-35-4	Dichloroethene[1,1-]	0.00105	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17683	11	8/13/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00105	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17683	11	8/13/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00105	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17683	11	8/13/2012	120-83-2	Dichlorophenol[2,4-]	0.35	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17683	11	8/13/2012	78-87-5	Dichloropropane[1,2-]	0.00105	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17683	11	8/13/2012	142-28-9	Dichloropropane[1,3-]	0.00105	U	U_LAB	n		1.6E+03		
RE16-12-17683	11	8/13/2012	594-20-7	Dichloropropane[2,2-]	0.00105	U	U_LAB					
RE16-12-17683	11	8/13/2012	563-58-6	Dichloropropene[1,1-]	0.00105	U	U_LAB					
RE16-12-17683	11	8/13/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00105	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17683	11	8/13/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00105	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17683	11	8/13/2012	84-66-2	Diethylphthalate	0.35	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17683	11	8/13/2012	131-11-3	Dimethyl Phthalate	0.35	U	U_LAB	n	6.11E+05			
RE16-12-17683	11	8/13/2012	105-67-9	Dimethylphenol[2,4-]	0.35	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17683	11	8/13/2012	84-74-2	Di-n-butylphthalate	0.35	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17683	11	8/13/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.35	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17683	11	8/13/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17683	11	8/13/2012	51-28-5	Dinitrophenol[2,4-]	0.701	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17683	11	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.35	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17683	11	8/13/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17683	11	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.35	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17683	11	8/13/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17683	11	8/13/2012	117-84-0	Di-n-octylphthalate	0.35	U	U_LAB	n		7.3E+02		
RE16-12-17683	11	8/13/2012	122-39-4	Diphenylamine	0.35	U	U_LAB	n		1.5E+03		
RE16-12-17683	11	8/13/2012	100-41-4	Ethylbenzene	0.00105	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17683	11	8/13/2012	206-44-0	Fluoranthene	0.035	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17683	11	8/13/2012	86-73-7	Fluorene	0.035	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17683	11	8/13/2012	118-74-1	Hexachlorobenzene	0.35	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17683	11	8/13/2012	87-68-3	Hexachlorobutadiene	0.35	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17683	11	8/13/2012	77-47-4	Hexachlorocyclopentadiene	0.35	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17683	11	8/13/2012	67-72-1	Hexachloroethane	0.35	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17683	11	8/13/2012	591-78-6	Hexanone[2-]	0.00527	U	U_LAB	n		2.1E+02		
RE16-12-17683	11	8/13/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17683	11	8/13/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.035	U	U_LAB	c	1.48E+00	1.5E+00		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17683	11	8/13/2012	74-88-4	Iodomethane	0.00527	U	U_LAB					
RE16-12-17683	11	8/13/2012	Fe	Iron	8430	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17683	11	8/13/2012	78-59-1	Isophorone	0.35	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17683	11	8/13/2012	98-82-8	Isopropylbenzene	0.00105	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17683	11	8/13/2012	99-87-6	Isopropyltoluene[4-]	0.00105	U	U_LAB					
RE16-12-17683	11	8/13/2012	Pb	Lead	9.73	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17683	11	8/13/2012	Mg	Magnesium	876	NQ	NQ					
RE16-12-17683	11	8/13/2012	Mn	Manganese	211	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17683	11	8/13/2012	Hg	Mercury	0.0107	J	J_LAB	n	1.56E+01	1.0E+01		
RE16-12-17683	11	8/13/2012	108-10-1	Methyl-2-pentanone[4-]	0.00527	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17683	11	8/13/2012	75-09-2	Methylene Chloride	0.00527	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17683	11	8/13/2012	91-57-6	Methylnaphthalene[2-]	0.035	U	U_LAB	n		2.3E+02		
RE16-12-17683	11	8/13/2012	95-48-7	Methylphenol[2-]	0.35	U	U_LAB	n		3.1E+03		
RE16-12-17683	11	8/13/2012	106-44-5	Methylphenol[4-]	0.35	U	U_LAB	n		6.1E+03		
RE16-12-17683	11	8/13/2012	91-20-3	Naphthalene	0.035	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17683	11	8/13/2012	Ni	Nickel	3.41	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17683	11	8/13/2012	88-74-4	Nitroaniline[2-]	0.35	U	U_LAB	n		6.1E+02		
RE16-12-17683	11	8/13/2012	99-09-2	Nitroaniline[3-]	0.35	U	U_LAB					
RE16-12-17683	11	8/13/2012	100-01-6	Nitroaniline[4-]	0.35	U	U_LAB	c		2.4E+02		
RE16-12-17683	11	8/13/2012	98-95-3	Nitrobenzene	0.35	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17683	11	8/13/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17683	11	8/13/2012	88-75-5	Nitrophenol[2-]	0.35	U	U_LAB					
RE16-12-17683	11	8/13/2012	100-02-7	Nitrophenol[4-]	0.35	U	U_LAB					
RE16-12-17683	11	8/13/2012	62-75-9	Nitrosodimethylamine[N-]	0.35	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17683	11	8/13/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.35	U	U_LAB	c		6.9E-01		
RE16-12-17683	11	8/13/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17683	11	8/13/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17683	11	8/13/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17683	11	8/13/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.35	U	U_LAB	c		4.6E+01		
RE16-12-17683	11	8/13/2012	87-86-5	Pentachlorophenol	0.35	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17683	11	8/13/2012	ClO4	Perchlorate	0.00211	U	U_LAB	n	5.48E+01	5.5E+01		
RE16-12-17683	11	8/13/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17683	11	8/13/2012	85-01-8	Phenanthrene	0.035	U	U_LAB	n	1.83E+03			
RE16-12-17683	11	8/13/2012	108-95-2	Phenol	0.35	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17683	11	8/13/2012	K	Potassium	991	NQ	NQ					
RE16-12-17683	11	8/13/2012	103-65-1	Propylbenzene[1-]	0.00105	U	U_LAB	n		3.4E+03		
RE16-12-17683	11	8/13/2012	129-00-0	Pyrene	0.035	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17683	11	8/13/2012	110-86-1	Pyridine	0.35	U	U_LAB	n		7.8E+01		
RE16-12-17683	11	8/13/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17683	11	8/13/2012	Se	Selenium	1.04	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17683	11	8/13/2012	Ag	Silver	0.4	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17683	11	8/13/2012	Na	Sodium	45.7	NQ	NQ					
RE16-12-17683	11	8/13/2012	100-42-5	Styrene	0.00105	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17683	11	8/13/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17683	11	8/13/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00105	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17683	11	8/13/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00105	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17683	11	8/13/2012	127-18-4	Tetrachloroethene	0.00105	U	U_LAB	c	7.02E+00	2.2E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17683	11	8/13/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17683	11	8/13/2012	Tl	Thallium	0.0954	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17683	11	8/13/2012	108-88-3	Toluene	0.00105	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17683	11	8/13/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00527	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17683	11	8/13/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.35	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17683	11	8/13/2012	71-55-6	Trichloroethane[1,1,1-]	0.00105	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17683	11	8/13/2012	79-00-5	Trichloroethane[1,1,2-]	0.00105	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17683	11	8/13/2012	79-01-6	Trichloroethene	0.00105	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17683	11	8/13/2012	75-69-4	Trichlorofluoromethane	0.00105	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17683	11	8/13/2012	95-95-4	Trichlorophenol[2,4,5-]	0.35	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17683	11	8/13/2012	88-06-2	Trichlorophenol[2,4,6-]	0.35	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17683	11	8/13/2012	96-18-4	Trichloropropane[1,2,3-]	0.00105	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17683	11	8/13/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00105	U	U_LAB	n		6.2E+01		
RE16-12-17683	11	8/13/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00105	U	U_LAB	n		7.8E+02		
RE16-12-17683	11	8/13/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17683	11	8/13/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17683	11	8/13/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17683	11	8/13/2012	V	Vanadium	18.4	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17683	11	8/13/2012	75-01-4	Vinyl Chloride	0.00105	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17683	11	8/13/2012	95-47-6	Xylene[1,2-]	0.00105	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17683	11	8/13/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00211	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17683	11	8/13/2012	Zn	Zinc	17.6	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17684	12	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17684	12	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17684	12	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17684	12	8/14/2012	83-32-9	Acenaphthene	0.034	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17684	12	8/14/2012	208-96-8	Acenaphthylene	0.034	U	U_LAB					
RE16-12-17684	12	8/14/2012	67-64-1	Acetone	0.00511	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17684	12	8/14/2012	Al	Aluminum	4070	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17684	12	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17684	12	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17684	12	8/14/2012	62-53-3	Aniline	0.34	U	U_LAB	c		8.5E+02		
RE16-12-17684	12	8/14/2012	120-12-7	Anthracene	0.034	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17684	12	8/14/2012	Sb	Antimony	0.935	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17684	12	8/14/2012	As	Arsenic	3.62	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17684	12	8/14/2012	103-33-3	Azobenzene	0.34	U	U_LAB	c		5.1E+01		
RE16-12-17684	12	8/14/2012	Ba	Barium	127	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17684	12	8/14/2012	71-43-2	Benzene	0.00102	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17684	12	8/14/2012	56-55-3	Benzo(a)anthracene	0.034	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17684	12	8/14/2012	50-32-8	Benzo(a)pyrene	0.034	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17684	12	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.034	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17684	12	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.034	U	U_LAB					
RE16-12-17684	12	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.034	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17684	12	8/14/2012	65-85-0	Benzoic Acid	0.68	U	U_LAB	n		2.4E+05		
RE16-12-17684	12	8/14/2012	100-51-6	Benzyl Alcohol	0.34	U	U_LAB	n		6.1E+03		
RE16-12-17684	12	8/14/2012	Be	Beryllium	0.483	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17684	12	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.34	U	U_LAB	n		1.8E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17684	12	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.34	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17684	12	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.34	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17684	12	8/14/2012	108-86-1	Bromobenzene	0.00102	U	U_LAB	n		3.0E+02		
RE16-12-17684	12	8/14/2012	74-97-5	Bromochloromethane	0.00102	U	U_LAB	n		1.6E+02		
RE16-12-17684	12	8/14/2012	75-27-4	Bromodichloromethane	0.00102	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17684	12	8/14/2012	75-25-2	Bromoform	0.00102	U	U_LAB	c		6.2E+02		
RE16-12-17684	12	8/14/2012	74-83-9	Bromomethane	0.00102	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17684	12	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.34	U	U_LAB					
RE16-12-17684	12	8/14/2012	78-93-3	Butanone[2-]	0.00511	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17684	12	8/14/2012	104-51-8	Butylbenzene[n-]	0.00102	U	U_LAB	n		3.9E+03		
RE16-12-17684	12	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00102	U	U_LAB					
RE16-12-17684	12	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00102	U	U_LAB					
RE16-12-17684	12	8/14/2012	85-68-7	Butylbenzylphthalate	0.34	U	U_LAB	c		2.6E+03		
RE16-12-17684	12	8/14/2012	Cd	Cadmium	0.468	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17684	12	8/14/2012	Ca	Calcium	1080	NQ	NQ					
RE16-12-17684	12	8/14/2012	75-15-0	Carbon Disulfide	0.00511	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17684	12	8/14/2012	56-23-5	Carbon Tetrachloride	0.00102	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17684	12	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.34	U	U_LAB	n		6.1E+03		
RE16-12-17684	12	8/14/2012	106-47-8	Chloroaniline[4-]	0.34	U	U_LAB	c		2.4E+01		
RE16-12-17684	12	8/14/2012	108-90-7	Chlorobenzene	0.00102	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17684	12	8/14/2012	124-48-1	Chlorodibromomethane	0.00102	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17684	12	8/14/2012	75-00-3	Chloroethane	0.00102	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17684	12	8/14/2012	67-66-3	Chloroform	0.00102	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17684	12	8/14/2012	74-87-3	Chloromethane	0.00102	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17684	12	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.034	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17684	12	8/14/2012	95-57-8	Chlorophenol[2-]	0.34	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17684	12	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.34	U	U_LAB					
RE16-12-17684	12	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00102	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17684	12	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00102	U	U_LAB	n		1.6E+03		
RE16-12-17684	12	8/14/2012	Cr	Chromium	6.24	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17684	12	8/14/2012	218-01-9	Chrysene	0.034	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17684	12	8/14/2012	Co	Cobalt	10	NQ	NQ	n		2.3E+01		
RE16-12-17684	12	8/14/2012	Cu	Copper	6.68	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17684	12	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.034	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17684	12	8/14/2012	132-64-9	Dibenzofuran	0.34	U	U_LAB	n		7.8E+01		
RE16-12-17684	12	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00102	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17684	12	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00102	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17684	12	8/14/2012	74-95-3	Dibromomethane	0.00102	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17684	12	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00102	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17684	12	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.34	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17684	12	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00102	U	U_LAB					
RE16-12-17684	12	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.34	U	U_LAB					
RE16-12-17684	12	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00102	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17684	12	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.34	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17684	12	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.34	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17684	12	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00102	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17684	12	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00102	U	U_LAB	c	6.45E+01	3.3E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17684	12	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00102	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17684	12	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00102	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17684	12	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00102	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17684	12	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00102	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17684	12	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.34	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17684	12	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00102	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17684	12	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00102	U	U_LAB	n		1.6E+03		
RE16-12-17684	12	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00102	U	U_LAB					
RE16-12-17684	12	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00102	U	U_LAB					
RE16-12-17684	12	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00102	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17684	12	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00102	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17684	12	8/14/2012	84-66-2	Diethylphthalate	0.34	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17684	12	8/14/2012	131-11-3	Dimethyl Phthalate	0.34	U	U_LAB	n	6.11E+05			
RE16-12-17684	12	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.34	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17684	12	8/14/2012	84-74-2	Di-n-butylphthalate	0.34	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17684	12	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.34	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17684	12	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17684	12	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.68	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17684	12	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.34	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17684	12	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17684	12	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.34	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17684	12	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17684	12	8/14/2012	117-84-0	Di-n-octylphthalate	0.34	U	U_LAB	n		7.3E+02		
RE16-12-17684	12	8/14/2012	122-39-4	Diphenylamine	0.34	U	U_LAB	n		1.5E+03		
RE16-12-17684	12	8/14/2012	100-41-4	Ethylbenzene	0.00102	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17684	12	8/14/2012	206-44-0	Fluoranthene	0.034	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17684	12	8/14/2012	86-73-7	Fluorene	0.034	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17684	12	8/14/2012	118-74-1	Hexachlorobenzene	0.34	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17684	12	8/14/2012	87-68-3	Hexachlorobutadiene	0.34	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17684	12	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.34	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17684	12	8/14/2012	67-72-1	Hexachloroethane	0.34	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17684	12	8/14/2012	591-78-6	Hexanone[2-]	0.00511	U	U_LAB	n		2.1E+02		
RE16-12-17684	12	8/14/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17684	12	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.034	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17684	12	8/14/2012	74-88-4	Iodomethane	0.00511	U	U_LAB					
RE16-12-17684	12	8/14/2012	Fe	Iron	11600	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17684	12	8/14/2012	78-59-1	Isophorone	0.34	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17684	12	8/14/2012	98-82-8	Isopropylbenzene	0.00102	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17684	12	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00102	U	U_LAB					
RE16-12-17684	12	8/14/2012	Pb	Lead	9.87	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17684	12	8/14/2012	Mg	Magnesium	1070	NQ	NQ					
RE16-12-17684	12	8/14/2012	Mn	Manganese	842	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17684	12	8/14/2012	Hg	Mercury	0.0114	U	U_LAB	n	1.56E+01	1.0E+01		
RE16-12-17684	12	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00511	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17684	12	8/14/2012	75-09-2	Methylene Chloride	0.00511	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17684	12	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.034	U	U_LAB	n		2.3E+02		
RE16-12-17684	12	8/14/2012	95-48-7	Methylphenol[2-]	0.34	U	U_LAB	n		3.1E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17684	12	8/14/2012	106-44-5	Methylphenol[4-]	0.34	U	U_LAB	n		6.1E+03		
RE16-12-17684	12	8/14/2012	91-20-3	Naphthalene	0.034	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17684	12	8/14/2012	Ni	Nickel	14.4	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17684	12	8/14/2012	88-74-4	Nitroaniline[2-]	0.34	U	U_LAB	n		6.1E+02		
RE16-12-17684	12	8/14/2012	99-09-2	Nitroaniline[3-]	0.34	U	U_LAB					
RE16-12-17684	12	8/14/2012	100-01-6	Nitroaniline[4-]	0.34	U	U_LAB	c		2.4E+02		
RE16-12-17684	12	8/14/2012	98-95-3	Nitrobenzene	0.34	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17684	12	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17684	12	8/14/2012	88-75-5	Nitrophenol[2-]	0.34	U	U_LAB					
RE16-12-17684	12	8/14/2012	100-02-7	Nitrophenol[4-]	0.34	U	U_LAB					
RE16-12-17684	12	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.34	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17684	12	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.34	U	U_LAB	c		6.9E-01		
RE16-12-17684	12	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17684	12	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17684	12	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17684	12	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.34	U	U_LAB	c		4.6E+01		
RE16-12-17684	12	8/14/2012	87-86-5	Pentachlorophenol	0.34	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17684	12	8/14/2012	ClO4	Perchlorate	0.00203	U	U_LAB	n	5.48E+01	5.5E+01		
RE16-12-17684	12	8/14/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17684	12	8/14/2012	85-01-8	Phenanthrene	0.034	U	U_LAB	n	1.83E+03			
RE16-12-17684	12	8/14/2012	108-95-2	Phenol	0.34	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17684	12	8/14/2012	K	Potassium	1120	NQ	NQ					
RE16-12-17684	12	8/14/2012	103-65-1	Propylbenzene[1-]	0.00102	U	U_LAB	n		3.4E+03		
RE16-12-17684	12	8/14/2012	129-00-0	Pyrene	0.034	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17684	12	8/14/2012	110-86-1	Pyridine	0.34	U	U_LAB	n		7.8E+01		
RE16-12-17684	12	8/14/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17684	12	8/14/2012	Se	Selenium	1.02	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17684	12	8/14/2012	Ag	Silver	0.275	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17684	12	8/14/2012	Na	Sodium	66.3	NQ	NQ					
RE16-12-17684	12	8/14/2012	100-42-5	Styrene	0.00102	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17684	12	8/14/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17684	12	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00102	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17684	12	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00102	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17684	12	8/14/2012	127-18-4	Tetrachloroethene	0.00102	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17684	12	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17684	12	8/14/2012	Tl	Thallium	0.198	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17684	12	8/14/2012	108-88-3	Toluene	0.00102	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17684	12	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00511	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17684	12	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.34	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17684	12	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00102	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17684	12	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00102	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17684	12	8/14/2012	79-01-6	Trichloroethene	0.00102	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17684	12	8/14/2012	75-69-4	Trichlorofluoromethane	0.00102	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17684	12	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.34	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17684	12	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.34	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17684	12	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00102	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17684	12	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00102	U	U_LAB	n		6.2E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17684	12	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00102	U	U_LAB	n		7.8E+02		
RE16-12-17684	12	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17684	12	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17684	12	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17684	12	8/14/2012	V	Vanadium	28	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17684	12	8/14/2012	75-01-4	Vinyl Chloride	0.00102	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17684	12	8/14/2012	95-47-6	Xylene[1,2-]	0.00102	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17684	12	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00204	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17684	12	8/14/2012	Zn	Zinc	16.1	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17685	13	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17685	13	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17685	13	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17685	13	8/14/2012	83-32-9	Acenaphthene	0.0344	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17685	13	8/14/2012	208-96-8	Acenaphthylene	0.0344	U	U_LAB					
RE16-12-17685	13	8/14/2012	67-64-1	Acetone	0.00517	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17685	13	8/14/2012	Al	Aluminum	6730	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17685	13	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17685	13	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17685	13	8/14/2012	62-53-3	Aniline	0.344	U	U_LAB	c		8.5E+02		
RE16-12-17685	13	8/14/2012	120-12-7	Anthracene	0.0344	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17685	13	8/14/2012	Sb	Antimony	1.02	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17685	13	8/14/2012	As	Arsenic	1.12	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17685	13	8/14/2012	103-33-3	Azobenzene	0.344	U	U_LAB	c		5.1E+01		
RE16-12-17685	13	8/14/2012	Ba	Barium	156	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17685	13	8/14/2012	71-43-2	Benzene	0.00103	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17685	13	8/14/2012	56-55-3	Benzo(a)anthracene	0.0344	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17685	13	8/14/2012	50-32-8	Benzo(a)pyrene	0.0344	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17685	13	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.0344	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17685	13	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.0344	U	U_LAB					
RE16-12-17685	13	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.0344	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17685	13	8/14/2012	65-85-0	Benzoic Acid	0.477	J	J_LAB	n		2.4E+05		
RE16-12-17685	13	8/14/2012	100-51-6	Benzyl Alcohol	0.344	U	U_LAB	n		6.1E+03		
RE16-12-17685	13	8/14/2012	Be	Beryllium	0.49	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17685	13	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.344	U	U_LAB	n		1.8E+02		
RE16-12-17685	13	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.344	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17685	13	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.344	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17685	13	8/14/2012	108-86-1	Bromobenzene	0.00103	U	U_LAB	n		3.0E+02		
RE16-12-17685	13	8/14/2012	74-97-5	Bromochloromethane	0.00103	U	U_LAB	n		1.6E+02		
RE16-12-17685	13	8/14/2012	75-27-4	Bromodichloromethane	0.00103	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17685	13	8/14/2012	75-25-2	Bromoform	0.00103	U	U_LAB	c		6.2E+02		
RE16-12-17685	13	8/14/2012	74-83-9	Bromomethane	0.00103	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17685	13	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.344	U	U_LAB					
RE16-12-17685	13	8/14/2012	78-93-3	Butanone[2-]	0.00517	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17685	13	8/14/2012	104-51-8	Butylbenzene[n-]	0.00103	U	U_LAB	n		3.9E+03		
RE16-12-17685	13	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00103	U	U_LAB					
RE16-12-17685	13	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00103	U	U_LAB					
RE16-12-17685	13	8/14/2012	85-68-7	Butylbenzylphthalate	0.344	U	U_LAB	c		2.6E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17685	13	8/14/2012	Cd	Cadmium	0.508	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17685	13	8/14/2012	Ca	Calcium	1570	NQ	NQ					
RE16-12-17685	13	8/14/2012	75-15-0	Carbon Disulfide	0.00517	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17685	13	8/14/2012	56-23-5	Carbon Tetrachloride	0.00103	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17685	13	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.344	U	U_LAB	n		6.1E+03		
RE16-12-17685	13	8/14/2012	106-47-8	Chloroaniline[4-]	0.344	U	U_LAB	c		2.4E+01		
RE16-12-17685	13	8/14/2012	108-90-7	Chlorobenzene	0.00103	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17685	13	8/14/2012	124-48-1	Chlorodibromomethane	0.00103	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17685	13	8/14/2012	75-00-3	Chloroethane	0.00103	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17685	13	8/14/2012	67-66-3	Chloroform	0.00103	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17685	13	8/14/2012	74-87-3	Chloromethane	0.00103	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17685	13	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.0344	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17685	13	8/14/2012	95-57-8	Chlorophenol[2-]	0.344	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17685	13	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.344	U	U_LAB					
RE16-12-17685	13	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00103	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17685	13	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00103	U	U_LAB	n		1.6E+03		
RE16-12-17685	13	8/14/2012	Cr	Chromium	4.02	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17685	13	8/14/2012	218-01-9	Chrysene	0.0344	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17685	13	8/14/2012	Co	Cobalt	2.33	NQ	NQ	n		2.3E+01		
RE16-12-17685	13	8/14/2012	Cu	Copper	4.79	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17685	13	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.0344	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17685	13	8/14/2012	132-64-9	Dibenzofuran	0.344	U	U_LAB	n		7.8E+01		
RE16-12-17685	13	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00103	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17685	13	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00103	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17685	13	8/14/2012	74-95-3	Dibromomethane	0.00103	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17685	13	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00103	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17685	13	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.344	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17685	13	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00103	U	U_LAB					
RE16-12-17685	13	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.344	U	U_LAB					
RE16-12-17685	13	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00103	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17685	13	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.344	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17685	13	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.344	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17685	13	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00103	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17685	13	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00103	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17685	13	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00103	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17685	13	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00103	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17685	13	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00103	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17685	13	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00103	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17685	13	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.344	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17685	13	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00103	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17685	13	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00103	U	U_LAB	n		1.6E+03		
RE16-12-17685	13	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00103	U	U_LAB					
RE16-12-17685	13	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00103	U	U_LAB					
RE16-12-17685	13	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00103	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17685	13	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00103	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17685	13	8/14/2012	84-66-2	Diethylphthalate	0.344	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17685	13	8/14/2012	131-11-3	Dimethyl Phthalate	0.344	U	U_LAB	n	6.11E+05			

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17685	13	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.344	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17685	13	8/14/2012	84-74-2	Di-n-butylphthalate	0.344	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17685	13	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.344	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17685	13	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17685	13	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.688	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17685	13	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.344	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17685	13	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17685	13	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.344	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17685	13	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17685	13	8/14/2012	117-84-0	Di-n-octylphthalate	0.344	U	U_LAB	n		7.3E+02		
RE16-12-17685	13	8/14/2012	122-39-4	Diphenylamine	0.344	U	U_LAB	n		1.5E+03		
RE16-12-17685	13	8/14/2012	100-41-4	Ethylbenzene	0.00103	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17685	13	8/14/2012	206-44-0	Fluoranthene	0.0344	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17685	13	8/14/2012	86-73-7	Fluorene	0.0344	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17685	13	8/14/2012	118-74-1	Hexachlorobenzene	0.344	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17685	13	8/14/2012	87-68-3	Hexachlorobutadiene	0.344	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17685	13	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.344	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17685	13	8/14/2012	67-72-1	Hexachloroethane	0.344	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17685	13	8/14/2012	591-78-6	Hexanone[2-]	0.00517	U	U_LAB	n		2.1E+02		
RE16-12-17685	13	8/14/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17685	13	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0344	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17685	13	8/14/2012	74-88-4	Iodomethane	0.00517	U	U_LAB					
RE16-12-17685	13	8/14/2012	Fe	Iron	13100	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17685	13	8/14/2012	78-59-1	Isophorone	0.344	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17685	13	8/14/2012	98-82-8	Isopropylbenzene	0.00103	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17685	13	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00103	U	U_LAB					
RE16-12-17685	13	8/14/2012	Pb	Lead	9.67	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17685	13	8/14/2012	Mg	Magnesium	969	NQ	NQ					
RE16-12-17685	13	8/14/2012	Mn	Manganese	258	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17685	13	8/14/2012	Hg	Mercury	0.0127	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17685	13	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00517	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17685	13	8/14/2012	75-09-2	Methylene Chloride	0.00517	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17685	13	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.0344	U	U_LAB	n		2.3E+02		
RE16-12-17685	13	8/14/2012	95-48-7	Methylphenol[2-]	0.344	U	U_LAB	n		3.1E+03		
RE16-12-17685	13	8/14/2012	106-44-5	Methylphenol[4-]	0.344	U	U_LAB	n		6.1E+03		
RE16-12-17685	13	8/14/2012	91-20-3	Naphthalene	0.0344	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17685	13	8/14/2012	Ni	Nickel	3.18	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17685	13	8/14/2012	88-74-4	Nitroaniline[2-]	0.344	U	U_LAB	n		6.1E+02		
RE16-12-17685	13	8/14/2012	99-09-2	Nitroaniline[3-]	0.344	U	U_LAB					
RE16-12-17685	13	8/14/2012	100-01-6	Nitroaniline[4-]	0.344	U	U_LAB	c		2.4E+02		
RE16-12-17685	13	8/14/2012	98-95-3	Nitrobenzene	0.344	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17685	13	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17685	13	8/14/2012	88-75-5	Nitrophenol[2-]	0.344	U	U_LAB					
RE16-12-17685	13	8/14/2012	100-02-7	Nitrophenol[4-]	0.344	U	U_LAB					
RE16-12-17685	13	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.344	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17685	13	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.344	U	U_LAB	c		6.9E-01		
RE16-12-17685	13	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17685	13	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17685	13	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17685	13	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.344	U	U_LAB	c		4.6E+01		
RE16-12-17685	13	8/14/2012	87-86-5	Pentachlorophenol	0.344	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17685	13	8/14/2012	ClO4	Perchlorate	0.00207	U	U_LAB	n	5.48E+01	5.5E+01		
RE16-12-17685	13	8/14/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17685	13	8/14/2012	85-01-8	Phenanthrene	0.0344	U	U_LAB	n	1.83E+03			
RE16-12-17685	13	8/14/2012	108-95-2	Phenol	0.344	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17685	13	8/14/2012	K	Potassium	962	NQ	NQ					
RE16-12-17685	13	8/14/2012	103-65-1	Propylbenzene[1-]	0.00103	U	U_LAB	n		3.4E+03		
RE16-12-17685	13	8/14/2012	129-00-0	Pyrene	0.0344	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17685	13	8/14/2012	110-86-1	Pyridine	0.344	U	U_LAB	n		7.8E+01		
RE16-12-17685	13	8/14/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17685	13	8/14/2012	Se	Selenium	0.916	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17685	13	8/14/2012	Ag	Silver	0.282	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17685	13	8/14/2012	Na	Sodium	68.3	NQ	NQ					
RE16-12-17685	13	8/14/2012	100-42-5	Styrene	0.00103	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17685	13	8/14/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17685	13	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00103	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17685	13	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00103	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17685	13	8/14/2012	127-18-4	Tetrachloroethene	0.00103	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17685	13	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17685	13	8/14/2012	Tl	Thallium	0.147	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17685	13	8/14/2012	108-88-3	Toluene	0.00103	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17685	13	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00517	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17685	13	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.344	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17685	13	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00103	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17685	13	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00103	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17685	13	8/14/2012	79-01-6	Trichloroethene	0.00103	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17685	13	8/14/2012	75-69-4	Trichlorofluoromethane	0.00103	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17685	13	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.344	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17685	13	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.344	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17685	13	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00103	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17685	13	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00103	U	U_LAB	n		6.2E+01		
RE16-12-17685	13	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00103	U	U_LAB	n		7.8E+02		
RE16-12-17685	13	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17685	13	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17685	13	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17685	13	8/14/2012	V	Vanadium	12.1	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17685	13	8/14/2012	75-01-4	Vinyl Chloride	0.00103	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17685	13	8/14/2012	95-47-6	Xylene[1,2-]	0.00103	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17685	13	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00207	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17685	13	8/14/2012	Zn	Zinc	14.8	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17686	14	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17686	14	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17686	14	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17686	14	8/14/2012	83-32-9	Acenaphthene	0.0342	U	U_LAB	n	3.44E+03	3.4E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17686	14	8/14/2012	208-96-8	Acenaphthylene	0.0342	U	U_LAB					
RE16-12-17686	14	8/14/2012	67-64-1	Acetone	0.00514	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17686	14	8/14/2012	Al	Aluminum	6840	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17686	14	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17686	14	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17686	14	8/14/2012	62-53-3	Aniline	0.342	U	U_LAB	c		8.5E+02		
RE16-12-17686	14	8/14/2012	120-12-7	Anthracene	0.0342	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17686	14	8/14/2012	Sb	Antimony	0.994	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17686	14	8/14/2012	As	Arsenic	1.49	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17686	14	8/14/2012	103-33-3	Azobenzene	0.342	U	U_LAB	c		5.1E+01		
RE16-12-17686	14	8/14/2012	Ba	Barium	269	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17686	14	8/14/2012	71-43-2	Benzene	0.00103	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17686	14	8/14/2012	56-55-3	Benzo(a)anthracene	0.0342	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17686	14	8/14/2012	50-32-8	Benzo(a)pyrene	0.0342	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17686	14	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.0342	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17686	14	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.0342	U	U_LAB					
RE16-12-17686	14	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.0342	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17686	14	8/14/2012	65-85-0	Benzoic Acid	0.684	U	U_LAB	n		2.4E+05		
RE16-12-17686	14	8/14/2012	100-51-6	Benzyl Alcohol	0.342	U	U_LAB	n		6.1E+03		
RE16-12-17686	14	8/14/2012	Be	Beryllium	0.702	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17686	14	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.342	U	U_LAB	n		1.8E+02		
RE16-12-17686	14	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.342	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17686	14	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.342	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17686	14	8/14/2012	108-86-1	Bromobenzene	0.00103	U	U_LAB	n		3.0E+02		
RE16-12-17686	14	8/14/2012	74-97-5	Bromochloromethane	0.00103	U	U_LAB	n		1.6E+02		
RE16-12-17686	14	8/14/2012	75-27-4	Bromodichloromethane	0.00103	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17686	14	8/14/2012	75-25-2	Bromoform	0.00103	U	U_LAB	c		6.2E+02		
RE16-12-17686	14	8/14/2012	74-83-9	Bromomethane	0.00103	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17686	14	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.342	U	U_LAB					
RE16-12-17686	14	8/14/2012	78-93-3	Butanone[2-]	0.00514	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17686	14	8/14/2012	104-51-8	Butylbenzene[n-]	0.00103	U	U_LAB	n		3.9E+03		
RE16-12-17686	14	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00103	U	U_LAB					
RE16-12-17686	14	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00103	U	U_LAB					
RE16-12-17686	14	8/14/2012	85-68-7	Butylbenzylphthalate	0.342	U	U_LAB	c		2.6E+03		
RE16-12-17686	14	8/14/2012	Cd	Cadmium	0.497	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17686	14	8/14/2012	Ca	Calcium	2190	NQ	NQ					
RE16-12-17686	14	8/14/2012	75-15-0	Carbon Disulfide	0.00514	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17686	14	8/14/2012	56-23-5	Carbon Tetrachloride	0.00103	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17686	14	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.342	U	U_LAB	n		6.1E+03		
RE16-12-17686	14	8/14/2012	106-47-8	Chloroaniline[4-]	0.342	U	U_LAB	c		2.4E+01		
RE16-12-17686	14	8/14/2012	108-90-7	Chlorobenzene	0.00103	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17686	14	8/14/2012	124-48-1	Chlorodibromomethane	0.00103	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17686	14	8/14/2012	75-00-3	Chloroethane	0.00103	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17686	14	8/14/2012	67-66-3	Chloroform	0.00103	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17686	14	8/14/2012	74-87-3	Chloromethane	0.00103	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17686	14	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.0342	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17686	14	8/14/2012	95-57-8	Chlorophenol[2-]	0.342	U	U_LAB	n	3.91E+02	3.9E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17686	14	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.342	U	U_LAB					
RE16-12-17686	14	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00103	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17686	14	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00103	U	U_LAB	n		1.6E+03		
RE16-12-17686	14	8/14/2012	Cr	Chromium	6.34	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17686	14	8/14/2012	218-01-9	Chrysene	0.0342	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17686	14	8/14/2012	Co	Cobalt	5.25	NQ	NQ	n		2.3E+01		
RE16-12-17686	14	8/14/2012	Cu	Copper	7.35	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17686	14	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.0342	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17686	14	8/14/2012	132-64-9	Dibenzofuran	0.342	U	U_LAB	n		7.8E+01		
RE16-12-17686	14	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00103	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17686	14	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00103	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17686	14	8/14/2012	74-95-3	Dibromomethane	0.00103	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17686	14	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00103	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17686	14	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.342	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17686	14	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00103	U	U_LAB					
RE16-12-17686	14	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.342	U	U_LAB					
RE16-12-17686	14	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00103	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17686	14	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.342	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17686	14	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.342	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17686	14	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00103	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17686	14	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00103	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17686	14	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00103	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17686	14	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00103	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17686	14	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00103	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17686	14	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00103	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17686	14	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.342	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17686	14	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00103	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17686	14	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00103	U	U_LAB	n		1.6E+03		
RE16-12-17686	14	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00103	U	U_LAB					
RE16-12-17686	14	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00103	U	U_LAB					
RE16-12-17686	14	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00103	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17686	14	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00103	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17686	14	8/14/2012	84-66-2	Diethylphthalate	0.342	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17686	14	8/14/2012	131-11-3	Dimethyl Phthalate	0.342	U	U_LAB	n	6.11E+05			
RE16-12-17686	14	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.342	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17686	14	8/14/2012	84-74-2	Di-n-butylphthalate	0.342	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17686	14	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.342	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17686	14	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17686	14	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.684	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17686	14	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.342	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17686	14	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17686	14	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.342	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17686	14	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17686	14	8/14/2012	117-84-0	Di-n-octylphthalate	0.342	U	U_LAB	n		7.3E+02		
RE16-12-17686	14	8/14/2012	122-39-4	Diphenylamine	0.342	U	U_LAB	n		1.5E+03		
RE16-12-17686	14	8/14/2012	100-41-4	Ethylbenzene	0.00103	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17686	14	8/14/2012	206-44-0	Fluoranthene	0.0342	U	U_LAB	n	2.29E+03	2.3E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17686	14	8/14/2012	86-73-7	Fluorene	0.0342	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17686	14	8/14/2012	118-74-1	Hexachlorobenzene	0.342	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17686	14	8/14/2012	87-68-3	Hexachlorobutadiene	0.342	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17686	14	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.342	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17686	14	8/14/2012	67-72-1	Hexachloroethane	0.342	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17686	14	8/14/2012	591-78-6	Hexanone[2-]	0.00514	U	U_LAB	n		2.1E+02		
RE16-12-17686	14	8/14/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17686	14	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0342	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17686	14	8/14/2012	74-88-4	Iodomethane	0.00514	U	U_LAB					
RE16-12-17686	14	8/14/2012	Fe	Iron	11500	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17686	14	8/14/2012	78-59-1	Isophorone	0.342	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17686	14	8/14/2012	98-82-8	Isopropylbenzene	0.00103	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17686	14	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00103	U	U_LAB					
RE16-12-17686	14	8/14/2012	Pb	Lead	18.1	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17686	14	8/14/2012	Mg	Magnesium	1380	NQ	NQ					
RE16-12-17686	14	8/14/2012	Mn	Manganese	391	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17686	14	8/14/2012	Hg	Mercury	0.0116	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17686	14	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00514	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17686	14	8/14/2012	75-09-2	Methylene Chloride	0.00514	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17686	14	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.0342	U	U_LAB	n		2.3E+02		
RE16-12-17686	14	8/14/2012	95-48-7	Methylphenol[2-]	0.342	U	U_LAB	n		3.1E+03		
RE16-12-17686	14	8/14/2012	106-44-5	Methylphenol[4-]	0.342	U	U_LAB	n		6.1E+03		
RE16-12-17686	14	8/14/2012	91-20-3	Naphthalene	0.0342	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17686	14	8/14/2012	Ni	Nickel	5.9	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17686	14	8/14/2012	88-74-4	Nitroaniline[2-]	0.342	U	U_LAB	n		6.1E+02		
RE16-12-17686	14	8/14/2012	99-09-2	Nitroaniline[3-]	0.342	U	U_LAB					
RE16-12-17686	14	8/14/2012	100-01-6	Nitroaniline[4-]	0.342	U	U_LAB	c		2.4E+02		
RE16-12-17686	14	8/14/2012	98-95-3	Nitrobenzene	0.342	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17686	14	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17686	14	8/14/2012	88-75-5	Nitrophenol[2-]	0.342	U	U_LAB					
RE16-12-17686	14	8/14/2012	100-02-7	Nitrophenol[4-]	0.342	U	U_LAB					
RE16-12-17686	14	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.342	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17686	14	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.342	U	U_LAB	c		6.9E-01		
RE16-12-17686	14	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17686	14	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17686	14	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17686	14	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.342	U	U_LAB	c		4.6E+01		
RE16-12-17686	14	8/14/2012	87-86-5	Pentachlorophenol	0.342	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17686	14	8/14/2012	ClO4	Perchlorate	0.000545	J	J_LAB	n	5.48E+01	5.5E+01		
RE16-12-17686	14	8/14/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17686	14	8/14/2012	85-01-8	Phenanthrene	0.0342	U	U_LAB	n	1.83E+03			
RE16-12-17686	14	8/14/2012	108-95-2	Phenol	0.342	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17686	14	8/14/2012	K	Potassium	1730	NQ	NQ					
RE16-12-17686	14	8/14/2012	103-65-1	Propylbenzene[1-]	0.00103	U	U_LAB	n		3.4E+03		
RE16-12-17686	14	8/14/2012	129-00-0	Pyrene	0.0342	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17686	14	8/14/2012	110-86-1	Pyridine	0.342	U	U_LAB	n		7.8E+01		
RE16-12-17686	14	8/14/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17686	14	8/14/2012	Se	Selenium	0.953	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17686	14	8/14/2012	Ag	Silver	0.257	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17686	14	8/14/2012	Na	Sodium	73.3	NQ	NQ					
RE16-12-17686	14	8/14/2012	100-42-5	Styrene	0.000688	J	J_LAB	n	7.28E+03	6.3E+03		
RE16-12-17686	14	8/14/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17686	14	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00103	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17686	14	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00103	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17686	14	8/14/2012	127-18-4	Tetrachloroethene	0.00103	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17686	14	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17686	14	8/14/2012	Tl	Thallium	0.212	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17686	14	8/14/2012	108-88-3	Toluene	0.00103	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17686	14	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00514	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17686	14	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.342	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17686	14	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00103	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17686	14	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00103	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17686	14	8/14/2012	79-01-6	Trichloroethene	0.00103	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17686	14	8/14/2012	75-69-4	Trichlorofluoromethane	0.00103	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17686	14	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.342	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17686	14	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.342	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17686	14	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00103	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17686	14	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00103	U	U_LAB	n		6.2E+01		
RE16-12-17686	14	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00103	U	U_LAB	n		7.8E+02		
RE16-12-17686	14	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17686	14	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17686	14	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17686	14	8/14/2012	V	Vanadium	18.7	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17686	14	8/14/2012	75-01-4	Vinyl Chloride	0.00103	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17686	14	8/14/2012	95-47-6	Xylene[1,2-]	0.00103	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17686	14	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00206	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17686	14	8/14/2012	Zn	Zinc	28.1	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17687	15	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17687	15	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17687	15	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17687	15	8/14/2012	83-32-9	Acenaphthene	0.0336	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17687	15	8/14/2012	208-96-8	Acenaphthylene	0.0336	U	U_LAB					
RE16-12-17687	15	8/14/2012	67-64-1	Acetone	0.00506	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17687	15	8/14/2012	Al	Aluminum	4840	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17687	15	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17687	15	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17687	15	8/14/2012	62-53-3	Aniline	0.336	U	U_LAB	c		8.5E+02		
RE16-12-17687	15	8/14/2012	120-12-7	Anthracene	0.0336	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17687	15	8/14/2012	Sb	Antimony	0.986	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17687	15	8/14/2012	As	Arsenic	1.18	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17687	15	8/14/2012	103-33-3	Azobenzene	0.336	U	U_LAB	c		5.1E+01		
RE16-12-17687	15	8/14/2012	Ba	Barium	146	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17687	15	8/14/2012	71-43-2	Benzene	0.00101	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17687	15	8/14/2012	56-55-3	Benzo(a)anthracene	0.0336	U	U_LAB	c	1.48E+00	1.5E+00		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17687	15	8/14/2012	50-32-8	Benzo(a)pyrene	0.0336	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17687	15	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.0336	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17687	15	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.0336	U	U_LAB					
RE16-12-17687	15	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.0336	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17687	15	8/14/2012	65-85-0	Benzoic Acid	0.672	U	U_LAB	n		2.4E+05		
RE16-12-17687	15	8/14/2012	100-51-6	Benzyl Alcohol	0.336	U	U_LAB	n		6.1E+03		
RE16-12-17687	15	8/14/2012	Be	Beryllium	0.436	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17687	15	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.336	U	U_LAB	n		1.8E+02		
RE16-12-17687	15	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.336	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17687	15	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.336	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17687	15	8/14/2012	108-86-1	Bromobenzene	0.00101	U	U_LAB	n		3.0E+02		
RE16-12-17687	15	8/14/2012	74-97-5	Bromochloromethane	0.00101	U	U_LAB	n		1.6E+02		
RE16-12-17687	15	8/14/2012	75-27-4	Bromodichloromethane	0.00101	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17687	15	8/14/2012	75-25-2	Bromoform	0.00101	U	U_LAB	c		6.2E+02		
RE16-12-17687	15	8/14/2012	74-83-9	Bromomethane	0.00101	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17687	15	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.336	U	U_LAB					
RE16-12-17687	15	8/14/2012	78-93-3	Butanone[2-]	0.00506	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17687	15	8/14/2012	104-51-8	Butylbenzene[n-]	0.00101	U	U_LAB	n		3.9E+03		
RE16-12-17687	15	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00101	U	U_LAB					
RE16-12-17687	15	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00101	U	U_LAB					
RE16-12-17687	15	8/14/2012	85-68-7	Butylbenzylphthalate	0.336	U	U_LAB	c		2.6E+03		
RE16-12-17687	15	8/14/2012	Cd	Cadmium	0.493	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17687	15	8/14/2012	Ca	Calcium	1190	NQ	NQ					
RE16-12-17687	15	8/14/2012	75-15-0	Carbon Disulfide	0.00506	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17687	15	8/14/2012	56-23-5	Carbon Tetrachloride	0.00101	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17687	15	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.336	U	U_LAB	n		6.1E+03		
RE16-12-17687	15	8/14/2012	106-47-8	Chloroaniline[4-]	0.336	U	U_LAB	c		2.4E+01		
RE16-12-17687	15	8/14/2012	108-90-7	Chlorobenzene	0.00101	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17687	15	8/14/2012	124-48-1	Chlorodibromomethane	0.00101	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17687	15	8/14/2012	75-00-3	Chloroethane	0.00101	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17687	15	8/14/2012	67-66-3	Chloroform	0.00101	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17687	15	8/14/2012	74-87-3	Chloromethane	0.00101	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17687	15	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.0336	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17687	15	8/14/2012	95-57-8	Chlorophenol[2-]	0.336	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17687	15	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.336	U	U_LAB					
RE16-12-17687	15	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00101	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17687	15	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00101	U	U_LAB	n		1.6E+03		
RE16-12-17687	15	8/14/2012	Cr	Chromium	4.59	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17687	15	8/14/2012	218-01-9	Chrysene	0.0336	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17687	15	8/14/2012	Co	Cobalt	1.94	NQ	NQ	n		2.3E+01		
RE16-12-17687	15	8/14/2012	Cu	Copper	4.53	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17687	15	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.0336	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17687	15	8/14/2012	132-64-9	Dibenzofuran	0.336	U	U_LAB	n		7.8E+01		
RE16-12-17687	15	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00101	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17687	15	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00101	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17687	15	8/14/2012	74-95-3	Dibromomethane	0.00101	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17687	15	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00101	U	U_LAB	n	2.31E+03	1.9E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17687	15	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.336	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17687	15	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00101	U	U_LAB					
RE16-12-17687	15	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.336	U	U_LAB					
RE16-12-17687	15	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00101	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17687	15	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.336	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17687	15	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.336	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17687	15	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00101	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17687	15	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00101	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17687	15	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00101	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17687	15	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00101	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17687	15	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00101	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17687	15	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00101	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17687	15	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.336	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17687	15	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00101	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17687	15	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00101	U	U_LAB	n		1.6E+03		
RE16-12-17687	15	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00101	U	U_LAB					
RE16-12-17687	15	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00101	U	U_LAB					
RE16-12-17687	15	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00101	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17687	15	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00101	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17687	15	8/14/2012	84-66-2	Diethylphthalate	0.336	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17687	15	8/14/2012	131-11-3	Dimethyl Phthalate	0.336	U	U_LAB	n	6.11E+05			
RE16-12-17687	15	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.336	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17687	15	8/14/2012	84-74-2	Di-n-butylphthalate	0.336	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17687	15	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.336	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17687	15	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17687	15	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.672	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17687	15	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.336	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17687	15	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17687	15	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.336	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17687	15	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17687	15	8/14/2012	117-84-0	Di-n-octylphthalate	0.336	U	U_LAB	n		7.3E+02		
RE16-12-17687	15	8/14/2012	122-39-4	Diphenylamine	0.336	U	U_LAB	n		1.5E+03		
RE16-12-17687	15	8/14/2012	100-41-4	Ethylbenzene	0.00101	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17687	15	8/14/2012	206-44-0	Fluoranthene	0.0336	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17687	15	8/14/2012	86-73-7	Fluorene	0.0336	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17687	15	8/14/2012	118-74-1	Hexachlorobenzene	0.336	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17687	15	8/14/2012	87-68-3	Hexachlorobutadiene	0.336	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17687	15	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.336	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17687	15	8/14/2012	67-72-1	Hexachloroethane	0.336	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17687	15	8/14/2012	591-78-6	Hexanone[2-]	0.00506	U	U_LAB	n		2.1E+02		
RE16-12-17687	15	8/14/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17687	15	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0336	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17687	15	8/14/2012	74-88-4	Iodomethane	0.00506	U	U_LAB					
RE16-12-17687	15	8/14/2012	Fe	Iron	12500	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17687	15	8/14/2012	78-59-1	Isophorone	0.336	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17687	15	8/14/2012	98-82-8	Isopropylbenzene	0.00101	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17687	15	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00101	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17687	15	8/14/2012	Pb	Lead	7.17	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17687	15	8/14/2012	Mg	Magnesium	1020	NQ	NQ					
RE16-12-17687	15	8/14/2012	Mn	Manganese	216	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17687	15	8/14/2012	Hg	Mercury	0.00502	J	J_LAB	n	1.56E+01	1.0E+01		
RE16-12-17687	15	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00506	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17687	15	8/14/2012	75-09-2	Methylene Chloride	0.00506	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17687	15	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.0336	U	U_LAB	n		2.3E+02		
RE16-12-17687	15	8/14/2012	95-48-7	Methylphenol[2-]	0.336	U	U_LAB	n		3.1E+03		
RE16-12-17687	15	8/14/2012	106-44-5	Methylphenol[4-]	0.336	U	U_LAB	n		6.1E+03		
RE16-12-17687	15	8/14/2012	91-20-3	Naphthalene	0.0336	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17687	15	8/14/2012	Ni	Nickel	3.52	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17687	15	8/14/2012	88-74-4	Nitroaniline[2-]	0.336	U	U_LAB	n		6.1E+02		
RE16-12-17687	15	8/14/2012	99-09-2	Nitroaniline[3-]	0.336	U	U_LAB					
RE16-12-17687	15	8/14/2012	100-01-6	Nitroaniline[4-]	0.336	U	U_LAB	c		2.4E+02		
RE16-12-17687	15	8/14/2012	98-95-3	Nitrobenzene	0.336	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17687	15	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17687	15	8/14/2012	88-75-5	Nitrophenol[2-]	0.336	U	U_LAB					
RE16-12-17687	15	8/14/2012	100-02-7	Nitrophenol[4-]	0.336	U	U_LAB					
RE16-12-17687	15	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.336	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17687	15	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.336	U	U_LAB	c		6.9E-01		
RE16-12-17687	15	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17687	15	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17687	15	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17687	15	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.336	U	U_LAB	c		4.6E+01		
RE16-12-17687	15	8/14/2012	87-86-5	Pentachlorophenol	0.336	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17687	15	8/14/2012	ClO4	Perchlorate	0.00202	U	U_LAB	n	5.48E+01	5.5E+01		
RE16-12-17687	15	8/14/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17687	15	8/14/2012	85-01-8	Phenanthrene	0.0336	U	U_LAB	n	1.83E+03			
RE16-12-17687	15	8/14/2012	108-95-2	Phenol	0.336	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17687	15	8/14/2012	K	Potassium	1120	NQ	NQ					
RE16-12-17687	15	8/14/2012	103-65-1	Propylbenzene[1-]	0.00101	U	U_LAB	n		3.4E+03		
RE16-12-17687	15	8/14/2012	129-00-0	Pyrene	0.0336	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17687	15	8/14/2012	110-86-1	Pyridine	0.336	U	U_LAB	n		7.8E+01		
RE16-12-17687	15	8/14/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17687	15	8/14/2012	Se	Selenium	0.977	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17687	15	8/14/2012	Ag	Silver	0.228	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17687	15	8/14/2012	Na	Sodium	106	NQ	NQ					
RE16-12-17687	15	8/14/2012	100-42-5	Styrene	0.00101	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17687	15	8/14/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17687	15	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00101	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17687	15	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00101	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17687	15	8/14/2012	127-18-4	Tetrachloroethene	0.00101	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17687	15	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17687	15	8/14/2012	Tl	Thallium	0.092	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17687	15	8/14/2012	108-88-3	Toluene	0.00101	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17687	15	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00506	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17687	15	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.336	U	U_LAB	n/c	7.30E+01	2.2E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17687	15	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00101	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17687	15	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00101	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17687	15	8/14/2012	79-01-6	Trichloroethene	0.00101	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17687	15	8/14/2012	75-69-4	Trichlorofluoromethane	0.00101	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17687	15	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.336	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17687	15	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.336	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17687	15	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00101	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17687	15	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00101	U	U_LAB	n		6.2E+01		
RE16-12-17687	15	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00101	U	U_LAB	n		7.8E+02		
RE16-12-17687	15	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17687	15	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17687	15	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17687	15	8/14/2012	V	Vanadium	12.8	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17687	15	8/14/2012	75-01-4	Vinyl Chloride	0.00101	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17687	15	8/14/2012	95-47-6	Xylene[1,2-]	0.00101	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17687	15	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00202	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17687	15	8/14/2012	Zn	Zinc	36.5	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17688	16	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17688	16	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17688	16	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17688	16	8/14/2012	83-32-9	Acenaphthene	0.035	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17688	16	8/14/2012	208-96-8	Acenaphthylene	0.035	U	U_LAB					
RE16-12-17688	16	8/14/2012	67-64-1	Acetone	0.00527	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17688	16	8/14/2012	Al	Aluminum	8350	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17688	16	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17688	16	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.186	J	J_LAB	n		1.5E+02		
RE16-12-17688	16	8/14/2012	62-53-3	Aniline	0.35	U	U_LAB	c		8.5E+02		
RE16-12-17688	16	8/14/2012	120-12-7	Anthracene	0.035	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17688	16	8/14/2012	Sb	Antimony	1.03	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17688	16	8/14/2012	As	Arsenic	1.39	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17688	16	8/14/2012	103-33-3	Azobenzene	0.35	U	U_LAB	c		5.1E+01		
RE16-12-17688	16	8/14/2012	Ba	Barium	1850	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17688	16	8/14/2012	71-43-2	Benzene	0.00105	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17688	16	8/14/2012	56-55-3	Benzo(a)anthracene	0.035	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17688	16	8/14/2012	50-32-8	Benzo(a)pyrene	0.035	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17688	16	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.035	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17688	16	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.035	U	U_LAB					
RE16-12-17688	16	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.035	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17688	16	8/14/2012	65-85-0	Benzoic Acid	0.7	U	U_LAB	n		2.4E+05		
RE16-12-17688	16	8/14/2012	100-51-6	Benzyl Alcohol	0.35	U	U_LAB	n		6.1E+03		
RE16-12-17688	16	8/14/2012	Be	Beryllium	0.669	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17688	16	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.35	U	U_LAB	n		1.8E+02		
RE16-12-17688	16	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.35	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17688	16	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.35	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17688	16	8/14/2012	108-86-1	Bromobenzene	0.00105	U	U_LAB	n		3.0E+02		
RE16-12-17688	16	8/14/2012	74-97-5	Bromochloromethane	0.00105	U	U_LAB	n		1.6E+02		
RE16-12-17688	16	8/14/2012	75-27-4	Bromodichloromethane	0.00105	U	U_LAB	c	5.41E+00	2.7E+00		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17688	16	8/14/2012	75-25-2	Bromoform	0.00105	U	U_LAB	c		6.2E+02		
RE16-12-17688	16	8/14/2012	74-83-9	Bromomethane	0.00105	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17688	16	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.35	U	U_LAB					
RE16-12-17688	16	8/14/2012	78-93-3	Butanone[2-]	0.00527	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17688	16	8/14/2012	104-51-8	Butylbenzene[n-]	0.00105	U	U_LAB	n		3.9E+03		
RE16-12-17688	16	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00105	U	U_LAB					
RE16-12-17688	16	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00105	U	U_LAB					
RE16-12-17688	16	8/14/2012	85-68-7	Butylbenzylphthalate	0.35	U	U_LAB	c		2.6E+03		
RE16-12-17688	16	8/14/2012	Cd	Cadmium	0.119	J	J_LAB	n	7.03E+01	7.0E+01		
RE16-12-17688	16	8/14/2012	Ca	Calcium	2110	NQ	NQ					
RE16-12-17688	16	8/14/2012	75-15-0	Carbon Disulfide	0.00527	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17688	16	8/14/2012	56-23-5	Carbon Tetrachloride	0.00105	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17688	16	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.35	U	U_LAB	n		6.1E+03		
RE16-12-17688	16	8/14/2012	106-47-8	Chloroaniline[4-]	0.35	U	U_LAB	c		2.4E+01		
RE16-12-17688	16	8/14/2012	108-90-7	Chlorobenzene	0.00105	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17688	16	8/14/2012	124-48-1	Chlorodibromomethane	0.00105	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17688	16	8/14/2012	75-00-3	Chloroethane	0.00105	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17688	16	8/14/2012	67-66-3	Chloroform	0.00105	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17688	16	8/14/2012	74-87-3	Chloromethane	0.00105	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17688	16	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.035	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17688	16	8/14/2012	95-57-8	Chlorophenol[2-]	0.35	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17688	16	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.35	U	U_LAB					
RE16-12-17688	16	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00105	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17688	16	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00105	U	U_LAB	n		1.6E+03		
RE16-12-17688	16	8/14/2012	Cr	Chromium	8.5	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17688	16	8/14/2012	218-01-9	Chrysene	0.035	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17688	16	8/14/2012	Co	Cobalt	9.15	NQ	NQ	n		2.3E+01		
RE16-12-17688	16	8/14/2012	Cu	Copper	11.2	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17688	16	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.035	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17688	16	8/14/2012	132-64-9	Dibenzofuran	0.35	U	U_LAB	n		7.8E+01		
RE16-12-17688	16	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00105	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17688	16	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00105	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17688	16	8/14/2012	74-95-3	Dibromomethane	0.00105	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17688	16	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00105	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17688	16	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.35	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17688	16	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00105	U	U_LAB					
RE16-12-17688	16	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.35	U	U_LAB					
RE16-12-17688	16	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00105	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17688	16	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.35	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17688	16	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.35	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17688	16	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00105	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17688	16	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00105	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17688	16	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00105	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17688	16	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00105	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17688	16	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00105	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17688	16	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00105	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17688	16	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.35	U	U_LAB	n	1.83E+02	1.8E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17688	16	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00105	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17688	16	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00105	U	U_LAB	n		1.6E+03		
RE16-12-17688	16	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00105	U	U_LAB					
RE16-12-17688	16	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00105	U	U_LAB					
RE16-12-17688	16	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00105	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17688	16	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00105	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17688	16	8/14/2012	84-66-2	Diethylphthalate	0.35	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17688	16	8/14/2012	131-11-3	Dimethyl Phthalate	0.35	U	U_LAB	n	6.11E+05			
RE16-12-17688	16	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.35	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17688	16	8/14/2012	84-74-2	Di-n-butylphthalate	0.35	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17688	16	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.35	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17688	16	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17688	16	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.7	U	U_LAB	n	1.22E+02	1.2E+02		
RE16-12-17688	16	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.35	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17688	16	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17688	16	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.35	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17688	16	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17688	16	8/14/2012	117-84-0	Di-n-octylphthalate	0.35	U	U_LAB	n		7.3E+02		
RE16-12-17688	16	8/14/2012	122-39-4	Diphenylamine	0.35	U	U_LAB	n		1.5E+03		
RE16-12-17688	16	8/14/2012	100-41-4	Ethylbenzene	0.00105	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17688	16	8/14/2012	206-44-0	Fluoranthene	0.035	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17688	16	8/14/2012	86-73-7	Fluorene	0.035	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17688	16	8/14/2012	118-74-1	Hexachlorobenzene	0.35	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17688	16	8/14/2012	87-68-3	Hexachlorobutadiene	0.35	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17688	16	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.35	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17688	16	8/14/2012	67-72-1	Hexachloroethane	0.35	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17688	16	8/14/2012	591-78-6	Hexanone[2-]	0.00527	U	U_LAB	n		2.1E+02		
RE16-12-17688	16	8/14/2012	2691-41-0	HMX	0.302	J	J_LAB	n	3.91E+03	3.8E+03		
RE16-12-17688	16	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.035	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17688	16	8/14/2012	74-88-4	Iodomethane	0.00527	U	U_LAB					
RE16-12-17688	16	8/14/2012	Fe	Iron	11300	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17688	16	8/14/2012	78-59-1	Isophorone	0.35	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17688	16	8/14/2012	98-82-8	Isopropylbenzene	0.00105	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17688	16	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00105	U	U_LAB					
RE16-12-17688	16	8/14/2012	Pb	Lead	12.9	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17688	16	8/14/2012	Mg	Magnesium	1710	NQ	NQ					
RE16-12-17688	16	8/14/2012	Mn	Manganese	619	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17688	16	8/14/2012	Hg	Mercury	0.023	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17688	16	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00527	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17688	16	8/14/2012	75-09-2	Methylene Chloride	0.00527	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17688	16	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.035	U	U_LAB	n		2.3E+02		
RE16-12-17688	16	8/14/2012	95-48-7	Methylphenol[2-]	0.35	U	U_LAB	n		3.1E+03		
RE16-12-17688	16	8/14/2012	106-44-5	Methylphenol[4-]	0.35	U	U_LAB	n		6.1E+03		
RE16-12-17688	16	8/14/2012	91-20-3	Naphthalene	0.035	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17688	16	8/14/2012	Ni	Nickel	7.44	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17688	16	8/14/2012	88-74-4	Nitroaniline[2-]	0.35	U	U_LAB	n		6.1E+02		
RE16-12-17688	16	8/14/2012	99-09-2	Nitroaniline[3-]	0.35	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17688	16	8/14/2012	100-01-6	Nitroaniline[4-]	0.35	U	U_LAB	c		2.4E+02		
RE16-12-17688	16	8/14/2012	98-95-3	Nitrobenzene	0.35	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17688	16	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17688	16	8/14/2012	88-75-5	Nitrophenol[2-]	0.35	U	U_LAB					
RE16-12-17688	16	8/14/2012	100-02-7	Nitrophenol[4-]	0.35	U	U_LAB					
RE16-12-17688	16	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.35	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17688	16	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.35	U	U_LAB	c		6.9E-01		
RE16-12-17688	16	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17688	16	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17688	16	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17688	16	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.35	U	U_LAB	c		4.6E+01		
RE16-12-17688	16	8/14/2012	87-86-5	Pentachlorophenol	0.35	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17688	16	8/14/2012	ClO4	Perchlorate	0.00212	U	U_LAB	n	5.48E+01	5.5E+01		
RE16-12-17688	16	8/14/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17688	16	8/14/2012	85-01-8	Phenanthrene	0.035	U	U_LAB	n	1.83E+03			
RE16-12-17688	16	8/14/2012	108-95-2	Phenol	0.35	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17688	16	8/14/2012	K	Potassium	1720	NQ	NQ					
RE16-12-17688	16	8/14/2012	103-65-1	Propylbenzene[1-]	0.00105	U	U_LAB	n		3.4E+03		
RE16-12-17688	16	8/14/2012	129-00-0	Pyrene	0.035	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17688	16	8/14/2012	110-86-1	Pyridine	0.35	U	U_LAB	n		7.8E+01		
RE16-12-17688	16	8/14/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17688	16	8/14/2012	Se	Selenium	0.999	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17688	16	8/14/2012	Ag	Silver	5.65	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17688	16	8/14/2012	Na	Sodium	69.5	NQ	NQ					
RE16-12-17688	16	8/14/2012	100-42-5	Styrene	0.00105	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17688	16	8/14/2012	3058-38-6	TATB	20.5	NQ	NQ					
RE16-12-17688	16	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00105	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17688	16	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00105	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17688	16	8/14/2012	127-18-4	Tetrachloroethene	0.00105	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17688	16	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17688	16	8/14/2012	Tl	Thallium	0.149	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17688	16	8/14/2012	108-88-3	Toluene	0.00105	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17688	16	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00527	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17688	16	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.35	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17688	16	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00105	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17688	16	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00105	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17688	16	8/14/2012	79-01-6	Trichloroethene	0.00105	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17688	16	8/14/2012	75-69-4	Trichlorofluoromethane	0.00105	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17688	16	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.35	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17688	16	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.35	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17688	16	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00105	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17688	16	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00105	U	U_LAB	n		6.2E+01		
RE16-12-17688	16	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00105	U	U_LAB	n		7.8E+02		
RE16-12-17688	16	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17688	16	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	1.5	J-	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17688	16	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17688	16	8/14/2012	V	Vanadium	24	NQ	NQ	n	3.91E+02	3.9E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17688	16	8/14/2012	75-01-4	Vinyl Chloride	0.00105	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17688	16	8/14/2012	95-47-6	Xylene[1,2-]	0.00105	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17688	16	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00211	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17688	16	8/14/2012	Zn	Zinc	61.1	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17689	17	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17689	17	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17689	17	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17689	17	8/14/2012	83-32-9	Acenaphthene	0.0344	U	U_LAB	n	3.44E+03	3.4E+03		
RE16-12-17689	17	8/14/2012	208-96-8	Acenaphthylene	0.0344	U	U_LAB					
RE16-12-17689	17	8/14/2012	67-64-1	Acetone	0.00518	U	U_LAB	n	6.66E+04	6.1E+04		
RE16-12-17689	17	8/14/2012	Al	Aluminum	8290	NQ	NQ	n	7.80E+04	7.7E+04		
RE16-12-17689	17	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17689	17	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB	n		1.5E+02		
RE16-12-17689	17	8/14/2012	62-53-3	Aniline	0.344	U	U_LAB	c		8.5E+02		
RE16-12-17689	17	8/14/2012	120-12-7	Anthracene	0.0344	U	U_LAB	n	1.72E+04	1.7E+04		
RE16-12-17689	17	8/14/2012	Sb	Antimony	0.935	U	U_LAB	n	3.13E+01	3.1E+01		
RE16-12-17689	17	8/14/2012	As	Arsenic	2.37	NQ	NQ	c	3.90E+00	3.9E+00		
RE16-12-17689	17	8/14/2012	103-33-3	Azobenzene	0.344	U	U_LAB	c		5.1E+01		
RE16-12-17689	17	8/14/2012	Ba	Barium	239	NQ	NQ	n	1.56E+04	1.5E+04		
RE16-12-17689	17	8/14/2012	71-43-2	Benzene	0.00104	U	U_LAB	c	1.54E+01	1.1E+01		
RE16-12-17689	17	8/14/2012	56-55-3	Benzo(a)anthracene	0.0344	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17689	17	8/14/2012	50-32-8	Benzo(a)pyrene	0.0344	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17689	17	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.0344	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17689	17	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.0344	U	U_LAB					
RE16-12-17689	17	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.0344	U	U_LAB	c	1.48E+01	1.5E+01		
RE16-12-17689	17	8/14/2012	65-85-0	Benzoic Acid	0.688	U	U_LAB	n		2.4E+05		
RE16-12-17689	17	8/14/2012	100-51-6	Benzyl Alcohol	0.344	U	U_LAB	n		6.1E+03		
RE16-12-17689	17	8/14/2012	Be	Beryllium	0.767	NQ	NQ	n	1.56E+02	1.6E+02		
RE16-12-17689	17	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.344	U	U_LAB	n		1.8E+02		
RE16-12-17689	17	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.344	U	U_LAB	c	2.68E+00	2.1E+00		
RE16-12-17689	17	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.344	U	U_LAB	c	3.47E+02	3.5E+02		
RE16-12-17689	17	8/14/2012	108-86-1	Bromobenzene	0.00104	U	U_LAB	n		3.0E+02		
RE16-12-17689	17	8/14/2012	74-97-5	Bromochloromethane	0.00104	U	U_LAB	n		1.6E+02		
RE16-12-17689	17	8/14/2012	75-27-4	Bromodichloromethane	0.00104	U	U_LAB	c	5.41E+00	2.7E+00		
RE16-12-17689	17	8/14/2012	75-25-2	Bromoform	0.00104	U	U_LAB	c		6.2E+02		
RE16-12-17689	17	8/14/2012	74-83-9	Bromomethane	0.00104	U	U_LAB	n	1.65E+01	7.3E+00		
RE16-12-17689	17	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.344	U	U_LAB					
RE16-12-17689	17	8/14/2012	78-93-3	Butanone[2-]	0.00518	U	U_LAB	n	3.71E+04	2.8E+04		
RE16-12-17689	17	8/14/2012	104-51-8	Butylbenzene[n-]	0.00104	U	U_LAB	n		3.9E+03		
RE16-12-17689	17	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00104	U	U_LAB					
RE16-12-17689	17	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00104	U	U_LAB					
RE16-12-17689	17	8/14/2012	85-68-7	Butylbenzylphthalate	0.344	U	U_LAB	c		2.6E+03		
RE16-12-17689	17	8/14/2012	Cd	Cadmium	0.467	U	U_LAB	n	7.03E+01	7.0E+01		
RE16-12-17689	17	8/14/2012	Ca	Calcium	2040	NQ	NQ					
RE16-12-17689	17	8/14/2012	75-15-0	Carbon Disulfide	0.00518	U	U_LAB	n	1.53E+03	8.2E+02		
RE16-12-17689	17	8/14/2012	56-23-5	Carbon Tetrachloride	0.00104	U	U_LAB	c	1.08E+01	6.1E+00		
RE16-12-17689	17	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.344	U	U_LAB	n		6.1E+03		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17689	17	8/14/2012	106-47-8	Chloroaniline[4-]	0.344	U	U_LAB	c		2.4E+01		
RE16-12-17689	17	8/14/2012	108-90-7	Chlorobenzene	0.00104	U	U_LAB	n	3.76E+02	2.9E+02		
RE16-12-17689	17	8/14/2012	124-48-1	Chlorodibromomethane	0.00104	U	U_LAB	c	1.21E+01	6.8E+00		
RE16-12-17689	17	8/14/2012	75-00-3	Chloroethane	0.00104	U	U_LAB	n	2.98E+04	1.5E+04		
RE16-12-17689	17	8/14/2012	67-66-3	Chloroform	0.00104	U	U_LAB	c	5.86E+00	2.9E+00		
RE16-12-17689	17	8/14/2012	74-87-3	Chloromethane	0.00104	U	U_LAB	n	2.75E+02	1.2E+02		
RE16-12-17689	17	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.0344	U	U_LAB	n	6.26E+03	6.3E+03		
RE16-12-17689	17	8/14/2012	95-57-8	Chlorophenol[2-]	0.344	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17689	17	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.344	U	U_LAB					
RE16-12-17689	17	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00104	U	U_LAB	n	1.56E+03	1.6E+03		
RE16-12-17689	17	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00104	U	U_LAB	n		1.6E+03		
RE16-12-17689	17	8/14/2012	Cr	Chromium	5.89	NQ	NQ	n	1.17E+05	1.2E+05		
RE16-12-17689	17	8/14/2012	218-01-9	Chrysene	0.0344	U	U_LAB	c	1.48E+02	1.5E+02		
RE16-12-17689	17	8/14/2012	Co	Cobalt	2.67	NQ	NQ	n		2.3E+01		
RE16-12-17689	17	8/14/2012	Cu	Copper	7.13	NQ	NQ	n	3.13E+03	3.1E+03		
RE16-12-17689	17	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.0344	U	U_LAB	c	1.48E-01	1.5E-01		
RE16-12-17689	17	8/14/2012	132-64-9	Dibenzofuran	0.344	U	U_LAB	n		7.8E+01		
RE16-12-17689	17	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00104	U	U_LAB	c	1.86E+00	5.4E-02		
RE16-12-17689	17	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00104	U	U_LAB	c	5.88E-01	3.4E-01		
RE16-12-17689	17	8/14/2012	74-95-3	Dibromomethane	0.00104	U	U_LAB	n	5.16E+01	2.5E+01		
RE16-12-17689	17	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00104	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17689	17	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.344	U	U_LAB	n	2.31E+03	1.9E+03		
RE16-12-17689	17	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00104	U	U_LAB					
RE16-12-17689	17	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.344	U	U_LAB					
RE16-12-17689	17	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00104	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17689	17	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.344	U	U_LAB	c	3.17E+01	2.4E+01		
RE16-12-17689	17	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.344	U	U_LAB	c	1.08E+01	1.1E+01		
RE16-12-17689	17	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00104	U	U_LAB	n	1.68E+02	9.4E+01		
RE16-12-17689	17	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00104	U	U_LAB	c	6.45E+01	3.3E+01		
RE16-12-17689	17	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00104	U	U_LAB	c	7.89E+00	4.3E+00		
RE16-12-17689	17	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00104	U	U_LAB	n	4.49E+02	2.4E+02		
RE16-12-17689	17	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00104	U	U_LAB	n	1.56E+02	1.6E+02		
RE16-12-17689	17	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00104	U	U_LAB	n	2.70E+02	1.5E+02		
RE16-12-17689	17	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.344	U	U_LAB	n	1.83E+02	1.8E+02		
RE16-12-17689	17	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00104	U	U_LAB	c	1.52E+01	9.4E+00		
RE16-12-17689	17	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00104	U	U_LAB	n		1.6E+03		
RE16-12-17689	17	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00104	U	U_LAB					
RE16-12-17689	17	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00104	U	U_LAB					
RE16-12-17689	17	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00104	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17689	17	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00104	U	U_LAB	c	3.37E+01	1.7E+01		
RE16-12-17689	17	8/14/2012	84-66-2	Diethylphthalate	0.344	U	U_LAB	n	4.89E+04	4.9E+04		
RE16-12-17689	17	8/14/2012	131-11-3	Dimethyl Phthalate	0.344	U	U_LAB	n	6.11E+05			
RE16-12-17689	17	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.344	U	U_LAB	n	1.22E+03	1.2E+03		
RE16-12-17689	17	8/14/2012	84-74-2	Di-n-butylphthalate	0.344	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17689	17	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.344	U	U_LAB	n	4.89E+00	4.9E+00		
RE16-12-17689	17	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB	n		6.1E+00		
RE16-12-17689	17	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.688	U	U_LAB	n	1.22E+02	1.2E+02		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17689	17	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.344	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17689	17	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB	c	1.57E+01	1.6E+01		
RE16-12-17689	17	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.344	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17689	17	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB	n	6.11E+01	6.1E+01		
RE16-12-17689	17	8/14/2012	117-84-0	Di-n-octylphthalate	0.344	U	U_LAB	n		7.3E+02		
RE16-12-17689	17	8/14/2012	122-39-4	Diphenylamine	0.344	U	U_LAB	n		1.5E+03		
RE16-12-17689	17	8/14/2012	100-41-4	Ethylbenzene	0.00104	U	U_LAB	c	6.84E+01	5.4E+01		
RE16-12-17689	17	8/14/2012	206-44-0	Fluoranthene	0.0344	U	U_LAB	n	2.29E+03	2.3E+03		
RE16-12-17689	17	8/14/2012	86-73-7	Fluorene	0.0344	U	U_LAB	n	2.29E+03	4.7E+03		
RE16-12-17689	17	8/14/2012	118-74-1	Hexachlorobenzene	0.344	U	U_LAB	c	3.04E+00	3.0E+00		
RE16-12-17689	17	8/14/2012	87-68-3	Hexachlorobutadiene	0.344	U	U_LAB	n/c	6.11E+01	6.2E+01		
RE16-12-17689	17	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.344	U	U_LAB	n	3.67E+02	3.7E+02		
RE16-12-17689	17	8/14/2012	67-72-1	Hexachloroethane	0.344	U	U_LAB	n/c	4.28E+01	1.2E+02		
RE16-12-17689	17	8/14/2012	591-78-6	Hexanone[2-]	0.00518	U	U_LAB	n		2.1E+02		
RE16-12-17689	17	8/14/2012	2691-41-0	HMX	0.5	U	U_LAB	n	3.91E+03	3.8E+03		
RE16-12-17689	17	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0344	U	U_LAB	c	1.48E+00	1.5E+00		
RE16-12-17689	17	8/14/2012	74-88-4	Iodomethane	0.00518	U	U_LAB					
RE16-12-17689	17	8/14/2012	Fe	Iron	12300	NQ	NQ	n	5.48E+04	5.5E+04		
RE16-12-17689	17	8/14/2012	78-59-1	Isophorone	0.344	U	U_LAB	c	5.12E+03	5.1E+03		
RE16-12-17689	17	8/14/2012	98-82-8	Isopropylbenzene	0.00104	U	U_LAB	n	2.43E+03	2.1E+03		
RE16-12-17689	17	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00104	U	U_LAB					
RE16-12-17689	17	8/14/2012	Pb	Lead	11.6	NQ	NQ	n	4.00E+02	4.0E+02		
RE16-12-17689	17	8/14/2012	Mg	Magnesium	1450	NQ	NQ					
RE16-12-17689	17	8/14/2012	Mn	Manganese	235	NQ	NQ	n	1.86E+03	1.8E+03		
RE16-12-17689	17	8/14/2012	Hg	Mercury	0.0141	NQ	NQ	n	1.56E+01	1.0E+01		
RE16-12-17689	17	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00518	U	U_LAB	n	5.82E+03	5.3E+03		
RE16-12-17689	17	8/14/2012	75-09-2	Methylene Chloride	0.00518	U	U_LAB	c	4.09E+02	5.6E+02		
RE16-12-17689	17	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.0344	U	U_LAB	n		2.3E+02		
RE16-12-17689	17	8/14/2012	95-48-7	Methylphenol[2-]	0.344	U	U_LAB	n		3.1E+03		
RE16-12-17689	17	8/14/2012	106-44-5	Methylphenol[4-]	0.344	U	U_LAB	n		6.1E+03		
RE16-12-17689	17	8/14/2012	91-20-3	Naphthalene	0.0344	U	U_LAB	c	4.30E+01	3.6E+01		
RE16-12-17689	17	8/14/2012	Ni	Nickel	5.57	NQ	NQ	n	1.56E+03	1.5E+03		
RE16-12-17689	17	8/14/2012	88-74-4	Nitroaniline[2-]	0.344	U	U_LAB	n		6.1E+02		
RE16-12-17689	17	8/14/2012	99-09-2	Nitroaniline[3-]	0.344	U	U_LAB					
RE16-12-17689	17	8/14/2012	100-01-6	Nitroaniline[4-]	0.344	U	U_LAB	c		2.4E+02		
RE16-12-17689	17	8/14/2012	98-95-3	Nitrobenzene	0.344	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17689	17	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB	c	5.35E+01	4.8E+01		
RE16-12-17689	17	8/14/2012	88-75-5	Nitrophenol[2-]	0.344	U	U_LAB					
RE16-12-17689	17	8/14/2012	100-02-7	Nitrophenol[4-]	0.344	U	U_LAB					
RE16-12-17689	17	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.344	U	U_LAB	c	2.26E-02	2.3E-02	YES	YES
RE16-12-17689	17	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.344	U	U_LAB	c		6.9E-01		
RE16-12-17689	17	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB	c	2.91E+01	2.9E+01		
RE16-12-17689	17	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB	n	7.82E+00	6.1E+00		
RE16-12-17689	17	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB	n/c	2.44E+02	3.0E+02		
RE16-12-17689	17	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.344	U	U_LAB	c		4.6E+01		
RE16-12-17689	17	8/14/2012	87-86-5	Pentachlorophenol	0.344	U	U_LAB	c	8.94E+00	8.9E+00		
RE16-12-17689	17	8/14/2012	ClO4	Perchlorate	0.00204	U	U_LAB	n	5.48E+01	5.5E+01		

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17689	17	8/14/2012	78-11-5	PETN	1	U	U_LAB	c		1.2E+03		
RE16-12-17689	17	8/14/2012	85-01-8	Phenanthrene	0.0344	U	U_LAB	n	1.83E+03			
RE16-12-17689	17	8/14/2012	108-95-2	Phenol	0.344	U	U_LAB	n	1.83E+04	1.8E+04		
RE16-12-17689	17	8/14/2012	K	Potassium	1460	NQ	NQ					
RE16-12-17689	17	8/14/2012	103-65-1	Propylbenzene[1-]	0.00104	U	U_LAB	n		3.4E+03		
RE16-12-17689	17	8/14/2012	129-00-0	Pyrene	0.0344	U	U_LAB	n	1.72E+03	1.7E+03		
RE16-12-17689	17	8/14/2012	110-86-1	Pyridine	0.344	U	U_LAB	n		7.8E+01		
RE16-12-17689	17	8/14/2012	121-82-4	RDX	0.5	U	U_LAB	n/c	5.82E+01	5.6E+01		
RE16-12-17689	17	8/14/2012	Se	Selenium	1.02	U	U_LAB	n	3.91E+02	3.9E+02		
RE16-12-17689	17	8/14/2012	Ag	Silver	0.331	J	J_LAB	n	3.91E+02	3.9E+02		
RE16-12-17689	17	8/14/2012	Na	Sodium	123	NQ	NQ					
RE16-12-17689	17	8/14/2012	100-42-5	Styrene	0.00104	U	U_LAB	n	7.28E+03	6.3E+03		
RE16-12-17689	17	8/14/2012	3058-38-6	TATB	1	U	U_LAB					
RE16-12-17689	17	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00104	U	U_LAB	c	2.91E+01	1.9E+01		
RE16-12-17689	17	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00104	U	U_LAB	c	8.02E+00	5.6E+00		
RE16-12-17689	17	8/14/2012	127-18-4	Tetrachloroethene	0.00104	U	U_LAB	c	7.02E+00	2.2E+02		
RE16-12-17689	17	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a	n	2.44E+02	2.4E+02		
RE16-12-17689	17	8/14/2012	Tl	Thallium	0.233	J	J_LAB	n	7.82E-01	7.8E-01		
RE16-12-17689	17	8/14/2012	108-88-3	Toluene	0.00104	U	U_LAB	n	5.27E+03	5.0E+03		
RE16-12-17689	17	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00518	U	U_LAB	n	7.21E+04	4.3E+04		
RE16-12-17689	17	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.344	U	U_LAB	n/c	7.30E+01	2.2E+02		
RE16-12-17689	17	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00104	U	U_LAB	n	1.56E+04	8.7E+03		
RE16-12-17689	17	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00104	U	U_LAB	c	2.81E+00	1.1E+01		
RE16-12-17689	17	8/14/2012	79-01-6	Trichloroethene	0.00104	U	U_LAB	n/c	8.77E+00	9.1E+00		
RE16-12-17689	17	8/14/2012	75-69-4	Trichlorofluoromethane	0.00104	U	U_LAB	n	1.41E+03	7.9E+02		
RE16-12-17689	17	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.344	U	U_LAB	n	6.11E+03	6.1E+03		
RE16-12-17689	17	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.344	U	U_LAB	n/c	6.11E+01	4.4E+02		
RE16-12-17689	17	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00104	U	U_LAB	c	4.97E-02	5.0E-02		
RE16-12-17689	17	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00104	U	U_LAB	n		6.2E+01		
RE16-12-17689	17	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00104	U	U_LAB	n		7.8E+02		
RE16-12-17689	17	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB	n		2.2E+03		
RE16-12-17689	17	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a	n/c	3.91E+01	1.9E+02		
RE16-12-17689	17	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17689	17	8/14/2012	V	Vanadium	14.5	NQ	NQ	n	3.91E+02	3.9E+02		
RE16-12-17689	17	8/14/2012	75-01-4	Vinyl Chloride	0.00104	U	U_LAB	c	7.28E-01	6.0E-01		
RE16-12-17689	17	8/14/2012	95-47-6	Xylene[1,2-]	0.00104	U	U_LAB	n	8.98E+02	6.9E+02		
RE16-12-17689	17	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00207	U	U_LAB	n	8.14E+02	6.3E+02		
RE16-12-17689	17	8/14/2012	Zn	Zinc	32.2	NQ	NQ	n	2.35E+04	2.3E+04		
RE16-12-17690	17-dup	8/14/2012	6629-29-4	2,4-Diamino-6-nitrotoluene	2	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	59229-75-3	2,6-Diamino-4-nitrotoluene	2	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	618-87-1	3,5-Dinitroaniline	1	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	83-32-9	Acenaphthene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	208-96-8	Acenaphthylene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	67-64-1	Acetone	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Al	Aluminum	8210	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	19406-51-0	Amino-2,6-dinitrotoluene[4-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	35572-78-2	Amino-4,6-dinitrotoluene[2-]	0.5	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17690	17-dup	8/14/2012	62-53-3	Aniline	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	120-12-7	Anthracene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Sb	Antimony	0.981	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	As	Arsenic	2.03	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	103-33-3	Azobenzene	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Ba	Barium	256	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	71-43-2	Benzene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	56-55-3	Benzo(a)anthracene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	50-32-8	Benzo(a)pyrene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	205-99-2	Benzo(b)fluoranthene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	191-24-2	Benzo(g,h,i)perylene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	207-08-9	Benzo(k)fluoranthene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	65-85-0	Benzoic Acid	0.688	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	100-51-6	Benzyl Alcohol	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Be	Beryllium	0.676	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	111-91-1	Bis(2-chloroethoxy)methane	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	111-44-4	Bis(2-chloroethyl)ether	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	117-81-7	Bis(2-ethylhexyl)phthalate	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	108-86-1	Bromobenzene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	74-97-5	Bromochloromethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-27-4	Bromodichloromethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-25-2	Bromoform	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	74-83-9	Bromomethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	101-55-3	Bromophenyl-phenylether[4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	78-93-3	Butanone[2-]	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	104-51-8	Butylbenzene[n-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	135-98-8	Butylbenzene[sec-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	98-06-6	Butylbenzene[tert-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	85-68-7	Butylbenzylphthalate	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Cd	Cadmium	0.491	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Ca	Calcium	2010	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	75-15-0	Carbon Disulfide	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	56-23-5	Carbon Tetrachloride	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	59-50-7	Chloro-3-methylphenol[4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	106-47-8	Chloroaniline[4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	108-90-7	Chlorobenzene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	124-48-1	Chlorodibromomethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-00-3	Chloroethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	67-66-3	Chloroform	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	74-87-3	Chloromethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	91-58-7	Chloronaphthalene[2-]	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-57-8	Chlorophenol[2-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	7005-72-3	Chlorophenyl-phenyl[4-] Ether	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-49-8	Chlorotoluene[2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	106-43-4	Chlorotoluene[4-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Cr	Chromium	6.11	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	218-01-9	Chrysene	0.0344	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17690	17-dup	8/14/2012	Co	Cobalt	2.85	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	Cu	Copper	7.44	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	53-70-3	Dibenz(a,h)anthracene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	132-64-9	Dibenzofuran	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	96-12-8	Dibromo-3-Chloropropane[1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	106-93-4	Dibromoethane[1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	74-95-3	Dibromomethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-50-1	Dichlorobenzene[1,2-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	541-73-1	Dichlorobenzene[1,3-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	106-46-7	Dichlorobenzene[1,4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	91-94-1	Dichlorobenzidine[3,3'-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-71-8	Dichlorodifluoromethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-34-3	Dichloroethane[1,1-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	107-06-2	Dichloroethane[1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-35-4	Dichloroethene[1,1-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	156-59-2	Dichloroethene[cis-1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	156-60-5	Dichloroethene[trans-1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	120-83-2	Dichlorophenol[2,4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	78-87-5	Dichloropropane[1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	142-28-9	Dichloropropane[1,3-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	594-20-7	Dichloropropane[2,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	563-58-6	Dichloropropene[1,1-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	10061-01-5	Dichloropropene[cis-1,3-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	10061-02-6	Dichloropropene[trans-1,3-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	84-66-2	Diethylphthalate	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	131-11-3	Dimethyl Phthalate	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	105-67-9	Dimethylphenol[2,4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	84-74-2	Di-n-butylphthalate	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	534-52-1	Dinitro-2-methylphenol[4,6-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	99-65-0	Dinitrobenzene[1,3-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	51-28-5	Dinitrophenol[2,4-]	0.688	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	121-14-2	Dinitrotoluene[2,4-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	606-20-2	Dinitrotoluene[2,6-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	117-84-0	Di-n-octylphthalate	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	122-39-4	Diphenylamine	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	100-41-4	Ethylbenzene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	206-44-0	Fluoranthene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	86-73-7	Fluorene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	118-74-1	Hexachlorobenzene	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	87-68-3	Hexachlorobutadiene	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	77-47-4	Hexachlorocyclopentadiene	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	67-72-1	Hexachloroethane	0.344	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17690	17-dup	8/14/2012	591-78-6	Hexanone[2-]	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	2691-41-0	HMX	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	193-39-5	Indeno(1,2,3-cd)pyrene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	74-88-4	Iodomethane	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Fe	Iron	12300	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	78-59-1	Isophorone	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	98-82-8	Isopropylbenzene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	99-87-6	Isopropyltoluene[4-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Pb	Lead	12.6	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	Mg	Magnesium	1480	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	Mn	Manganese	264	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	Hg	Mercury	0.0163	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	108-10-1	Methyl-2-pentanone[4-]	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-09-2	Methylene Chloride	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	91-57-6	Methylnaphthalene[2-]	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-48-7	Methylphenol[2-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	106-44-5	Methylphenol[4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	91-20-3	Naphthalene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Ni	Nickel	4.87	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	88-74-4	Nitroaniline[2-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	99-09-2	Nitroaniline[3-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	100-01-6	Nitroaniline[4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	98-95-3	Nitrobenzene	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	98-95-3	Nitrobenzene	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	88-75-5	Nitrophenol[2-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	100-02-7	Nitrophenol[4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	62-75-9	Nitrosodimethylamine[N-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	621-64-7	Nitroso-di-n-propylamine[N-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	88-72-2	Nitrotoluene[2-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	99-08-1	Nitrotoluene[3-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	99-99-0	Nitrotoluene[4-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	108-60-1	Oxybis(1-chloropropane)[2,2'-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	87-86-5	Pentachlorophenol	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	ClO4	Perchlorate	0.00206	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	78-11-5	PETN	1	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	85-01-8	Phenanthrene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	108-95-2	Phenol	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	K	Potassium	1450	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	103-65-1	Propylbenzene[1-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	129-00-0	Pyrene	0.0344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	110-86-1	Pyridine	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	121-82-4	RDX	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Se	Selenium	0.989	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Ag	Silver	0.306	J	J_LAB					
RE16-12-17690	17-dup	8/14/2012	Na	Sodium	119	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	100-42-5	Styrene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	3058-38-6	TATB	1	U	U_LAB					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Reported Result (mg/kg)	Validation Qualifier	Validation Reason Codes	Endpoint	Residential NMED SSL (mg/kg)	ResidentialEPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17690	17-dup	8/14/2012	630-20-6	Tetrachloroethane[1,1,1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	79-34-5	Tetrachloroethane[1,1,2,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	127-18-4	Tetrachloroethene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	479-45-8	Tetryl	0.5	UJ	HE12a					
RE16-12-17690	17-dup	8/14/2012	Tl	Thallium	0.215	J	J_LAB					
RE16-12-17690	17-dup	8/14/2012	108-88-3	Toluene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.00517	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	120-82-1	Trichlorobenzene[1,2,4-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	71-55-6	Trichloroethane[1,1,1-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	79-00-5	Trichloroethane[1,1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	79-01-6	Trichloroethene	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	75-69-4	Trichlorofluoromethane	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-95-4	Trichlorophenol[2,4,5-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	88-06-2	Trichlorophenol[2,4,6-]	0.344	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	96-18-4	Trichloropropane[1,2,3-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-63-6	Trimethylbenzene[1,2,4-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	108-67-8	Trimethylbenzene[1,3,5-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	99-35-4	Trinitrobenzene[1,3,5-]	0.5	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	118-96-7	Trinitrotoluene[2,4,6-]	0.5	UJ	HE12a					
RE16-12-17690	17-dup	8/14/2012	78-30-8	Tris (o-cresyl) phosphate	1	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	V	Vanadium	14.6	NQ	NQ					
RE16-12-17690	17-dup	8/14/2012	75-01-4	Vinyl Chloride	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	95-47-6	Xylene[1,2-]	0.00103	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]	0.00207	U	U_LAB					
RE16-12-17690	17-dup	8/14/2012	Zn	Zinc	33	NQ	NQ					

J Value is estimated
N Metals-The Matrix spike sample recovery is not within specified control limits
U Compound analyzed for, but not detected; reported value equals the CRQL
NQ No qualification
n Noncarcinogenic endpoint
c Carcinogenic endpoint
n/c SSL endpoint noncarcinogenic; EPA endpoint carcinogenic

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17672	1	8/13/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.20E-05	NQ	NQ	1.20E-05	1.00E-02	1.20E-07					
RE16-12-17672	1	8/13/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	2.66E-05	NQ	NQ	2.66E-05	0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.75E-06	NQ	NQ	5.75E-06	1.00E-02	5.75E-08					
RE16-12-17672	1	8/13/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.17E-06	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17672	1	8/13/2012	38998-75-3	Heptachlorodibenzofurans (Total)	9.91E-06	NQ	NQ	9.91E-06	0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	6.51E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17672	1	8/13/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	8.23E-07	J	J_LAB	8.23E-07	1.00E-01	8.23E-08					
RE16-12-17672	1	8/13/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	6.65E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17672	1	8/13/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	7.75E-06	NQ	NQ	7.75E-06	0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	9.68E-07	J	J_LAB	9.68E-07	1.00E-01	9.68E-08					
RE16-12-17672	1	8/13/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	9.02E-07	J	J_LAB	9.02E-07	1.00E-01	9.02E-08					
RE16-12-17672	1	8/13/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17672	1	8/13/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	7.80E-07	J	J_LAB	7.80E-07	1.00E-01	7.80E-08					
RE16-12-17672	1	8/13/2012	55684-94-1	Hexachlorodibenzofurans (Total)	8.76E-06	NQ	NQ	8.76E-06	0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	6.68E-05	NQ	NQ	6.68E-05	3.00E-04	2.00E-08					
RE16-12-17672	1	8/13/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	8.05E-06	J	J_LAB	8.05E-06	3.00E-04	2.42E-09					
RE16-12-17672	1	8/13/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.18E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	7.01E-07	J	J_LAB	7.01E-07	3.00E-01	2.10E-07					
RE16-12-17672	1	8/13/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	6.12E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17672	1	8/13/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	2.42E-06	J	J_LAB	2.42E-06	0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	4.83E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	1.23E-06	NQ	NQ	1.23E-06	0.00E+00	0.00E+00					
RE16-12-17672	1	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	1.04E-06	U	DF4		1.00E-01	0.00E+00					
RE16-12-17672	1	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	7.86E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17672	1	8/13/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	2.22E-06	NQ	NQ	2.22E-06	0.00E+00	0.00E+00	7.58E-07	4.50E-05	4.50E-05		
RE16-12-17679	7	8/13/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	8.02E-05	NQ	NQ	8.02E-05	1.00E-02	8.02E-07					
RE16-12-17679	7	8/13/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.49E-04	NQ	NQ	1.49E-04	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	2.57E-05	NQ	NQ	2.57E-05	1.00E-02	2.57E-07					
RE16-12-17679	7	8/13/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.50E-06	J	J_LAB	1.50E-06	1.00E-02	1.50E-08					
RE16-12-17679	7	8/13/2012	38998-75-3	Heptachlorodibenzofurans (Total)	5.15E-05	NQ	NQ	5.15E-05	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	1.61E-06	J	J_LAB	1.61E-06	1.00E-01	1.61E-07					
RE16-12-17679	7	8/13/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	3.69E-06	J	J_LAB	3.69E-06	1.00E-01	3.69E-07					
RE16-12-17679	7	8/13/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.34E-06	J	J_LAB	4.34E-06	1.00E-01	4.34E-07					
RE16-12-17679	7	8/13/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	3.57E-05	NQ	NQ	3.57E-05	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	9.85E-07	J	J_LAB	9.85E-07	1.00E-01	9.85E-08					
RE16-12-17679	7	8/13/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.32E-06	J	J_LAB	1.32E-06	1.00E-01	1.32E-07					
RE16-12-17679	7	8/13/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.14E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17679	7	8/13/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.57E-06	J	J_LAB	1.57E-06	1.00E-01	1.57E-07					
RE16-12-17679	7	8/13/2012	55684-94-1	Hexachlorodibenzofurans (Total)	2.46E-05	NQ	NQ	2.46E-05	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.81E-04	NQ	NQ	4.81E-04	3.00E-04	1.44E-07					
RE16-12-17679	7	8/13/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	4.94E-05	NQ	NQ	4.94E-05	3.00E-04	1.48E-08					
RE16-12-17679	7	8/13/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	8.39E-07	J	J_LAB	8.39E-07	1.00E+00	8.39E-07					
RE16-12-17679	7	8/13/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	3.26E-06	J	J_LAB	3.26E-06	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	6.50E-07	J	J_LAB	6.50E-07	3.00E-01	1.95E-07					
RE16-12-17679	7	8/13/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.14E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17679	7	8/13/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	4.50E-06	J	J_LAB	4.50E-06	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	4.17E-07	J	J_LAB	4.17E-07	1.00E+00	4.17E-07					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17679	7	8/13/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	7.36E-07	J	J_LAB	7.36E-07	0.00E+00	0.00E+00					
RE16-12-17679	7	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	5.26E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17679	7	8/13/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	3.62E-06	NQ	NQ	3.62E-06	0.00E+00	0.00E+00	4.04E-06	4.50E-05	4.50E-05		
RE16-12-17680	8	8/13/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.70E-03	NQ	NQ	1.70E-03	1.00E-02	1.70E-05					
RE16-12-17680	8	8/13/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	2.82E-03	R	DF7	2.82E-03	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.61E-04	NQ	NQ	5.61E-04	1.00E-02	5.61E-06					
RE16-12-17680	8	8/13/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	3.30E-05	NQ	NQ	3.30E-05	1.00E-02	3.30E-07					
RE16-12-17680	8	8/13/2012	38998-75-3	Heptachlorodibenzofurans (Total)	1.27E-03	NQ	NQ	1.27E-03	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	3.08E-05	NQ	NQ	3.08E-05	1.00E-01	3.08E-06					
RE16-12-17680	8	8/13/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	7.18E-05	NQ	NQ	7.18E-05	1.00E-01	7.18E-06					
RE16-12-17680	8	8/13/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	8.71E-05	NQ	NQ	8.71E-05	1.00E-01	8.71E-06					
RE16-12-17680	8	8/13/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	5.38E-04	NQ	NQ	5.38E-04	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.69E-05	NQ	NQ	1.69E-05	1.00E-01	1.69E-06					
RE16-12-17680	8	8/13/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	2.23E-05	NQ	NQ	2.23E-05	1.00E-01	2.23E-06					
RE16-12-17680	8	8/13/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	2.88E-06	J	J_LAB	2.88E-06	1.00E-01	2.88E-07					
RE16-12-17680	8	8/13/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	2.66E-05	NQ	NQ	2.66E-05	1.00E-01	2.66E-06					
RE16-12-17680	8	8/13/2012	55684-94-1	Hexachlorodibenzofurans (Total)	5.03E-04	NQ	NQ	5.03E-04	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.03E-02	R	DF7	1.03E-02	3.00E-04	0.00E+00					
RE16-12-17680	8	8/13/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.28E-03	NQ	NQ	1.28E-03	3.00E-04	3.84E-07					
RE16-12-17680	8	8/13/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	1.11E-05	NQ	NQ	1.11E-05	1.00E+00	1.11E-05					
RE16-12-17680	8	8/13/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	5.10E-05	NQ	NQ	5.10E-05	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	1.77E-06	J	J_LAB	1.77E-06	3.00E-02	5.31E-08					
RE16-12-17680	8	8/13/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	3.00E-06	J	J_LAB	3.00E-06	3.00E-01	9.00E-07					
RE16-12-17680	8	8/13/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	7.97E-05	NQ	NQ	7.97E-05	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	1.49E-06	NQ	NQ	1.49E-06	1.00E+00	1.49E-06					
RE16-12-17680	8	8/13/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	5.16E-06	NQ	NQ	5.16E-06	0.00E+00	0.00E+00					
RE16-12-17680	8	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	8.14E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17680	8	8/13/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	2.19E-05	NQ	NQ	2.19E-05	0.00E+00	0.00E+00	6.27E-05	4.50E-05	4.50E-05	YES	YES
RE16-12-17681	9	8/13/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	8.77E-03	NQ	NQ	8.77E-03	1.00E-02	8.77E-05					
RE16-12-17681	9	8/13/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.50E-02	NQ	NQ	1.50E-02	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	2.35E-03	NQ	NQ	2.35E-03	1.00E-02	2.35E-05					
RE16-12-17681	9	8/13/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.59E-04	NQ	NQ	1.59E-04	1.00E-02	1.59E-06					
RE16-12-17681	9	8/13/2012	38998-75-3	Heptachlorodibenzofurans (Total)	5.77E-03	NQ	NQ	5.77E-03	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	1.52E-04	NQ	NQ	1.52E-04	1.00E-01	1.52E-05					
RE16-12-17681	9	8/13/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	3.33E-04	NQ	NQ	3.33E-04	1.00E-01	3.33E-05					
RE16-12-17681	9	8/13/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	3.71E-04	NQ	NQ	3.71E-04	1.00E-01	3.71E-05					
RE16-12-17681	9	8/13/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	2.59E-03	NQ	NQ	2.59E-03	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	8.36E-05	NQ	NQ	8.36E-05	1.00E-01	8.36E-06					
RE16-12-17681	9	8/13/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.07E-04	NQ	NQ	1.07E-04	1.00E-01	1.07E-05					
RE16-12-17681	9	8/13/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.41E-05	J	J_LAB	1.41E-05	1.00E-01	1.41E-06					
RE16-12-17681	9	8/13/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.37E-04	NQ	NQ	1.37E-04	1.00E-01	1.37E-05					
RE16-12-17681	9	8/13/2012	55684-94-1	Hexachlorodibenzofurans (Total)	2.62E-03	NQ	NQ	2.62E-03	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	5.29E-02	R	DF7	5.29E-02	3.00E-04	0.00E+00					
RE16-12-17681	9	8/13/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	6.32E-03	NQ	NQ	6.32E-03	3.00E-04	1.90E-06					
RE16-12-17681	9	8/13/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.63E-05	NQ	NQ	5.63E-05	1.00E+00	5.63E-05					
RE16-12-17681	9	8/13/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	2.85E-04	NQ	NQ	2.85E-04	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	7.35E-06	J	J_LAB	7.35E-06	3.00E-02	2.21E-07					
RE16-12-17681	9	8/13/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	1.25E-05	J	J_LAB	1.25E-05	3.00E-01	3.75E-06					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17681	9	8/13/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	4.49E-04	NQ	NQ	4.49E-04	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	3.09E-06	J	J_LAB	3.09E-06	1.00E+00	3.09E-06					
RE16-12-17681	9	8/13/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	1.31E-05	NQ	NQ	1.31E-05	0.00E+00	0.00E+00					
RE16-12-17681	9	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	3.12E-06	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17681	9	8/13/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	7.17E-05	NQ	NQ	7.17E-05	0.00E+00	0.00E+00	2.98E-04	4.50E-05	4.50E-05	YES	YES
RE16-12-17682	10	8/13/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	5.63E-06	NQ	NQ	5.63E-06	1.00E-02	5.63E-08					
RE16-12-17682	10	8/13/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.52E-05	NQ	NQ	1.52E-05	0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.17E-06	J	J_LAB	1.17E-06	1.00E-02	1.17E-08					
RE16-12-17682	10	8/13/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.44E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17682	10	8/13/2012	38998-75-3	Heptachlorodibenzofurans (Total)	2.37E-06	J	J_LAB	2.37E-06	0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	1.39E-06	J	J_LAB	1.39E-06	0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.44E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	55684-94-1	Hexachlorodibenzofurans (Total)	6.99E-07	J	J_LAB	6.99E-07	0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.15E-05	NQ	NQ	3.15E-05	3.00E-04	9.45E-09					
RE16-12-17682	10	8/13/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	2.25E-06	J	J_LAB	2.25E-06	3.00E-04	6.75E-10					
RE16-12-17682	10	8/13/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.44E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	5.44E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.44E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.33E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17682	10	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	4.36E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17682	10	8/13/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	6.79E-07	J	J_LAB	6.79E-07	0.00E+00	0.00E+00	7.81E-08	4.50E-05	4.50E-05		
RE16-12-17683	11	8/13/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	6.42E-06	NQ	NQ	6.42E-06	1.00E-02	6.42E-08					
RE16-12-17683	11	8/13/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.35E-05	NQ	NQ	1.35E-05	0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.63E-06	J	J_LAB	1.63E-06	1.00E-02	1.63E-08					
RE16-12-17683	11	8/13/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.03E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17683	11	8/13/2012	38998-75-3	Heptachlorodibenzofurans (Total)	3.49E-06	J	J_LAB	3.49E-06	0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	2.16E-06	J	J_LAB	2.16E-06	0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.03E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	55684-94-1	Hexachlorodibenzofurans (Total)	9.42E-07	J	J_LAB	9.42E-07	0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	3.54E-05	NQ	NQ	3.54E-05	3.00E-04	1.06E-08					
RE16-12-17683	11	8/13/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	3.73E-06	J	J_LAB	3.73E-06	3.00E-04	1.12E-09					
RE16-12-17683	11	8/13/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.03E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	5.03E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.03E-07	U	U_LAB		3.00E-01	0.00E+00					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17683	11	8/13/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	1.89E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17683	11	8/13/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	4.43E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17683	11	8/13/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	6.86E-07	J	J_LAB	6.86E-07	0.00E+00	0.00E+00	9.22E-08	4.50E-05	4.50E-05		
RE16-12-17684	12	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.11E-06	J	J_LAB	1.11E-06	1.00E-02	1.11E-08					
RE16-12-17684	12	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.26E-06	J	J_LAB	1.26E-06	0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.66E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17684	12	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.66E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17684	12	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	5.07E-07	J	J_LAB	5.07E-07	0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.66E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	7.68E-06	J	J_LAB	7.68E-06	3.00E-04	2.30E-09					
RE16-12-17684	12	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.05E-06	U	U_LAB		3.00E-04	0.00E+00					
RE16-12-17684	12	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.66E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	4.66E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	4.66E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.35E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17684	12	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	2.16E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17684	12	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00	1.34E-08	4.50E-05	4.50E-05		
RE16-12-17685	13	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	1.50E-06	J	J_LAB	1.50E-06	1.00E-02	1.50E-08					
RE16-12-17685	13	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	3.21E-06	J	J_LAB	3.21E-06	0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	5.05E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17685	13	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.05E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17685	13	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	0.00E+00	NQ	NQ	0.00E+00	0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.05E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	8.34E-06	J	J_LAB	8.34E-06	3.00E-04	2.50E-09					
RE16-12-17685	13	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.01E-06	U	U_LAB		3.00E-04	0.00E+00					
RE16-12-17685	13	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.05E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	5.05E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.05E-07	U	U_LAB		3.00E-01	0.00E+00					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17685	13	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.79E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17685	13	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	3.03E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17685	13	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	3.03E-07	J	J_LAB	3.03E-07	0.00E+00	0.00E+00	1.75E-08	4.50E-05	4.50E-05		
RE16-12-17686	14	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	2.28E-06	J	J_LAB	2.28E-06	1.00E-02	2.28E-08					
RE16-12-17686	14	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	5.52E-06	NQ	NQ	5.52E-06	0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	9.08E-07	J	J_LAB	9.08E-07	1.00E-02	9.08E-09					
RE16-12-17686	14	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.95E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17686	14	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	1.65E-06	J	J_LAB	1.65E-06	0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	6.72E-07	J	J_LAB	6.72E-07	0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	1.51E-05	NQ	NQ	1.51E-05	3.00E-04	4.53E-09					
RE16-12-17686	14	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.26E-06	J	J_LAB	1.26E-06	3.00E-04	3.78E-10					
RE16-12-17686	14	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.95E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	4.95E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	4.95E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.72E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17686	14	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	3.37E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17686	14	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	4.20E-07	J	J_LAB	4.20E-07	0.00E+00	0.00E+00	3.68E-08	4.50E-05	4.50E-05		
RE16-12-17687	15	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	3.87E-06	J	J_LAB	3.87E-06	1.00E-02	3.87E-08					
RE16-12-17687	15	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	8.13E-06	NQ	NQ	8.13E-06	0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.76E-06	J	J_LAB	1.76E-06	1.00E-02	1.76E-08					
RE16-12-17687	15	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	4.95E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17687	15	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	2.64E-06	J	J_LAB	2.64E-06	0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	7.25E-07	J	J_LAB	7.25E-07	0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	4.95E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	8.12E-07	J	J_LAB	8.12E-07	0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.51E-05	NQ	NQ	2.51E-05	3.00E-04	7.53E-09					
RE16-12-17687	15	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	2.77E-06	J	J_LAB	2.77E-06	3.00E-04	8.31E-10					
RE16-12-17687	15	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	4.95E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	4.95E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	4.95E-07	U	U_LAB		3.00E-01	0.00E+00					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17687	15	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.42E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17687	15	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	4.16E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17687	15	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	4.16E-07	J	J_LAB	4.16E-07	0.00E+00	0.00E+00	6.47E-08	4.50E-05	4.50E-05		
RE16-12-17688	16	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	5.84E-06	NQ	NQ	5.84E-06	1.00E-02	5.84E-08					
RE16-12-17688	16	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.49E-05	NQ	NQ	1.49E-05	0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	9.29E-06	NQ	NQ	9.29E-06	1.00E-02	9.29E-08					
RE16-12-17688	16	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	2.40E-06	J	J_LAB	2.40E-06	1.00E-02	2.40E-08					
RE16-12-17688	16	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	1.92E-05	NQ	NQ	1.92E-05	0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.20E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17688	16	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	6.05E-07	J	J_LAB	6.05E-07	1.00E-01	6.05E-08					
RE16-12-17688	16	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.20E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17688	16	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	4.25E-06	J	J_LAB	4.25E-06	0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.35E-06	J	J_LAB	1.35E-06	1.00E-01	1.35E-07					
RE16-12-17688	16	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.63E-06	J	J_LAB	1.63E-06	1.00E-01	1.63E-07					
RE16-12-17688	16	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	6.65E-07	J	J_LAB	6.65E-07	1.00E-01	6.65E-08					
RE16-12-17688	16	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.79E-06	J	J_LAB	1.79E-06	1.00E-01	1.79E-07					
RE16-12-17688	16	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	1.71E-05	NQ	NQ	1.71E-05	0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	2.82E-05	NQ	NQ	2.82E-05	3.00E-04	8.46E-09					
RE16-12-17688	16	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	1.81E-05	NQ	NQ	1.81E-05	3.00E-04	5.43E-09					
RE16-12-17688	16	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.20E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	7.65E-07	J	J_LAB	7.65E-07	0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	7.44E-07	J	J_LAB	7.44E-07	3.00E-01	2.23E-07					
RE16-12-17688	16	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	7.21E-07	J	J_LAB	7.21E-07	3.00E-01	2.16E-07					
RE16-12-17688	16	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	1.43E-05	NQ	NQ	1.43E-05	0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	3.51E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17688	16	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	6.19E-07	U	DF4		1.00E-01	0.00E+00					
RE16-12-17688	16	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	3.39E-06	NQ	NQ	3.39E-06	0.00E+00	0.00E+00	1.23E-06	4.50E-05	4.50E-05		
RE16-12-17689	17	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	3.99E-06	J	J_LAB	3.99E-06	1.00E-02	3.99E-08					
RE16-12-17689	17	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.15E-05	NQ	NQ	1.15E-05	0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.31E-06	J	J_LAB	1.31E-06	1.00E-02	1.31E-08					
RE16-12-17689	17	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.18E-07	U	U_LAB		1.00E-02	0.00E+00					
RE16-12-17689	17	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	3.87E-06	J	J_LAB	3.87E-06	0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	1.20E-06	J	J_LAB	1.20E-06	0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.18E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	1.26E-06	J	J_LAB	1.26E-06	0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.07E-05	NQ	NQ	4.07E-05	3.00E-04	1.22E-08					
RE16-12-17689	17	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	4.64E-06	J	J_LAB	4.64E-06	3.00E-04	1.39E-09					
RE16-12-17689	17	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.18E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	5.18E-07	U	U_LAB		3.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.18E-07	U	U_LAB		3.00E-01	0.00E+00					

Field Sample ID	Field Location ID	Sample Date (Start)	Parameter Code	Parameter Name	Report Result mg/kg	Validation Qualifier	Validation Reason Codes	Detected Concentration (mg/kg)	TEF	TEQ (mg/kg)	Total TEC's (mg/kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
RE16-12-17689	17	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB		0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.90E-07	U	U_LAB		1.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	3.01E-07	J	J_LAB	3.01E-07	0.00E+00	0.00E+00					
RE16-12-17689	17	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	3.36E-07	U	U_LAB		1.00E-01	0.00E+00					
RE16-12-17689	17	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	3.90E-07	J	J_LAB	3.90E-07	0.00E+00	0.00E+00	6.66E-08	4.50E-05	4.50E-05		
RE16-12-17690	17-dup	8/14/2012	35822-46-9	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	4.08E-06	J	J_LAB								
RE16-12-17690	17-dup	8/14/2012	37871-00-4	Heptachlorodibenzodioxins (Total)	1.15E-05	NQ	NQ								
RE16-12-17690	17-dup	8/14/2012	67562-39-4	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.72E-06	J	J_LAB								
RE16-12-17690	17-dup	8/14/2012	55673-89-7	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.25E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	38998-75-3	Heptachlorodibenzofurans (Total)	4.62E-06	J	J_LAB								
RE16-12-17690	17-dup	8/14/2012	39227-28-6	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	57653-85-7	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	19408-74-3	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	34465-46-8	Hexachlorodibenzodioxins (Total)	1.74E-06	J	J_LAB								
RE16-12-17690	17-dup	8/14/2012	70648-26-9	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	57117-44-9	Hexachlorodibenzofuran[1,2,3,6,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	72918-21-9	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	60851-34-5	Hexachlorodibenzofuran[2,3,4,6,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	55684-94-1	Hexachlorodibenzofurans (Total)	9.00E-07	J	J_LAB								
RE16-12-17690	17-dup	8/14/2012	3268-87-9	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	4.38E-05	NQ	NQ								
RE16-12-17690	17-dup	8/14/2012	39001-02-0	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	4.78E-06	J	J_LAB								
RE16-12-17690	17-dup	8/14/2012	40321-76-4	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	36088-22-9	Pentachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	57117-41-6	Pentachlorodibenzofuran[1,2,3,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	57117-31-4	Pentachlorodibenzofuran[2,3,4,7,8-]	5.13E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	30402-15-4	Pentachlorodibenzofurans (Totals)	0.00E+00	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	1746-01-6	Tetrachlorodibenzodioxin[2,3,7,8-]	2.69E-07	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	41903-57-5	Tetrachlorodibenzodioxins (Total)	0.00E+00	U	U_LAB								
RE16-12-17690	17-dup	8/14/2012	51207-31-9	Tetrachlorodibenzofuran[2,3,7,8-]	3.88E-07	U	DF4								
RE16-12-17690	17-dup	8/14/2012	55722-27-5	Tetrachlorodibenzofurans (Totals)	3.88E-07	J	J_LAB								

J Value is estimated
N Metals-The Matrix spike sample recovery is not within specified control limits
U Compound analyzed for, but not detected; reported value equals the CRQL
NQ – No qualification
R – The affected results were not analyzed with a valid 5-point calibration curve and/or a standard at the reporting limit.

Summary of Analytical Results for Soil Samples Collected in 2013 at TA-16-388 and TA-16-399 (Inorganic and Organic)

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Aluminum	4870	mg/kg		Y	4.87E+03	n	7.80E+04	7.7E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Aluminum	5310	mg/kg		Y	5.31E+03	n	7.80E+04	7.7E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Aluminum	4830	mg/kg		Y	4.83E+03	n	7.80E+04	7.7E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Aluminum	4880	mg/kg		Y	4.88E+03	n	7.80E+04	7.7E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Aluminum	5190	mg/kg		Y	5.19E+03	n	7.80E+04	7.7E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Aluminum	5130	mg/kg		Y	5.13E+03	n	7.80E+04	7.7E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Aluminum	6010	mg/kg		Y	6.01E+03	n	7.80E+04	7.7E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Antimony	0.666	mg/kg	J	Y	6.66E-01	n	3.13E+01	3.1E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Antimony	0.995	mg/kg	U	N	0.00E+00	n	3.13E+01	3.1E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Antimony	1.01	mg/kg	U	N	0.00E+00	n	3.13E+01	3.1E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Antimony	0.993	mg/kg	U	N	0.00E+00	n	3.13E+01	3.1E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Antimony	1	mg/kg	U	N	0.00E+00	n	3.13E+01	3.1E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Antimony	0.976	mg/kg	U	N	0.00E+00	n	3.13E+01	3.1E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Antimony	1	mg/kg	U	N	0.00E+00	n	3.13E+01	3.1E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Barium	123	mg/kg		Y	1.23E+02	n	1.56E+04	1.5E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Barium	463	mg/kg		Y	4.63E+02	n	1.56E+04	1.5E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Barium	230	mg/kg		Y	2.30E+02	n	1.56E+04	1.5E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Barium	206	mg/kg		Y	2.06E+02	n	1.56E+04	1.5E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Barium	388	mg/kg		Y	3.88E+02	n	1.56E+04	1.5E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Barium	263	mg/kg		Y	2.63E+02	n	1.56E+04	1.5E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Barium	262	mg/kg		Y	2.62E+02	n	1.56E+04	1.5E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Cadmium	0.5	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Cadmium	0.497	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Cadmium	0.506	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Cadmium	0.496	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Cadmium	0.5	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Cadmium	0.488	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Cadmium	0.501	mg/kg	U	N	0.00E+00	n	7.03E+01	7.0E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Calcium	1930	mg/kg	N	Y	1.93E+03					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Calcium	2370	mg/kg	N	Y	2.37E+03					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Calcium	2480	mg/kg	N	Y	2.48E+03					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Calcium	1790	mg/kg	N	Y	1.79E+03					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Calcium	2500	mg/kg	N	Y	2.50E+03					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Calcium	2320	mg/kg	N	Y	2.32E+03					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Calcium	2160	mg/kg	N	Y	2.16E+03					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Chromium	5.48	mg/kg		Y	5.48E+00	n	1.17E+05	1.2E+05		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Chromium	5.75	mg/kg		Y	5.75E+00	n	1.17E+05	1.2E+05		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Chromium	5.14	mg/kg		Y	5.14E+00	n	1.17E+05	1.2E+05		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Chromium	5.38	mg/kg		Y	5.38E+00	n	1.17E+05	1.2E+05		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Chromium	5.38	mg/kg		Y	5.38E+00	n	1.17E+05	1.2E+05		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Chromium	6.7	mg/kg		Y	6.70E+00	n	1.17E+05	1.2E+05		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Chromium	7.63	mg/kg		Y	7.63E+00	n	1.17E+05	1.2E+05		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Cobalt	2.81	mg/kg		Y	2.81E+00	n		2.3E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Cobalt	2.95	mg/kg		Y	2.95E+00	n		2.3E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Cobalt	3.31	mg/kg		Y	3.31E+00	n		2.3E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Cobalt	3.05	mg/kg		Y	3.05E+00	n		2.3E+01		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Cobalt	2.99	mg/kg		Y	2.99E+00	n		2.3E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Cobalt	3.87	mg/kg		Y	3.87E+00	n		2.3E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Cobalt	4.25	mg/kg		Y	4.25E+00	n		2.3E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Copper	5.78	mg/kg		Y	5.78E+00	n	3.13E+03	3.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Copper	13.6	mg/kg		Y	1.36E+01	n	3.13E+03	3.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Copper	7.35	mg/kg		Y	7.35E+00	n	3.13E+03	3.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Copper	8.67	mg/kg		Y	8.67E+00	n	3.13E+03	3.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Copper	7.44	mg/kg		Y	7.44E+00	n	3.13E+03	3.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Copper	6.35	mg/kg		Y	6.35E+00	n	3.13E+03	3.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Copper	6.37	mg/kg		Y	6.37E+00	n	3.13E+03	3.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Iron	11100	mg/kg		Y	1.11E+04	n	5.48E+04	5.5E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Iron	9910	mg/kg		Y	9.91E+03	n	5.48E+04	5.5E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Iron	9880	mg/kg		Y	9.88E+03	n	5.48E+04	5.5E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Iron	10500	mg/kg		Y	1.05E+04	n	5.48E+04	5.5E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Iron	10200	mg/kg		Y	1.02E+04	n	5.48E+04	5.5E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Iron	10300	mg/kg		Y	1.03E+04	n	5.48E+04	5.5E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Iron	11400	mg/kg		Y	1.14E+04	n	5.48E+04	5.5E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Lead	8.91	mg/kg		Y	8.91E+00	n	4.00E+02	4.0E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Lead	12.7	mg/kg		Y	1.27E+01	n	4.00E+02	4.0E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Lead	10.6	mg/kg		Y	1.06E+01	n	4.00E+02	4.0E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Lead	10.4	mg/kg		Y	1.04E+01	n	4.00E+02	4.0E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Lead	11	mg/kg		Y	1.10E+01	n	4.00E+02	4.0E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Lead	11.5	mg/kg		Y	1.15E+01	n	4.00E+02	4.0E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Lead	11.7	mg/kg		Y	1.17E+01	n	4.00E+02	4.0E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Magnesium	1170	mg/kg		Y	1.17E+03					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Magnesium	1350	mg/kg		Y	1.35E+03					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Magnesium	1260	mg/kg		Y	1.26E+03					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Magnesium	1140	mg/kg		Y	1.14E+03					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Magnesium	1220	mg/kg		Y	1.22E+03					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Magnesium	1190	mg/kg		Y	1.19E+03					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Magnesium	1220	mg/kg		Y	1.22E+03					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Manganese	231	mg/kg		Y	2.31E+02	n	1.86E+03	1.8E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Manganese	278	mg/kg		Y	2.78E+02	n	1.86E+03	1.8E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Manganese	301	mg/kg		Y	3.01E+02	n	1.86E+03	1.8E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Manganese	273	mg/kg		Y	2.73E+02	n	1.86E+03	1.8E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Manganese	314	mg/kg		Y	3.14E+02	n	1.86E+03	1.8E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Manganese	343	mg/kg		Y	3.43E+02	n	1.86E+03	1.8E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Manganese	355	mg/kg		Y	3.55E+02	n	1.86E+03	1.8E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Potassium	1490	mg/kg		Y	1.49E+03					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Potassium	1610	mg/kg		Y	1.61E+03					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Potassium	1580	mg/kg		Y	1.58E+03					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Potassium	1370	mg/kg		Y	1.37E+03					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Potassium	1440	mg/kg		Y	1.44E+03					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Potassium	1470	mg/kg		Y	1.47E+03					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Potassium	1380	mg/kg		Y	1.38E+03					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Silver	0.164	mg/kg	J	Y	1.64E-01	n	3.91E+02	3.9E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Silver	0.287	mg/kg	J	Y	2.87E-01	n	3.91E+02	3.9E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Silver	0.157	mg/kg	J	Y	1.57E-01	n	3.91E+02	3.9E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Silver	0.161	mg/kg	J	Y	1.61E-01	n	3.91E+02	3.9E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Silver	0.303	mg/kg	J	Y	3.03E-01	n	3.91E+02	3.9E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Silver	0.205	mg/kg	J	Y	2.05E-01	n	3.91E+02	3.9E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Silver	0.439	mg/kg	J	Y	4.39E-01	n	3.91E+02	3.9E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Sodium	105	mg/kg		Y	1.05E+02					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Sodium	81.4	mg/kg		Y	8.14E+01					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Sodium	70.7	mg/kg		Y	7.07E+01					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Sodium	70	mg/kg		Y	7.00E+01					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Sodium	66.3	mg/kg		Y	6.63E+01					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Sodium	50	mg/kg		Y	5.00E+01					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Sodium	54.7	mg/kg		Y	5.47E+01					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Vanadium	15.8	mg/kg		Y	1.58E+01	n	3.91E+02	3.9E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Vanadium	14.7	mg/kg		Y	1.47E+01	n	3.91E+02	3.9E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Vanadium	15.1	mg/kg		Y	1.51E+01	n	3.91E+02	3.9E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Vanadium	16.9	mg/kg		Y	1.69E+01	n	3.91E+02	3.9E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Vanadium	15.2	mg/kg		Y	1.52E+01	n	3.91E+02	3.9E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Vanadium	19.9	mg/kg		Y	1.99E+01	n	3.91E+02	3.9E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Vanadium	22.2	mg/kg		Y	2.22E+01	n	3.91E+02	3.9E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6010B	Zinc	29.5	mg/kg		Y	2.95E+01	n	2.35E+04	2.3E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6010B	Zinc	39.8	mg/kg		Y	3.98E+01	n	2.35E+04	2.3E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6010B	Zinc	33.3	mg/kg		Y	3.33E+01	n	2.35E+04	2.3E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6010B	Zinc	32.8	mg/kg		Y	3.28E+01	n	2.35E+04	2.3E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6010B	Zinc	36.6	mg/kg		Y	3.66E+01	n	2.35E+04	2.3E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6010B	Zinc	30.5	mg/kg		Y	3.05E+01	n	2.35E+04	2.3E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6010B	Zinc	30.7	mg/kg		Y	3.07E+01	n	2.35E+04	2.3E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6020	Arsenic	1.7	mg/kg		Y	1.70E+00	c	3.90E+00	3.9E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6020	Arsenic	2.19	mg/kg		Y	2.19E+00	c	3.90E+00	3.9E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6020	Arsenic	1.79	mg/kg		Y	1.79E+00	c	3.90E+00	3.9E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6020	Arsenic	1.78	mg/kg		Y	1.78E+00	c	3.90E+00	3.9E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6020	Arsenic	2.09	mg/kg		Y	2.09E+00	c	3.90E+00	3.9E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6020	Arsenic	1.93	mg/kg		Y	1.93E+00	c	3.90E+00	3.9E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6020	Arsenic	2.15	mg/kg		Y	2.15E+00	c	3.90E+00	3.9E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6020	Beryllium	0.635	mg/kg		Y	6.35E-01	n	1.56E+02	1.6E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6020	Beryllium	0.715	mg/kg		Y	7.15E-01	n	1.56E+02	1.6E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6020	Beryllium	0.639	mg/kg		Y	6.39E-01	n	1.56E+02	1.6E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6020	Beryllium	0.649	mg/kg		Y	6.49E-01	n	1.56E+02	1.6E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6020	Beryllium	0.718	mg/kg		Y	7.18E-01	n	1.56E+02	1.6E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6020	Beryllium	0.711	mg/kg		Y	7.11E-01	n	1.56E+02	1.6E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6020	Beryllium	0.773	mg/kg		Y	7.73E-01	n	1.56E+02	1.6E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6020	Nickel	5.46	mg/kg		Y	5.46E+00	n	1.56E+03	1.5E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6020	Nickel	5.75	mg/kg		Y	5.75E+00	n	1.56E+03	1.5E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6020	Nickel	5.26	mg/kg		Y	5.26E+00	n	1.56E+03	1.5E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6020	Nickel	5.51	mg/kg		Y	5.51E+00	n	1.56E+03	1.5E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6020	Nickel	6.23	mg/kg		Y	6.23E+00	n	1.56E+03	1.5E+03		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6020	Nickel	6.01	mg/kg		Y	6.01E+00	n	1.56E+03	1.5E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6020	Nickel	6.29	mg/kg		Y	6.29E+00	n	1.56E+03	1.5E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6020	Selenium	0.987	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6020	Selenium	0.962	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6020	Selenium	0.985	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6020	Selenium	1	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6020	Selenium	1.01	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6020	Selenium	0.961	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6020	Selenium	0.998	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6020	Thallium	0.266	mg/kg	J	Y	2.66E-01	n	7.82E-01	7.8E-01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6020	Thallium	0.287	mg/kg	J	Y	2.87E-01	n	7.82E-01	7.8E-01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6020	Thallium	0.248	mg/kg	J	Y	2.48E-01	n	7.82E-01	7.8E-01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6020	Thallium	0.202	mg/kg	J	Y	2.02E-01	n	7.82E-01	7.8E-01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6020	Thallium	0.234	mg/kg	J	Y	2.34E-01	n	7.82E-01	7.8E-01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6020	Thallium	0.184	mg/kg	J	Y	1.84E-01	n	7.82E-01	7.8E-01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6020	Thallium	0.183	mg/kg	J	Y	1.83E-01	n	7.82E-01	7.8E-01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:6850	Perchlorate	0.00202	mg/kg	U	N	0.00E+00	n	5.48E+01	5.5E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:6850	Perchlorate	0.000517	mg/kg	J	Y	5.17E-04	n	5.48E+01	5.5E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:6850	Perchlorate	0.00202	mg/kg	U	N	0.00E+00	n	5.48E+01	5.5E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:6850	Perchlorate	0.00202	mg/kg	U	N	0.00E+00	n	5.48E+01	5.5E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:6850	Perchlorate	0.00201	mg/kg	U	N	0.00E+00	n	5.48E+01	5.5E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:6850	Perchlorate	0.00069	mg/kg	J	Y	6.90E-04	n	5.48E+01	5.5E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:6850	Perchlorate	0.00202	mg/kg	U	N	0.00E+00	n	5.48E+01	5.5E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:7471A	Mercury	0.0089	mg/kg	J	Y	8.90E-03	n	1.56E+01	1.0E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:7471A	Mercury	0.0179	mg/kg		Y	1.79E-02	n	1.56E+01	1.0E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:7471A	Mercury	0.00966	mg/kg	J	Y	9.66E-03	n	1.56E+01	1.0E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:7471A	Mercury	0.0103	mg/kg	J	Y	1.03E-02	n	1.56E+01	1.0E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:7471A	Mercury	0.0147	mg/kg		Y	1.47E-02	n	1.56E+01	1.0E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:7471A	Mercury	0.0112	mg/kg	J	Y	1.12E-02	n	1.56E+01	1.0E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:7471A	Mercury	0.0119	mg/kg		Y	1.19E-02	n	1.56E+01	1.0E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Acenaphthene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Acenaphthene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Acenaphthene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Acenaphthene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Acenaphthene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Acenaphthene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Acenaphthene	0.0336	mg/kg	U	N	0.00E+00	n				
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Acenaphthylene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Acenaphthylene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Acenaphthylene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Acenaphthylene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Acenaphthylene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Acenaphthylene	0.0335	mg/kg	U	N	0.00E+00	n				
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Acenaphthylene	0.0336	mg/kg	U	N	0.00E+00	n				
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Aniline	0.335	mg/kg	U	N	0.00E+00	c		8.5E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Aniline	0.335	mg/kg	U	N	0.00E+00	c		8.5E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Aniline	0.335	mg/kg	U	N	0.00E+00	c		8.5E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Aniline	0.335	mg/kg	U	N	0.00E+00	c		8.5E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Aniline	0.335	mg/kg	U	N	0.00E+00	c		8.5E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Aniline	0.335	mg/kg	U	N	0.00E+00	c		8.5E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Aniline	0.336	mg/kg	U	N	0.00E+00	c		8.5E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Anthracene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Anthracene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Anthracene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Anthracene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Anthracene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Anthracene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Anthracene	0.0336	mg/kg	U	N	0.00E+00	n	1.72E+04	1.7E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Azobenzene	0.335	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Azobenzene	0.335	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Azobenzene	0.335	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Azobenzene	0.335	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Azobenzene	0.335	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Azobenzene	0.335	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Azobenzene	0.336	mg/kg	U	N	0.00E+00	c		5.1E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(a)anthracene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(a)pyrene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(b)fluoranthene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0335	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0335	mg/kg	U	N	0.00E+00					

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(g,h,i)perylene	0.0336	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzo(k)fluoranthene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E+01	1.5E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzoic Acid	0.67	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzoic Acid	0.671	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzoic Acid	0.67	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzoic Acid	0.669	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzoic Acid	0.67	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzoic Acid	0.671	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzoic Acid	0.672	mg/kg	U	N	0.00E+00	n		2.4E+05		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Benzyl Alcohol	0.336	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.335	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.335	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.335	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.335	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.335	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.335	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-chloroethoxy)methane	0.336	mg/kg	U	N	0.00E+00	n		1.8E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.335	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.335	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.335	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.335	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.335	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.335	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-chloroethyl)ether	0.336	mg/kg	U	N	0.00E+00	c	2.68E+00	2.1E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.335	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.335	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.335	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.335	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.335	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.335	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Bis(2-ethylhexyl)phthalate	0.336	mg/kg	U	N	0.00E+00	c	3.47E+02	3.5E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.335	mg/kg	U	N	0.00E+00					

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Bromophenyl-phenylether[4-]	0.336	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.335	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.335	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.335	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.335	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.335	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.335	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Butylbenzylphthalate	0.336	mg/kg	U	N	0.00E+00	c		2.6E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Chloro-3-methylphenol[4-]	0.336	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Chloroaniline[4-]	0.336	mg/kg	U	N	0.00E+00	c		2.4E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Chloronaphthalene[2-]	0.0336	mg/kg	U	N	0.00E+00	n	6.26E+03	6.3E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.335	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.335	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.335	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.335	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.335	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.335	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Chlorophenol[2-]	0.336	mg/kg	U	N	0.00E+00	n	3.91E+02	3.9E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Chlorophenyl-phenyl[4-] Ether	0.336	mg/kg	U	N	0.00E+00					

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Chrysene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Chrysene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Chrysene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Chrysene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Chrysene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Chrysene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Chrysene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E+02	1.5E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dibenz(a,h)anthracene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E-01	1.5E-01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dibenzofuran	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dibenzofuran	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dibenzofuran	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dibenzofuran	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dibenzofuran	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dibenzofuran	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dibenzofuran	0.336	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.335	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.335	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.335	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.335	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.335	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.335	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,2-]	0.336	mg/kg	U	N	0.00E+00	n	2.31E+03	1.9E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,3-]	0.336	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.335	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.335	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.335	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.335	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.335	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.335	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzene[1,4-]	0.336	mg/kg	U	N	0.00E+00	c	3.17E+01	2.4E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.335	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.335	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.335	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.335	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.335	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.335	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorobenzidine[3,3'-]	0.336	mg/kg	U	N	0.00E+00	c	1.08E+01	1.1E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dichlorophenol[2,4-]	0.336	mg/kg	U	N	0.00E+00	n	1.83E+02	1.8E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Diethylphthalate	0.335	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Diethylphthalate	0.335	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Diethylphthalate	0.335	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Diethylphthalate	0.335	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Diethylphthalate	0.335	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Diethylphthalate	0.335	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Diethylphthalate	0.336	mg/kg	U	N	0.00E+00	n	4.89E+04	4.9E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dimethyl Phthalate	0.336	mg/kg	U	N	0.00E+00	n	6.11E+05			
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.335	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dimethylphenol[2,4-]	0.336	mg/kg	U	N	0.00E+00	n	1.22E+03	1.2E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Di-n-butylphthalate	0.336	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.335	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.335	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.335	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.335	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.335	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.335	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dinitro-2-methylphenol[4,6-]	0.336	mg/kg	U	N	0.00E+00	n	4.89E+00	4.9E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.67	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.671	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.67	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.669	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.67	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.671	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dinitrophenol[2,4-]	0.672	mg/kg	U	N	0.00E+00	n	1.22E+02	1.2E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.335	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.335	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.335	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.335	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.335	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.335	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dinitrotoluene[2,4-]	0.336	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Dinitrotoluene[2,6-]	0.336	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.335	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.335	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.335	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.335	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.335	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.335	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Di-n-octylphthalate	0.336	mg/kg	U	N	0.00E+00	n		7.3E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Diphenylamine	0.335	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Diphenylamine	0.335	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Diphenylamine	0.335	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Diphenylamine	0.335	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Diphenylamine	0.335	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Diphenylamine	0.335	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Diphenylamine	0.336	mg/kg	U	N	0.00E+00	n		1.5E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Fluoranthene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Fluoranthene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Fluoranthene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Fluoranthene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Fluoranthene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Fluoranthene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Fluoranthene	0.0336	mg/kg	U	N	0.00E+00	n	2.29E+03	2.3E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Fluorene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Fluorene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Fluorene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Fluorene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Fluorene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Fluorene	0.0335	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Fluorene	0.0336	mg/kg	U	N	0.00E+00	n	2.29E+03	4.7E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.335	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.335	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.335	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.335	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.335	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.335	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorobenzene	0.336	mg/kg	U	N	0.00E+00	c	3.04E+00	3.0E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorobutadiene	0.336	mg/kg	U	N	0.00E+00	n/c	6.11E+01	6.2E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.335	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.335	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.335	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.335	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.335	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.335	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Hexachlorocyclopentadiene	0.336	mg/kg	U	N	0.00E+00	n	3.67E+02	3.7E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Hexachloroethane	0.335	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Hexachloroethane	0.335	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Hexachloroethane	0.335	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Hexachloroethane	0.335	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Hexachloroethane	0.335	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Hexachloroethane	0.335	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Hexachloroethane	0.336	mg/kg	U	N	0.00E+00	n/c	4.28E+01	1.2E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0335	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Indeno(1,2,3-cd)pyrene	0.0336	mg/kg	U	N	0.00E+00	c	1.48E+00	1.5E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Isophorone	0.335	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Isophorone	0.335	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Isophorone	0.335	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Isophorone	0.335	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Isophorone	0.335	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Isophorone	0.335	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Isophorone	0.336	mg/kg	U	N	0.00E+00	c	5.12E+03	5.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n		2.3E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0131	mg/kg	J	Y	1.31E-02	n		2.3E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n		2.3E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n		2.3E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n		2.3E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0335	mg/kg	U	N	0.00E+00	n		2.3E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Methylnaphthalene[2-]	0.0336	mg/kg	U	N	0.00E+00	n		2.3E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.335	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.335	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.335	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.335	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.335	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.335	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Methylphenol[2-]	0.336	mg/kg	U	N	0.00E+00	n		3.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Methylphenol[4-]	0.336	mg/kg	U	N	0.00E+00	n		6.1E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Naphthalene	0.0335	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Naphthalene	0.0335	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Naphthalene	0.0335	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Naphthalene	0.0335	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Naphthalene	0.0335	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Naphthalene	0.0335	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Naphthalene	0.0336	mg/kg	U	N	0.00E+00	c	4.30E+01	3.6E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.335	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[2-]	0.336	mg/kg	U	N	0.00E+00	n		6.1E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[3-]	0.336	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.335	mg/kg	U	N	0.00E+00	c		2.4E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitroaniline[4-]	0.336	mg/kg	U	N	0.00E+00	c		2.4E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitrobenzene	0.335	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitrobenzene	0.335	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitrobenzene	0.335	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitrobenzene	0.335	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitrobenzene	0.335	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitrobenzene	0.335	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitrobenzene	0.336	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitrophenol[2-]	0.336	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.335	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitrophenol[4-]	0.336	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitrosodimethylamine[N-]	0.336	mg/kg	U	N	0.00E+00	c	2.26E-02	2.3E-02	YES	YES
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.335	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Nitroso-di-n-propylamine[N-]	0.336	mg/kg	U	N	0.00E+00	c		6.9E-01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.335	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.335	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.335	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.335	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.335	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.335	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Oxybis(1-chloropropane)[2,2'-]	0.336	mg/kg	U	N	0.00E+00	c		4.6E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Pentachlorophenol	0.335	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Pentachlorophenol	0.335	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Pentachlorophenol	0.335	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		

Summary of Analytical Results for Soil Samples Collected in 2013 at TA-16-388 and TA-16-399 (Inorganic and Organic)

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Pentachlorophenol	0.335	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Pentachlorophenol	0.335	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Pentachlorophenol	0.335	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Pentachlorophenol	0.336	mg/kg	U	N	0.00E+00	c	8.94E+00	8.9E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Phenanthrene	0.0335	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Phenanthrene	0.0335	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Phenanthrene	0.0335	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Phenanthrene	0.0335	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Phenanthrene	0.0335	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Phenanthrene	0.0335	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Phenanthrene	0.0336	mg/kg	U	N	0.00E+00	n	1.83E+03			
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Phenol	0.335	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Phenol	0.335	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Phenol	0.335	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Phenol	0.335	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Phenol	0.335	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Phenol	0.335	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Phenol	0.336	mg/kg	U	N	0.00E+00	n	1.83E+04	1.8E+04		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Pyrene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Pyrene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Pyrene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Pyrene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Pyrene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Pyrene	0.0335	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Pyrene	0.0336	mg/kg	U	N	0.00E+00	n	1.72E+03	1.7E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Pyridine	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Pyridine	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Pyridine	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Pyridine	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Pyridine	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Pyridine	0.335	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Pyridine	0.336	mg/kg	U	N	0.00E+00	n		7.8E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.335	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.335	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.335	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.335	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.335	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.335	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Trichlorobenzene[1,2,4-]	0.336	mg/kg	U	N	0.00E+00	n/c	7.30E+01	2.2E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.335	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,5-]	0.336	mg/kg	U	N	0.00E+00	n	6.11E+03	6.1E+03		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.335	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8270C	Trichlorophenol[2,4,6-]	0.336	mg/kg	U	N	0.00E+00	n/c	6.11E+01	4.4E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	2,4-Diamino-6-nitrotoluene	2	mg/kg	UQ	N	2.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	2,6-Diamino-4-nitrotoluene	2	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	3,5-Dinitroaniline	1	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Amino-2,6-dinitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Amino-4,6-dinitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	n		1.5E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrobenzene[1,3-]	0.5	mg/kg	U	N	0.00E+00	n		6.1E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,4-]	0.5	mg/kg	U	N	0.00E+00	c	1.57E+01	1.6E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Dinitrotoluene[2,6-]	0.5	mg/kg	U	N	0.00E+00	n	6.11E+01	6.1E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	HMX	0.5	mg/kg	U	N	0.00E+00	n	3.91E+03	3.8E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrobenzene	0.5	mg/kg	U	N	0.00E+00	c	5.35E+01	4.8E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[2-]	0.5	mg/kg	U	N	0.00E+00	c	2.91E+01	2.9E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[3-]	0.5	mg/kg	U	N	0.00E+00	n	7.82E+00	6.1E+00		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Nitrotoluene[4-]	0.5	mg/kg	U	N	0.00E+00	n/c	2.44E+02	3.0E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	PETN	1	mg/kg	U	N	0.00E+00	c		1.2E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	RDX	0.5	mg/kg	U	N	0.00E+00	n/c	5.82E+01	5.6E+01		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	TATB	1	mg/kg	U	N	0.00E+00					
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Tetryl	0.5	mg/kg	U	N	0.00E+00	n	2.44E+02	2.4E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Trinitrobenzene[1,3,5-]	0.5	mg/kg	U	N	0.00E+00	n		2.2E+03		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		

Field Sample ID	Location ID	Lat	Long	Sample Date (Start)	Analytical Method	Parameter Name	Report Result	Report Units	Lab Qualifier	Detect Flag	Actual Concentration (mg/Kg)	Endpoint	Residential NMED SSL (mg/kg)	Residential EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Trinitrotoluene[2,4,6-]	0.5	mg/kg	U	N	0.00E+00	n/c	3.91E+01	1.9E+02		
WST16-13-29794	WST-RCRA	35.84768333	-106.3318	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					
WST16-13-29795	WST-RCRA	35.84768333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					
WST16-13-29796	WST-RCRA	35.84766667	-106.3318667	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					
WST16-13-29797	WST-RCRA	35.84765	-106.3318833	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					
WST16-13-29798	WST-RCRA	35.84766667	-106.3319	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					
WST16-13-29799	WST-RCRA	35.84755	-106.3318667	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					
WST16-13-29800	WST-RCRA	35.84748333	-106.3318833	3/27/2013	SW-846:8321A_MOD	Tris (o-cresyl) phosphate	1	mg/kg	U	N	0.00E+00					

J Value is estimated
N Metals-The Matrix spike sample recovery is not within specified control limits
U Compound analyzed for, but not detected; reported value equals the CRQL
NQ No qualification
n Noncarcinogenic endpoint
c Carcinogenic endpoint
n/c SSL endpoint noncarcinogenic; EPA endpoint carcinogenic

Summary of Analytical Results for Soil Samples Collected in 2013 at TA-16-388 and TA-16-399 (Dioxins/Furans)

Field Sample ID	Sample Date (Start)	Parameter Name	Report Result (mg/Kg)	Lab Qualifier	Detected Concentration (mg/Kg)	TEF	TEQ	Total TEC's (mg/Kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29794	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	9.21E-05		9.21E-05	1.00E-02	9.21E-07					
WST16-13-29794	3/27/2013	Heptachlorodibenzodioxins (Total)	0.000162		1.62E-04	0	0.00E+00					
WST16-13-29794	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	3.96E-05		3.96E-05	1.00E-02	3.96E-07					
WST16-13-29794	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.97E-06	J	1.97E-06	1.00E-02	1.97E-08					
WST16-13-29794	3/27/2013	Heptachlorodibenzofurans (Total)	7.24E-05		7.24E-05	0	0.00E+00					
WST16-13-29794	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	2.45E-06	J	2.45E-06	1.00E-01	2.45E-07					
WST16-13-29794	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.76E-06	J	4.76E-06	1.00E-01	4.76E-07					
WST16-13-29794	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.94E-06		5.94E-06	1.00E-01	5.94E-07					
WST16-13-29794	3/27/2013	Hexachlorodibenzodioxins (Total)	4.27E-05		4.27E-05	0	0.00E+00					
WST16-13-29794	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.15E-06	J	1.15E-06	1.00E-01	1.15E-07					
WST16-13-29794	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.87E-06	J	1.87E-06	1.00E-01	1.87E-07					
WST16-13-29794	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.06E-07	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29794	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	2.21E-06	J	2.21E-06	1.00E-01	2.21E-07	3.98E-06				
WST16-13-29794	3/27/2013	Hexachlorodibenzofurans (Total)	3.90E-05		3.90E-05	0	0.00E+00					
WST16-13-29794	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.000563		5.63E-04	3.00E-04	1.69E-07					
WST16-13-29794	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	6.17E-05		6.17E-05	3.00E-04	1.85E-08					
WST16-13-29794	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	6.20E-07	J	6.20E-07	1	6.20E-07					
WST16-13-29794	3/27/2013	Pentachlorodibenzodioxins (Total)	2.05E-06	J	2.05E-06	0	0.00E+00					
WST16-13-29794	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	5.06E-07	U	0.00E+00	3.00E-02	0.00E+00					
WST16-13-29794	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	5.06E-07	U	0.00E+00	3.00E-01	0.00E+00					
WST16-13-29794	3/27/2013	Pentachlorodibenzofurans (Totals)	7.14E-06		7.14E-06	0	0.00E+00					
WST16-13-29794	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	1.74E-07	U	0.00E+00	1	0.00E+00					
WST16-13-29794	3/27/2013	Tetrachlorodibenzodioxins (Total)	0	U	0.00E+00	0	0.00E+00					
WST16-13-29794	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	2.37E-07	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29794	3/27/2013	Tetrachlorodibenzofurans (Totals)	1.03E-06		1.03E-06	0	0.00E+00		4.50E-05	4.50E-05		
WST16-13-29795	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.00744		7.44E-03	1.00E-02	7.44E-05					
WST16-13-29795	3/27/2013	Heptachlorodibenzodioxins (Total)	0.0121		1.21E-02	0	0.00E+00					
WST16-13-29795	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.00251		2.51E-03	1.00E-02	2.51E-05					
WST16-13-29795	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	0.000149		1.49E-04	1.00E-02	1.49E-06					
WST16-13-29795	3/27/2013	Heptachlorodibenzofurans (Total)	0.00597		5.97E-03	0	0.00E+00					
WST16-13-29795	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	0.000141		1.41E-04	1.00E-01	1.41E-05					
WST16-13-29795	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	0.000302		3.02E-04	1.00E-01	3.02E-05					
WST16-13-29795	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	0.000323		3.23E-04	1.00E-01	3.23E-05					
WST16-13-29795	3/27/2013	Hexachlorodibenzodioxins (Total)	0.00221		2.21E-03	0	0.00E+00					
WST16-13-29795	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	8.96E-05		8.96E-05	1.00E-01	8.96E-06					
WST16-13-29795	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	9.84E-05		9.84E-05	1.00E-01	9.84E-06					
WST16-13-29795	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.12E-05	U	0.00E+00	1.00E-01	0.00E+00					

Summary of Analytical Results for Soil Samples Collected in 2013 at TA-16-388 and TA-16-399 (Dioxins/Furans)

Field Sample ID	Sample Date (Start)	Parameter Name	Report Result (mg/Kg)	Lab Qualifier	Detected Concentration (mg/Kg)	TEF	TEQ	Total TEC's (mg/Kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29795	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	0.000137		1.37E-04	1.00E-01	1.37E-05	2.70E-04				
WST16-13-29795	3/27/2013	Hexachlorodibenzofurans (Total)	0.00247		2.47E-03	0	0.00E+00					
WST16-13-29795	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.0551		5.51E-02	3.00E-04	1.65E-05					
WST16-13-29795	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.00703		7.03E-03	3.00E-04	2.11E-06					
WST16-13-29795	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	3.83E-05	J	3.83E-05	1	3.83E-05					
WST16-13-29795	3/27/2013	Pentachlorodibenzodioxins (Total)	0.000175		1.75E-04	0	0.00E+00					
WST16-13-29795	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	8.02E-06	U	0.00E+00	3.00E-02	0.00E+00					
WST16-13-29795	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	1.05E-05	JK	1.05E-05	3.00E-01	3.15E-06					
WST16-13-29795	3/27/2013	Pentachlorodibenzofurans (Totals)	0.000393		3.93E-04	0	0.00E+00					
WST16-13-29795	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	6.86E-06	U	0.00E+00	1	0.00E+00					
WST16-13-29795	3/27/2013	Tetrachlorodibenzodioxins (Total)	0	U	0.00E+00	0	0.00E+00					
WST16-13-29795	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	6.36E-06	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29795	3/27/2013	Tetrachlorodibenzofurans (Totals)	4.04E-05		4.04E-05	0	0.00E+00		4.50E-05	4.50E-05	YES	YES
WST16-13-29796	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.00111		1.11E-03	1.00E-02	1.11E-05					
WST16-13-29796	3/27/2013	Heptachlorodibenzodioxins (Total)	0.0019		1.90E-03	0	0.00E+00					
WST16-13-29796	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.000411		4.11E-04	1.00E-02	4.11E-06					
WST16-13-29796	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	1.78E-05		1.78E-05	1.00E-02	1.78E-07					
WST16-13-29796	3/27/2013	Heptachlorodibenzofurans (Total)	0.000808		8.08E-04	0	0.00E+00					
WST16-13-29796	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	2.48E-05		2.48E-05	1.00E-01	2.48E-06					
WST16-13-29796	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.18E-05		5.18E-05	1.00E-01	5.18E-06					
WST16-13-29796	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	6.26E-05		6.26E-05	1.00E-01	6.26E-06					
WST16-13-29796	3/27/2013	Hexachlorodibenzodioxins (Total)	0.000464		4.64E-04	0	0.00E+00					
WST16-13-29796	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.27E-05		1.27E-05	1.00E-01	1.27E-06					
WST16-13-29796	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.93E-05		1.93E-05	1.00E-01	1.93E-06					
WST16-13-29796	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.93E-06	J	1.93E-06	1.00E-01	1.93E-07					
WST16-13-29796	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	2.41E-05		2.41E-05	1.00E-01	2.41E-06	4.62E-05				
WST16-13-29796	3/27/2013	Hexachlorodibenzofurans (Total)	0.000425		4.25E-04	0	0.00E+00					
WST16-13-29796	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.0067		6.70E-03	3.00E-04	2.01E-06					
WST16-13-29796	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.00074		7.40E-04	3.00E-04	2.22E-07					
WST16-13-29796	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	7.93E-06		7.93E-06	1	7.93E-06					
WST16-13-29796	3/27/2013	Pentachlorodibenzodioxins (Total)	5.08E-05		5.08E-05	0	0.00E+00					
WST16-13-29796	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	1.18E-06	J	1.18E-06	3.00E-02	3.54E-08					
WST16-13-29796	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	1.81E-06	J	1.81E-06	3.00E-01	5.43E-07					
WST16-13-29796	3/27/2013	Pentachlorodibenzofurans (Totals)	7.96E-05		7.96E-05	0	0.00E+00					
WST16-13-29796	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	3.44E-07	J	3.44E-07	1	3.44E-07					
WST16-13-29796	3/27/2013	Tetrachlorodibenzodioxins (Total)	3.36E-06		3.36E-06	0	0.00E+00					
WST16-13-29796	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	4.47E-07	U	0.00E+00	1.00E-01	0.00E+00					

Field Sample ID	Sample Date (Start)	Parameter Name	Report Result (mg/Kg)	Lab Qualifier	Detected Concentration (mg/Kg)	TEF	TEQ	Total TEC's (mg/Kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29796	3/27/2013	Tetrachlorodibenzofurans (Totals)	8.42E-06		8.42E-06	0	0.00E+00		4.50E-05	4.50E-05	YES	YES
WST16-13-29797	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.00681		6.81E-03	1.00E-02	6.81E-05					
WST16-13-29797	3/27/2013	Heptachlorodibenzodioxins (Total)	0.0108		1.08E-02	0	0.00E+00					
WST16-13-29797	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.00222		2.22E-03	1.00E-02	2.22E-05					
WST16-13-29797	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	0.000144		1.44E-04	1.00E-02	1.44E-06					
WST16-13-29797	3/27/2013	Heptachlorodibenzofurans (Total)	0.00569		5.69E-03	0	0.00E+00					
WST16-13-29797	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	0.000124		1.24E-04	1.00E-01	1.24E-05					
WST16-13-29797	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	0.000274		2.74E-04	1.00E-01	2.74E-05					
WST16-13-29797	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	0.000282		2.82E-04	1.00E-01	2.82E-05					
WST16-13-29797	3/27/2013	Hexachlorodibenzodioxins (Total)	0.00186		1.86E-03	0	0.00E+00					
WST16-13-29797	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	7.31E-05		7.31E-05	1.00E-01	7.31E-06					
WST16-13-29797	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	8.49E-05		8.49E-05	1.00E-01	8.49E-06					
WST16-13-29797	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.28E-05	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29797	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	0.00011		1.10E-04	1.00E-01	1.10E-05	1.70E-04				
WST16-13-29797	3/27/2013	Hexachlorodibenzofurans (Total)	0.00217		2.17E-03	0	0.00E+00					
WST16-13-29797	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.0506		5.06E-02	3.00E-04	1.52E-05					
WST16-13-29797	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.00763		7.63E-03	3.00E-04	2.29E-06					
WST16-13-29797	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	3.22E-05	J	3.22E-05	1	3.22E-05					
WST16-13-29797	3/27/2013	Pentachlorodibenzodioxins (Total)	0.000133		1.33E-04	0	0.00E+00					
WST16-13-29797	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	4.57E-06	U	0.00E+00	3.00E-02	0.00E+00					
WST16-13-29797	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	7.67E-06	J	7.67E-06	3.00E-01	2.30E-06					
WST16-13-29797	3/27/2013	Pentachlorodibenzofurans (Totals)	0.00033		3.30E-04	0	0.00E+00					
WST16-13-29797	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	5.65E-06	U	0.00E+00	1	0.00E+00					
WST16-13-29797	3/27/2013	Tetrachlorodibenzodioxins (Total)	0	U	0.00E+00	0	0.00E+00					
WST16-13-29797	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	5.73E-06	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29797	3/27/2013	Tetrachlorodibenzofurans (Totals)	3.18E-05		3.18E-05	0	0.00E+00		4.50E-05	4.50E-05	YES	YES
WST16-13-29798	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.000964		9.64E-04	1.00E-02	9.64E-06					
WST16-13-29798	3/27/2013	Heptachlorodibenzodioxins (Total)	0.00163		1.63E-03	0	0.00E+00					
WST16-13-29798	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.000337		3.37E-04	1.00E-02	3.37E-06					
WST16-13-29798	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	2.01E-05		2.01E-05	1.00E-02	2.01E-07					
WST16-13-29798	3/27/2013	Heptachlorodibenzofurans (Total)	0.000746		7.46E-04	0	0.00E+00					
WST16-13-29798	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	1.89E-05		1.89E-05	1.00E-01	1.89E-06					
WST16-13-29798	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	4.40E-05		4.40E-05	1.00E-01	4.40E-06					
WST16-13-29798	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	5.09E-05		5.09E-05	1.00E-01	5.09E-06					
WST16-13-29798	3/27/2013	Hexachlorodibenzodioxins (Total)	0.00022		2.20E-04	0	0.00E+00					
WST16-13-29798	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.18E-05		1.18E-05	1.00E-01	1.18E-06					
WST16-13-29798	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	1.47E-05		1.47E-05	1.00E-01	1.47E-06					

Summary of Analytical Results for Soil Samples Collected in 2013 at TA-16-388 and TA-16-399 (Dioxins/Furans)

Field Sample ID	Sample Date (Start)	Parameter Name	Report Result (mg/Kg)	Lab Qualifier	Detected Concentration (mg/Kg)	TEF	TEQ	Total TEC's (mg/Kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29798	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	1.87E-06	J	1.87E-06	1.00E-01	1.87E-07					
WST16-13-29798	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	1.84E-05		1.84E-05	1.00E-01	1.84E-06	3.80E-05				
WST16-13-29798	3/27/2013	Hexachlorodibenzofurans (Total)	0.000326		3.26E-04	0	0.00E+00					
WST16-13-29798	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.00665		6.65E-03	3.00E-04	2.00E-06					
WST16-13-29798	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.00084		8.40E-04	3.00E-04	2.52E-07					
WST16-13-29798	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.83E-06		5.83E-06	1	5.83E-06					
WST16-13-29798	3/27/2013	Pentachlorodibenzodioxins (Total)	3.73E-05		3.73E-05	0	0.00E+00					
WST16-13-29798	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	8.73E-07	J	8.73E-07	3.00E-01	2.62E-07					
WST16-13-29798	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	1.42E-06	J	1.42E-06	3.00E-01	4.26E-07					
WST16-13-29798	3/27/2013	Pentachlorodibenzofurans (Totals)	5.72E-05		5.72E-05	0	0.00E+00					
WST16-13-29798	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	4.02E-07	U	0.00E+00	1	0.00E+00					
WST16-13-29798	3/27/2013	Tetrachlorodibenzodioxins (Total)	1.82E-06		1.82E-06	0	0.00E+00					
WST16-13-29798	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	5.30E-07	U	0.00E+00	1.00E-02	0.00E+00					
WST16-13-29798	3/27/2013	Tetrachlorodibenzofurans (Totals)	1.08E-05		1.08E-05	0	0.00E+00		4.50E-05	4.50E-05		
WST16-13-29799	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.000131		1.31E-04	1.00E-02	1.31E-06					
WST16-13-29799	3/27/2013	Heptachlorodibenzodioxins (Total)	0.000226		2.26E-04	0	0.00E+00					
WST16-13-29799	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	4.88E-05		4.88E-05	1.00E-02	4.88E-07					
WST16-13-29799	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	2.87E-06	J	2.87E-06	1.00E-02	2.87E-08					
WST16-13-29799	3/27/2013	Heptachlorodibenzofurans (Total)	0.000102		1.02E-04	0	0.00E+00					
WST16-13-29799	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	2.50E-06	J	2.50E-06	1.00E-01	2.50E-07					
WST16-13-29799	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	5.87E-06		5.87E-06	1.00E-01	5.87E-07					
WST16-13-29799	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	6.66E-06		6.66E-06	1.00E-01	6.66E-07					
WST16-13-29799	3/27/2013	Hexachlorodibenzodioxins (Total)	5.08E-05		5.08E-05	0	0.00E+00					
WST16-13-29799	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	1.89E-06	JK	1.89E-06	1.00E-01	1.89E-07					
WST16-13-29799	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	2.64E-06	J	2.64E-06	1.00E-01	2.64E-07					
WST16-13-29799	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.59E-07	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29799	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	2.63E-06	J	2.63E-06	1.00E-01	2.63E-07	5.53E-06				
WST16-13-29799	3/27/2013	Hexachlorodibenzofurans (Total)	4.56E-05		4.56E-05	0	0.00E+00					
WST16-13-29799	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.000893		8.93E-04	3.00E-04	2.68E-07					
WST16-13-29799	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.000106		1.06E-04	3.00E-04	3.18E-08					
WST16-13-29799	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	9.08E-07	J	9.08E-07	1	9.08E-07					
WST16-13-29799	3/27/2013	Pentachlorodibenzodioxins (Total)	3.51E-06	J	3.51E-06	0	0.00E+00					
WST16-13-29799	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	4.98E-07	U	0.00E+00	3.00E-02	0.00E+00					
WST16-13-29799	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	4.98E-07	U	0.00E+00	3.00E-01	0.00E+00					
WST16-13-29799	3/27/2013	Pentachlorodibenzofurans (Totals)	9.26E-06		9.26E-06	0	0.00E+00					
WST16-13-29799	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	2.77E-07	J	2.77E-07	1	2.77E-07					
WST16-13-29799	3/27/2013	Tetrachlorodibenzodioxins (Total)	5.63E-07	J	5.63E-07	0	0.00E+00					

Field Sample ID	Sample Date (Start)	Parameter Name	Report Result (mg/Kg)	Lab Qualifier	Detected Concentration (mg/Kg)	TEF	TEQ	Total TEC's (mg/Kg)	HH NMED Residential SSL (mg/kg)	EPA RSL (mg/kg)	Above NMED SSL?	Above EPA RSL?
WST16-13-29799	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	3.11E-07	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29799	3/27/2013	Tetrachlorodibenzofurans (Totals)	1.18E-06		1.18E-06	0	0.00E+00		4.50E-05	4.50E-05		
WST16-13-29800	3/27/2013	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	4.40E-05		4.40E-05	1.00E-02	4.40E-07					
WST16-13-29800	3/27/2013	Heptachlorodibenzodioxins (Total)	8.11E-05		8.11E-05	0	0.00E+00					
WST16-13-29800	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	1.53E-05		1.53E-05	1.00E-02	1.53E-07					
WST16-13-29800	3/27/2013	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	5.47E-07	U	0.00E+00	1.00E-02	0.00E+00					
WST16-13-29800	3/27/2013	Heptachlorodibenzofurans (Total)	3.20E-05		3.20E-05	0	0.00E+00					
WST16-13-29800	3/27/2013	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	6.69E-07	J	6.69E-07	1.00E-01	6.69E-08					
WST16-13-29800	3/27/2013	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	2.14E-06	J	2.14E-06	1.00E-01	2.14E-07					
WST16-13-29800	3/27/2013	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	2.30E-06	J	2.30E-06	1.00E-01	2.30E-07					
WST16-13-29800	3/27/2013	Hexachlorodibenzodioxins (Total)	1.73E-05		1.73E-05	0	0.00E+00					
WST16-13-29800	3/27/2013	Hexachlorodibenzofuran[1,2,3,4,7,8-]	5.41E-07	J	5.41E-07	1.00E-01	5.41E-08					
WST16-13-29800	3/27/2013	Hexachlorodibenzofuran[1,2,3,6,7,8-]	6.22E-07	J	6.22E-07	1.00E-01	6.22E-08					
WST16-13-29800	3/27/2013	Hexachlorodibenzofuran[1,2,3,7,8,9-]	5.05E-07	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29800	3/27/2013	Hexachlorodibenzofuran[2,3,4,6,7,8-]	7.01E-07	J	7.01E-07	1.00E-01	7.01E-08	1.40E-06				
WST16-13-29800	3/27/2013	Hexachlorodibenzofurans (Total)	1.13E-05		1.13E-05	0	0.00E+00					
WST16-13-29800	3/27/2013	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.000326		3.26E-04	3.00E-04	9.78E-08					
WST16-13-29800	3/27/2013	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	4.05E-05		4.05E-05	3.00E-04	1.22E-08					
WST16-13-29800	3/27/2013	Pentachlorodibenzodioxin[1,2,3,7,8-]	5.05E-07	U	0.00E+00	1	0.00E+00					
WST16-13-29800	3/27/2013	Pentachlorodibenzodioxins (Total)	5.78E-07	J	5.78E-07	0	0.00E+00					
WST16-13-29800	3/27/2013	Pentachlorodibenzofuran[1,2,3,7,8-]	5.05E-07	U	0.00E+00	3.00E-02	0.00E+00					
WST16-13-29800	3/27/2013	Pentachlorodibenzofuran[2,3,4,7,8-]	5.05E-07	U	0.00E+00	3.00E-01	0.00E+00					
WST16-13-29800	3/27/2013	Pentachlorodibenzofurans (Totals)	2.34E-06	J	2.34E-06	0	0.00E+00					
WST16-13-29800	3/27/2013	Tetrachlorodibenzodioxin[2,3,7,8-]	2.06E-07	U	0.00E+00	1	0.00E+00					
WST16-13-29800	3/27/2013	Tetrachlorodibenzodioxins (Total)	0	U	0.00E+00	0	0.00E+00					
WST16-13-29800	3/27/2013	Tetrachlorodibenzofuran[2,3,7,8-]	2.85E-07	U	0.00E+00	1.00E-01	0.00E+00					
WST16-13-29800	3/27/2013	Tetrachlorodibenzofurans (Totals)	0	U	0.00E+00	0	0.00E+00		4.50E-05	4.50E-05		

Attachment G

Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations for Los Alamos National Laboratory

LA-UR-13-24178

Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations at Los Alamos National Laboratory

Operated by:

Los Alamos National Security, LLC

Los Alamos National Laboratory

Los Alamos, New Mexico 87544

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
OD	open burn
REL	Reference Exposure Levels
RSL	Regional Screening Level
SR	State Road
SSL	Soil Screening Levels
TA	Technical Area
TSP	total suspended particulates

[This page has been left intentionally blank.]

1.0 INTRODUCTION

This report describes the air modeling analysis and risk evaluation for open burning (OB) operations conducted at Technical Area (TA)-16 located at Los Alamos National Laboratory (LANL). The purpose of this air modeling exercise is to develop reasonable, yet conservative estimates, of air quality impacts from current and future OB 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 Los Alamos National Security, LLC (LANS). The location of the OB 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 OB treatment of detonable quantities of explosives waste and explosives-contaminated wastes.

The unit coonsists 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 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 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; decommissioning and demolition activities; and corrective action 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 OB at LANL. Up to 95% of the wastes treated by OB 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 OB. The other three waste streams 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 OB units at the TA-16 Burn Ground rather than the single unit (TA-16-388 Flash Pad) that the DOE/LANS 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 conducted treatment operations for a full hour and could have operated continuously from 8 AM to 5 PM over an entire year in order to ensure the maximum hourly annual air concentration was captured. This is not the case for the TA-16-388 Flash Pad. 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. Additionally, the average number of actual treatment events per year is approximately 38 burns per year. If the unit operated continuously from 8 AM to 5 PM every weekday, 38 burns that took one hour each would calculate to less than one week's worth of open burning.

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.

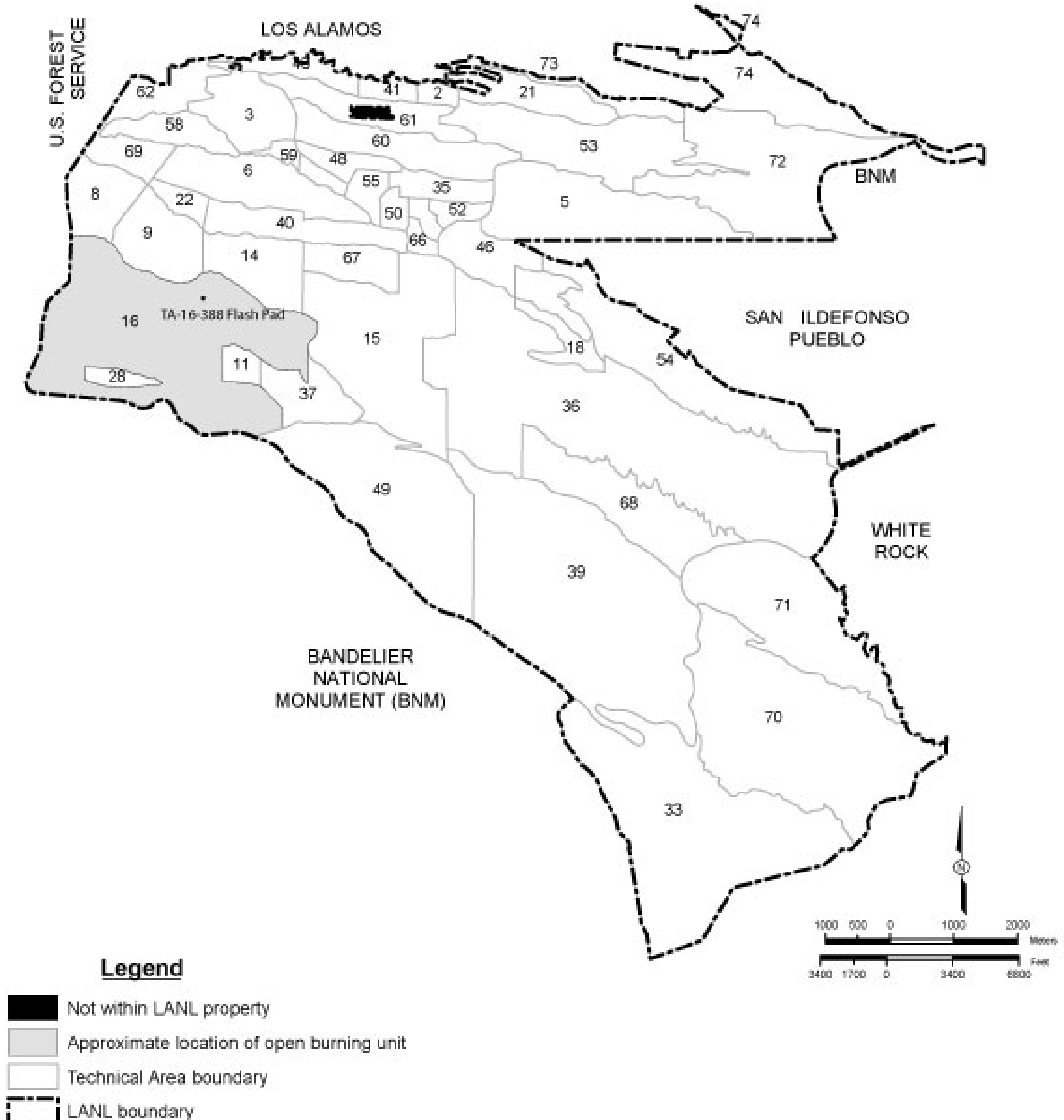


Figure 1-1

Location Map of Open Burning 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 OB 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 EPA has approved the use of OBODM for modeling open burn/open detonation operations. Previously, 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 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 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 (Bjorkland, 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 (Bjorkland, 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 OB 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 (EPA AP-42 – Appendix A). 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 OB 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 a distance of approximately 1.5 miles. 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.

OB 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 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 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. 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.

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 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

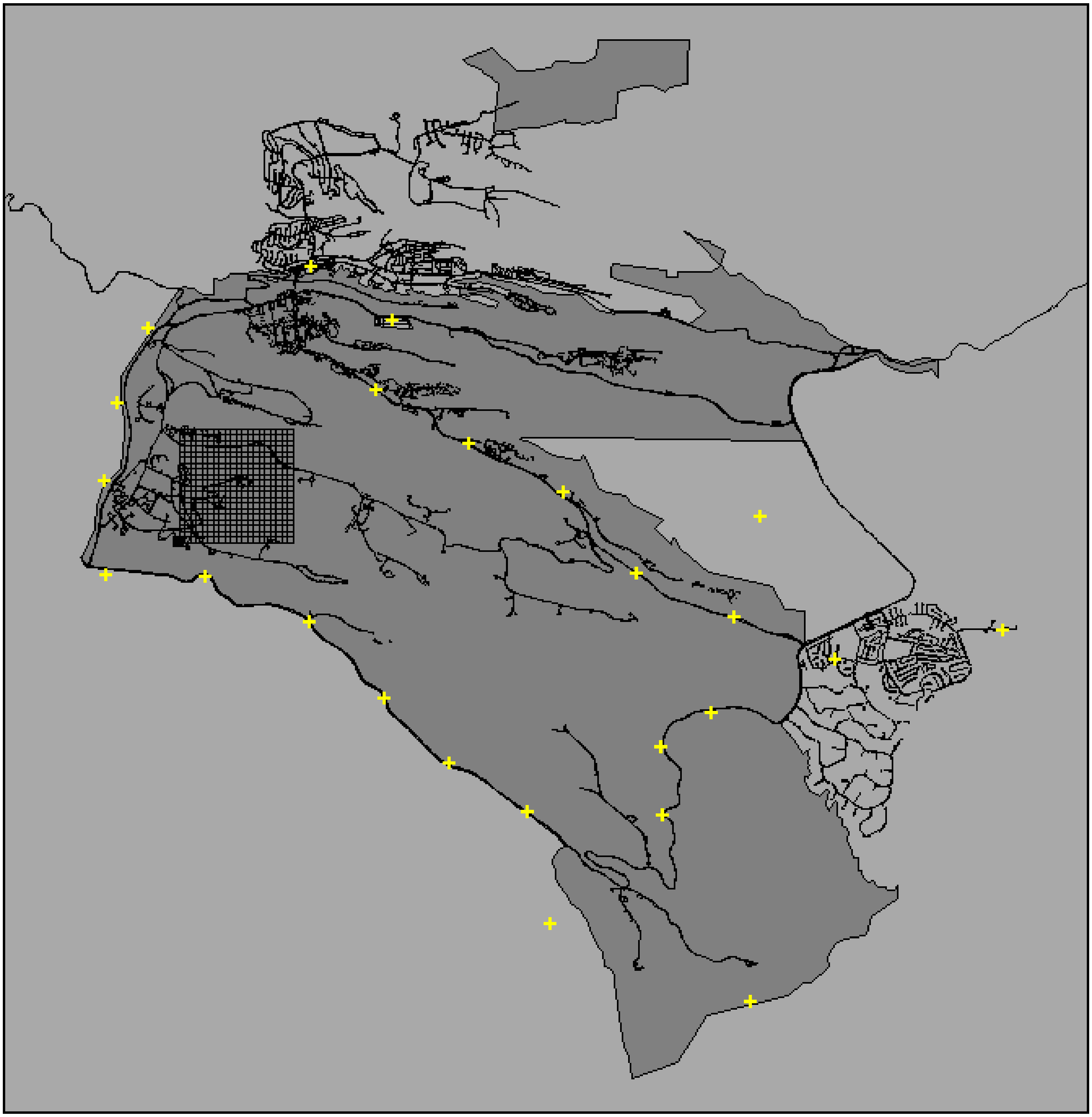


Figure 2-1

Location of Public Receptors and Receptor Grid

(Black grid squares are the site location and the yellow plus signs are public receptors.)

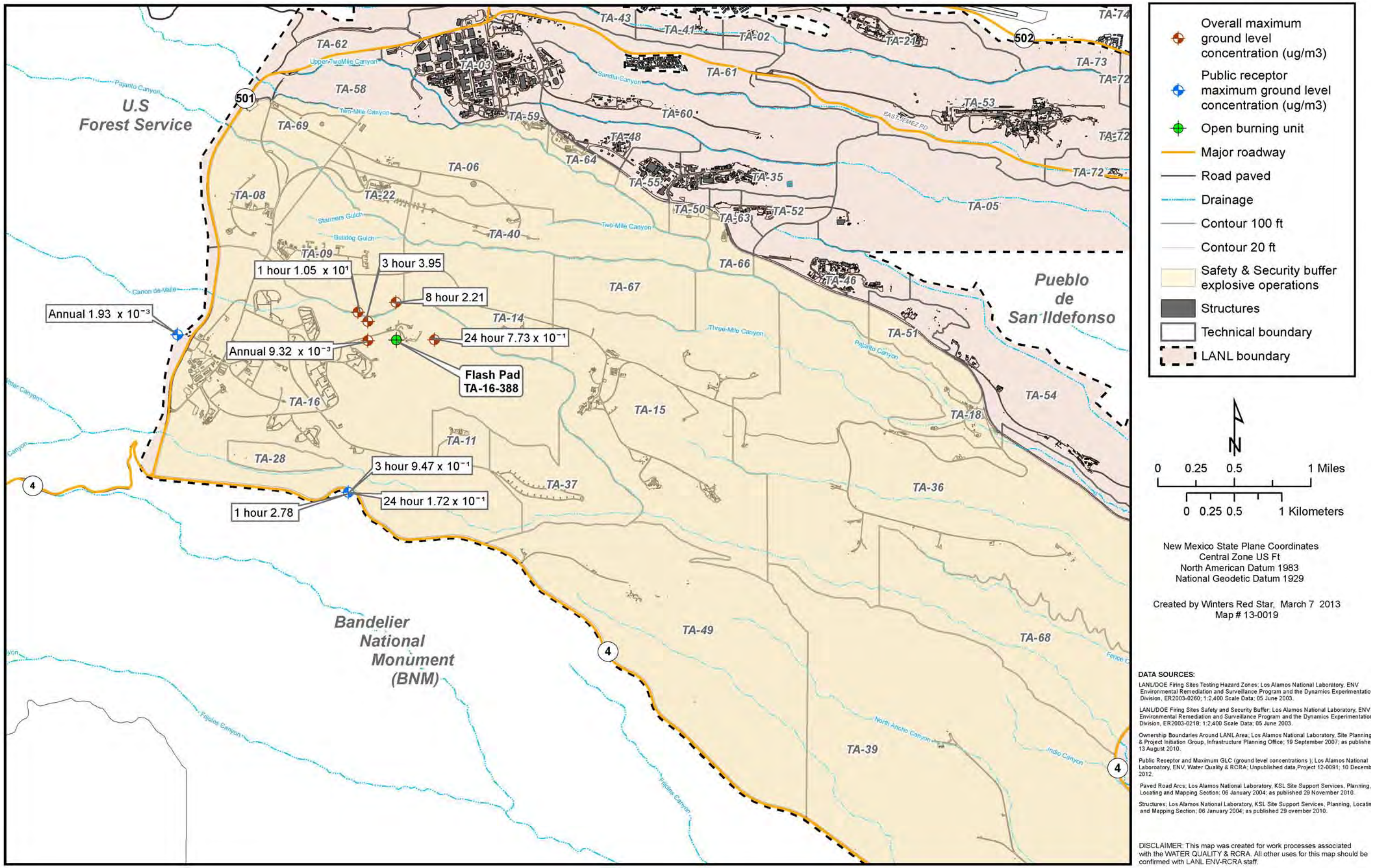


Figure 2-2

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. 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 OB 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 OB.

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 OB are carbon, nitrogen, and oxygen. In fact, emission products from most energetic material treated by OB 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 (Mitchell & Suggs 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 OB 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 OB. 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 OB 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 don’t burn, the only emissions result from the burning of the explosives.

The specific types of explosives treated by OB 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 (AP-42 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 (EPA 1998) 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 OB at LANL, a number of contaminants are within the surrogates that would not be present in LANL explosives. No attempt has been made to eliminate from this analysis emissions that could be considered non-characteristic waste treated at LANL. 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 (EPA 1998) 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, 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 supposed to simulate the mix of AP-contaminated plastic gloves, cotton rags, Kimwipes, wood towel rods and similar materials that result from the clean-up of the vessels used to manufacture AP-based propellants (Mitchell & Suggs 1998). As a 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 chosen to represent this LANL waste stream. The first reason is that LANL does not treat AP through OB so these emission factors are not representative of the wastes treated at LANL. The second and more important reason for not choosing this waste surrogate is that the trial-execution for the development of emission factors for the AP-manufacturing surrogate waste was flawed and should not be used to represent any waste stream that is treated by OB at LANL.

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 (Mitchell & Suggs 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 conditions necessary for dioxin/furan formation are low temperature (250-400 ^{o}C), long residence time (numerous seconds), presence of chlorine and organic materials, and a metal that could serve as a catalyst (EPA 2010). Those conditions are in contrast with operations at the TA-16-388 Flash Pad because 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. Combustion studies indicate that dioxin and furan compounds are readily created at temperatures from 400-1000 ^{o}F (approximately 204-538 ^{o}C) and are destroyed when gas temperatures exceed approximately 1400 ^{o}F or 760 ^{o}C (EPA 2010). 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 OB 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 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 (AP-42 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
1,2,4-Trimethylbenzene & sec-Butylbe		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

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 Alkenes (Olefins)		2.57E-06	1.33E-05	1.59E-05	1.93E-04	1.93E-04	Diesel and Dunnage
Total Non-methane Hydrocarbons		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
Particulate Matter	0.7	1.65E-04
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 EPA OB/OD Permitting Guidelines (EPA 2002b) 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, nitrogen dioxide, and particulate matter (total suspended particulates [TSP]). 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. A screening analysis was not conducted for the lead NAAQS because no lead emissions are predicted to occur from open burning. In addition, following NMED's modeling guidance, for the total suspended particulate (TSP) NMAAQS demonstrating compliance with the 24-hour and annual averaging periods show compliance for the additional 7- and 30-day averaging periods (NMED, 2010). For this reason, estimates were not made for a 7- or 30-day TSP concentration.

4.2 Toxic Air Pollutant Screening Levels

The EPA OB/OD Permitting Guidelines (EPA 2002b) suggest evaluating both long-term (chronic and cancer) and short-term (acute) risk-based impacts:

- Long-term impacts were evaluated using the EPA Region 3, 6, and 9 Regional Screening Levels (RSLs) (EPA 2012). If both noncancer and cancer RSLs are listed for a specific pollutant, the cancer RSL (adjusted to a target risk of $1X10^{-5}$) was used when it is lower. The value included in the EPA regional tables are the lower values if both noncancer and cancer effects occur.

- Short-term impacts were evaluated using the 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 2005) where available. This database includes all of the other acute inhalation sources of information listed in Section 4.1.4 of the OB/OD Permitting Guidelines. 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 (RELs) for Airborne Toxicants"*, drafted by the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency (OEHHA 1999). All acute screening levels found have been included in Table 4-1. If multiple screening levels exist for a constituent, the lower screening level has been used.

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 2012). The estimated 10-year soil concentrations were also compared to the LANL-derived ecological screening levels (ESLs) obtained from ECORISK Database, Version 3.1 (NMED 2012). Comparing the estimated 10-year impact to soil to both of 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

Pollutants and Screening Levels

Name of Pollutant	Acute Air Limits ($\mu g/m^3$)[a]	Chronic Air Screening Levels ($\mu g/m^3$)[b]	Human Health Soil Screening Levels (mg/kg)[c]	Ecological Screening Levels (mg/kg)[d]
1,2,4-Trimethylbenzene		7.30E+00	6.20E+01	
1,2,4-Trimethylbenzene & sec-Butylbe			62 & 3900	
1,3,5-Trimethylbenzene	1.25E+05		7.80E+02	
1,3-Butadiene		8.10E-01[e]	8.08E-01	
1-Butene				
1-Hexene				
1-Pentene				
2,2,4-Trimethylpentane				
2,2-Dimethylbutane				
2,3,4-Trimethylpentane				
2,3-Dimethylbutane				
2,3-Dimethylhexane				
2,3-Dimethylpentane				
2,4,4-Trimethyl-1-pentene				
2,4-Dimethylhexane				
2,4-Dimethylpentane				
2,5-Dimethylhexane				
2-Methyl-1-butene				
2-Methyl-2-butene				
2-Methylheptane				
2-Methylhexane				
2-Methylnaphthalene			2.30E+02	1.60E+01
2-Methylpentane				
3-Ethylhexane, 3-Methylheptane				
3-Methyl-1-butene				
3-Methylhexane				
3-Methylpentane				
Acenaphthylene			1.72E+03	1.20E+02
Acetophenone	3.00E+04		7.82E+03	
Acetylene				
Aluminum			7.80E+04	pH dependant
Anthracene	6.00E+03		1.72E+04	6.80E+00
Aromative (e.g. Styrene)				
Barium	1.50E+03		1.56E+04	1.10E+02
Benzene	1.30E+03		1.54E+01	2.40E+01
Benzo(a)anthracene	3.00E+02	8.70E-02[e]	1.48E+00	8.00E-01
Benzo(a)pyrene	6.00E+02	8.70E-03[e]	1.48E-01	5.30E+01
Benzo(b)fluoranthene	6.00E+02	8.70E-02[e]	1.72E+03	1.80E+01
Benzo(ghi)perylene			1.72E+03	2.40E+01
Benzo(k)fluoranthene	6.00E+02	8.70E-02[e]	1.48E+01	6.20E+01
Benzyl alcohol	6.00E+04		6.10E+03	1.20E+02
Biphenyl		4.20E-01	5.71E+01	
Butylbenzyl phthalate	1.50E+04		2.90E+03	9.00E+01

Table 4-1.
Pollutants and Screening Levels (continued)

Name of Pollutant	Acute Air Limits ($\mu g/m^3$)[a]	Chronic Air Screening Levels ($\mu g/m^3$)[b]	Human Health Soil Screening Levels (mg/kg) [c]	Ecological Screening Levels (mg/kg) [d]
Carbon Tetrachloride	1.90E+03	4.10E+00 [e]	1.08E+01	
Chromium	1.50E+03		1.17E+05	2.80E+01
Chrysene	6.00E+02	8.70E-01 [e]	1.48E+02	2.40E+00
cis-2-Butene				
cis-2-Pentene				
CO				
CO2				
Copper	1.00E+02 [f]		3.13E+03	1.50E+01
Cyclohexane				
Cyclopentane				
Dibenz(a,h)anthracene			1.48E-01	1.20E+01
Diethyl phthalate	1.50E+04		4.89E+04	1.00E+02
Dimethyl phthalate			6.11E+05	1.00E+01
Di-n-butyl phthalate	1.50E+04		6.11E+03	1.10E-02
Di-n-octyl phthalate	5.00E+04		6.11E+03	9.10E-01
Ethane				
Ethyl chloride	2.50E+05	1.00E+04	2.98E+04	
Ethylbenzene	5.00E+05	9.70E+00 [e]	6.84E+01	
Ethylene				
Fluoranthene	1.50E+01		2.29E+03	1.00E+01
HCL	2.10E+03	2.10E+01		
i-Butane				
i-Butene				
Indeno(1,2,3-cd)pyrene	5.00E+02	8.70E-02 [e]	1.48E+00	6.20E+01
i-Pentane				
i-Propylbenzene	2.46E+05	4.20E+02		
m- & p-Xylene	2.20E+04	1.00E+02	8.14E+02	1.40E+00
Methane				
Methyl chloroform	6.80E+04	5.20E+03	1.56E+04	2.60E+02
Methylchloride	2.00E+05	9.40E+01	2.75E+02	
Methylcyclohexane			5.63E+03	
Methylcyclopentane				
Methylenechloride	1.40E+04	9.60E+02 [e]	4.09E+02	1.30E+03
m-Ethyltoluene				
Naphthalene	7.50E+04	7.20E-01 [e]	4.30E+01	1.00E+00
n-Butane				
n-Decane				
n-Heptane				
n-Hexane		7.30E+02	9.38E+02	
Nitrogen dioxide (peroxide)				
Nitrogen Oxide				
Nitrogen Oxides				
n-Nonane		2.10E+02		
n-Octane				
Non-methane Organic Compound				
n-Pentane		1.00E+03		
n-Propylbenzene		1.00E+03	3.40E+03	

Table 4-1.
Pollutants and Screening Levels (continued)

Name of Pollutant	Acute Air Limits (µg/m^3)[a]	Chronic Air Screening Levels (µg/m^3)[b]	Human Health Soil Screening Levels (mg/kg)[c]	Ecological Screening Levels (mg/kg)[d]
TCDD	7.50E+01	6.40E-07[e]	4.50E-05	2.90E-07
o-Ethyltoluene				
o-Xylene	2.20E+04	1.00E+02	8.98E+02	1.40E+00
Particulates				
Perylene				
p-Ethyltoluene				
Phenanthrene	1.00E+03		1.83E+03	5.50E+00
Phenol	5.80E+03		1.83E+04	7.90E-01
PM10				
Propane				
Propene		3.10E+03		
Pyrene	1.50E+04		1.72E+03	1.00E+01
Styrene	2.10E+04	1.00E+03	7.28E+03	1.20E+00
Sulfur Dioxide	6.60E+02[f]			
Toluene	3.70E+04	5.20E+03	5.27E+03	2.30E+01
Total Alkanes (Paraffins)				
Total Alkenes (Olefins)				
Total Non-methane Hydrocarbons				
Total Unidentified Hydrocarbons				
trans-2-Butene				
trans-2-Pentene				
Vinyl Chloride	1.80E+05	1.60E+00[e]	7.28E-01	1.20E-01
Vinylidene Chloride		2.10E+02	4.49E+02	1.10E+01
Volatile Organic Compounds				
Zinc	3.00E+04		2.35E+04	4.80E+01

[a] 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 2005) except where noted.
[b] Screening concentrations from Environmental Protection Agency Regions 3, 6, and 9 Regional Screening Levels (RSLs) (EPA 2012).
[c] Screening levels from New Mexico Environment Department Human Health Residential Soil Screening Levels (SSLs) (NMED 2012).
[d] Screening levels from LANL-derived ecological screening levels (ESLs) obtained from ECORISK Database, Version 3.1 (NMED 2012).
[e] Screening level is a carcinogenic target risk that has been adjusted to a target risk of $1X10^{-5}$.
[f] Screening concentrations from 1999 Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels (RELs) for Airborne Toxicants (OEHHA 1999).

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.
- Maximum 1-hour concentrations were calculated and compared to acute air screening levels.
- Annual average air concentrations were calculated and compared to chronic air screening levels.
- Soil concentrations from deposition were calculated and compared to residential human health and ecological screening levels.
- Concentrations for all contaminants were calculated whether there was a screening level or not.

A comparison of the calculated values from model results with the EPA and NMED AAQS are summarized in Table 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 have been added to model results as specified by NMED and the total value is shown in the tables for comparison to standards (NMED, 2010).

The Ambient Air Quality Standard (AAQS) included within Table 5-1 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 calculations spreadsheets included in Attachment A.

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 2010). 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. All results are conservatively predicted.

Table 5-2 contains 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 2003).

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 = [{$e^{-Ks * Tf}$ - $e^{-Ks * To}$} / 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[1]

Pollutant	1-hr µg/m³		3-hr µg/m³		8-hr µg/m³		24-hr µg/m³		Annual µg/m³	
	Result	AAQS[2]	Result	AAQS[2]	Result	AAQS[2]	Result	AAQS[2]	Result	AAQS[2]
NO_2	1.6	188.1	-	none	-	none	0.3	143.0	0.00001	**71.5**
CO	2.2	11400.4	-	none	0.4	7571.2	-	none	-	none
SO_2	-	none	0.06	1309.4	-	none	0.01	199.1	0.0000004	39.8
PM_{10}	-	none	-	none	-	none	23.6	150.0	-	none
$PM_{2.5}$	-	none	-	none	-	none	8.2	35.0	7.3	12.0
TSP	-	none	-	none	-	none	27.0	150.0	26.6	60.0

[1] Calculations used are included in Attachment A.

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

[3] µg/m³ = micrograms per cubic meter

Table 5-2
Health and Ecological Screening Level Comparisons

Contaminant	1-hr Air ug/m³		Annual Air ug/m³		10-yr Soil mg/kg		
	Result	Acute Air Limits[a]	Result	Chronic Air Screening Level[b]	Result	Human Health Soil Screening Level[c]	Ecological Screening Levels [d]
1,2,4-Trimethylbenzene	6.43E-02		1.95E-07	7.30E+00	1.16E-04	6.20E+01	
1,2,4-Trimethylbenzene & sec-Butylbenzene	1.35E-01		4.09E-07		2.42E-04	62 & 3900	
1,3,5-Trimethylbenzene	1.47E-01	1.25E+05	4.48E-07		2.65E-04	7.80E+02	
1,3-Butadiene	3.55E-04		1.08E-09	8.10E-01[e]	6.37E-07	8.08E-01	
1-Butene	1.24E-03		3.77E-09		2.23E-06		
1-Hexene	5.79E-04		1.76E-09		1.04E-06		
1-Pentene	4.55E-04		1.38E-09		8.18E-07		
2,2,4-Trimethylpentane	1.84E-03		5.61E-09		3.32E-06		
2,2-Dimethylbutane	1.14E-05		3.45E-11		2.04E-08		
2,3,4-Trimethylpentane	3.65E-04		0.00E+00		4.12E-03		
2,3-Dimethylbutane	5.45E-04		1.66E-09		9.80E-07		
2,3-Dimethylhexane	1.43E-03		4.34E-09		2.57E-06		
2,3-Dimethylpentane	8.81E-04		2.68E-09		1.58E-06		
2,4,4-Trimethyl-1-pentene	5.27E-05		1.60E-10		9.47E-08		
2,4-Dimethylhexane	1.70E-03		5.16E-09		3.05E-06		
2,4-Dimethylpentane	5.72E-04		1.74E-09		1.03E-06		
2,5-Dimethylhexane	2.94E-03		8.93E-09		5.28E-06		
2-Methyl-1-butene	2.78E-04		8.45E-10		5.00E-07		
2-Methyl-2-butene	2.40E-05		7.30E-11		4.31E-08		
2-Methylheptane	1.17E-02		3.56E-08		2.10E-05		
2-Methylhexane	3.65E-03		1.11E-08		6.56E-06		
2-Methylnaphthalene	5.77E-03		1.75E-08		1.04E-05	2.30E+02	1.60E+01
2-Methylpentane	2.51E-03		7.62E-09		4.51E-06		
3-Ethylhexane, 3-Methylheptane	1.56E-02		4.75E-08		2.81E-05		
3-Methyl-1-butene	5.27E-05		1.60E-10		9.47E-08		
3-Methylhexane	4.10E-03		1.25E-08		7.37E-06		
3-Methylpentane	1.34E-03		4.09E-09		2.42E-06		
Acenaphthylene	1.78E-03		5.40E-09		3.19E-06	1.72E+03	1.20E+02
Acetophenone	4.60E-05	3.00E+04	1.40E-10		8.28E-08	7.82E+03	
Acetylene	2.52E-02		7.66E-08		4.53E-05		
Aluminum	1.89E-04		5.73E-10		3.39E-07	7.80E+04	pH dependent
Anthracene	2.70E-05	6.00E+03	8.20E-11		4.85E-08	1.72E+04	6.80E+00
Aromative (e.g. Styrene)	6.06E-01		1.84E-06		1.09E-03		
Barium	1.11E-04	1.50E+03	3.38E-10		2.00E-07	1.56E+04	1.10E+02
Benzene	2.07E-02	1.30E+03	6.31E-08		3.73E-05	1.54E+01	2.40E+01
Benzo(a)anthracene	2.60E-04	3.00E+02	7.89E-10	8.70E-02 [e]	4.67E-07	1.48E+00	8.00E-01
Benzo(a)pyrene	1.96E-04	6.00E+02	5.97E-10	8.70E-03 [e]	3.53E-07	1.48E-01	5.30E+01
Benzo(b)fluoranthene	2.07E-04	6.00E+02	6.31E-10	8.70E-02 [e]	3.73E-07	1.72E+03	1.80E+01
Benzo(ghi)perylene	9.13E-05		2.77E-10		1.64E-07	1.72E+03	2.40E+01
Benzo(k)fluoranthene	1.97E-04	6.00E+02	6.00E-10	8.70E-02 [e]	3.55E-07	1.48E+01	6.20E+01
Benzyl alcohol	1.05E-02	6.00E+04	3.19E-08		1.88E-05	6.10E+03	1.20E+02
Biphenyl	1.71E-03		5.19E-09	4.20E-01	3.07E-06	5.71E+01	
Butylbenzyl phthalate	3.23E-05	1.50E+04	9.81E-11		5.80E-08	2.90E+03	9.00E+01
Carbon Tetrachloride	1.82E-05	1.90E+03	5.54E-11	4.10E+00[e]	3.28E-08	1.08E+01	
Chromium	1.05E-04	1.50E+03	3.19E-10		1.89E-07	1.17E+05	2.80E+01
Chrysene	2.47E-04	6.00E+02	7.50E-10	8.70E-01 [e]	4.44E-07	1.48E+02	2.40E+00
cis-2-Butene	5.27E-05		1.60E-10		9.47E-08		
cis-2-Pentene	2.40E-05		7.30E-11		4.31E-08		

Table 5-2

Health and Ecological Screening Level Comparisons (continued)

Contaminant	1-hr Air ug/m^3		Annual Air ug/m^3		10-yr Soil mg/kg		
	Result	Acute Air Limits[a]	Result	Chronic Air Screening Level[b]	Result	Human Health Soil Screening Level[c]	Ecological Screening Levels [d]
CO	8.18E+00		2.49E-05		1.47E-02		
CO2	4.31E+02		1.31E-03		7.75E-01		
Copper	1.67E-03	1.00E+02[f]	5.08E-09		3.00E-06	3.13E+03	1.50E+01
Cyclohexane	7.06E-03		2.15E-08		1.27E-05		
Cyclopentane	4.05E-04		1.23E-09		7.28E-07		
Dibenz(a,h)anthracene	5.29E-05		1.61E-10		9.51E-08	1.48E-01	1.20E+01
Diethyl phthalate	1.85E-05	1.50E+04	5.63E-11		3.33E-08	4.89E+04	1.00E+02
Dimethyl phthalate	4.97E-05		1.51E-10		8.94E-08	6.11E+05	1.00E+01
Di-n-butyl phthalate	8.73E-05	1.50E+04	2.65E-10		1.57E-07	6.11E+03	1.10E-02
Di-n-octyl phthalate	2.43E-04	5.00E+04	7.39E-10		4.37E-07	6.11E+03	9.10E-01
Ethane	3.04E-03		9.25E-09		5.47E-06		
Ethyl chloride	1.82E-05	2.50E+05	5.54E-11	1.00E+04	3.28E-08	2.98E+04	
Ethylbenzene	1.45E-02	5.00E+05	4.42E-08	9.70E+00 [e]	2.61E-05	6.84E+01	
Ethylene	1.97E-02		5.98E-08		3.53E-05		
Fluoranthene	2.08E-04	1.50E+01	6.31E-10		3.73E-07	2.29E+03	1.00E+01
HCL	2.64E-01	2.10E+03	8.02E-07	2.10E+01	4.74E-04		
i-Butane	3.28E-04		9.97E-10		5.90E-07		
i-Butene	5.98E-04		1.82E-09		1.08E-06		
Indeno(1,2,3-cd)pyrene	7.49E-05	5.00E+02	2.28E-10	8.70E-02 [e]	1.35E-07	1.48E+00	6.20E+01
i-Pentane	2.86E-03		8.69E-09		5.14E-06		
i-Propylbenzene	2.73E-02	2.46E+05	8.28E-08	4.20E+02	4.90E-05		
m- & p-Xylene	1.20E-01	2.20E+04	3.64E-07	1.00E+02	2.15E-04	8.14E+02	1.40E+00
Methane	2.31E-02		7.01E-08		4.15E-05		
Methyl chloroform	9.10E-06	6.80E+04	2.77E-11	5.20E+03	1.64E-08	1.56E+04	2.60E+02
Methylchloride	7.51E-05	2.00E+05	2.28E-10	9.40E+01	1.35E-07	2.75E+02	
Methylcyclohexane	4.13E-02		1.25E-07		7.42E-05	5.63E+03	
Methylcyclopentane	2.63E-03		7.99E-09		4.72E-06		
Methylenechloride	1.97E-04	1.40E+04	6.00E-10	9.60E+02 [e]	3.55E-07	4.09E+02	1.30E+03
m-Ethyltoluene	3.39E-02		1.03E-07		6.09E-05		
Naphthalene	2.22E-02	7.50E+04	6.74E-08	7.20E-01 [e]	3.99E-05	4.30E+01	1.00E+00
n-Butane	1.22E-03		3.70E-09		2.19E-06		
n-Decane	5.21E-01		1.58E-06		9.37E-04		
n-Heptane	1.56E-02		4.75E-08		2.81E-05		
n-Hexane	4.23E-03		1.29E-08	7.30E+02	7.61E-06	9.38E+02	
Nitrogen dioxide (peroxide)	1.24E-01		3.77E-07		2.23E-04		
Nitrogen Oxide	1.66E+00		5.05E-06		2.99E-03		
Nitrogen Oxides	2.04E+01		6.19E-05		3.66E-02		
n-Nonane	2.73E-01		8.28E-07	2.10E+02	4.90E-04		
n-Octane	6.56E-02		1.99E-07		1.18E-04		
Non-methane Organic Compound	2.07E+00		6.31E-06		3.73E-03		
n-Pentane	2.39E-03		7.28E-09	1.00E+03	4.31E-06		
n-Propylbenzene	2.16E-02		6.56E-08	1.00E+03	3.88E-05	3.40E+03	
TCDD	2.73E-09	7.50E+01	8.28E-15	6.40E-07 [e]	4.90E-12	4.50E-05	2.90E-07
o-Ethyltoluene	1.03E-04		3.14E-10		1.86E-07		
o-Xylene	3.31E-02	2.20E+04	1.01E-07	1.00E+02	5.95E-05	8.98E+02	1.40E+00
Particulates	2.38E+01		7.25E-05		4.29E-02		
Perylene	4.55E-05		1.38E-10		8.18E-08		
p-Ethyltoluene	4.05E-02		1.23E-07		7.28E-05		
Phenanthrene	1.90E-03	1.00E+03	5.77E-09		3.41E-06	1.83E+03	5.50E+00
Phenol	4.13E-03	5.80E+03	1.25E-08		7.42E-06	1.83E+04	7.90E-01
PM10	2.41E+02		7.32E-04		4.33E-01		
Propane	5.87E-04		1.79E-09		1.06E-06		
Propene	3.44E-03		1.05E-08	3.10E+03	6.18E-06		
Pyrene	1.87E-04	1.50E+04	5.68E-10		3.36E-07	1.72E+03	1.00E+01
Styrene	1.32E-02	2.10E+04	4.01E-08	1.00E+03	2.37E-05	7.28E+03	1.20E+00

Table 5-2

Health and Ecological Screening Level Comparisons (continued)

Contaminant	1-hr Air ug/m^3		Annual Air ug/m^3		10-yr Soil mg/kg		
	Result	Acute Air Limits[a]	Result	Chronic Air Screening Level[b]	Result	Human Health Soil Screening Level[c]	Ecological Screening Levels [d]
Sulfur Dioxide	6.80E-01	6.60E+02[f]	2.07E-06		1.22E-03		
Toluene	3.23E-02	3.70E+04	9.81E-08	5.20E+03	5.80E-05	5.27E+03	2.30E+01
Total Alkanes (Paraffins)	9.26E-01		2.82E-06		1.67E-03		
Total Alkenes (Olefins)	5.11E-02		1.55E-07		9.18E-05		
Total Non-methane Hydrocarbons	3.21E+00		9.77E-06		5.78E-03		
Total Unidentified Hydrocarbons	1.60E+00		4.86E-06		2.87E-03		
trans-2-Butene	7.70E-04		2.34E-09		1.38E-06		
trans-2-Pentene	2.86E-04		8.69E-10		5.14E-07		
Vinyl Chloride	5.90E-05	1.80E+05	1.79E-10	1.60E+00 [e]	1.06E-07	7.28E-01	1.20E-01
Vinylidene Chloride	5.69E-05		1.73E-10	2.10E+02	1.02E-07	4.49E+02	1.10E+01
Volatile Organic Compounds	1.46E-01		4.42E-07		2.62E-04		
Zinc	1.66E-02	3.00E+04	5.04E-08		2.98E-05	2.35E+04	4.80E+01

[a] 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 2005) except where noted.

[b] Screening concentrations from Environmental Protection Agency Regions 3, 6, and 9 Regional Screening Levels (RSLs) (EPA 2011).

[c] Screening levels from New Mexico Environment Department Human Health Residential Soil Screening Levels (SSLs) (NMED 2012).

[d] Screening levels from LANL-derived ecological screening levels (ESLs) obtained from ECORISK Database, Version 3.0 (NMED 2011).

[e] Screening level is a carcinogenic target risk that has been adjusted to a target risk of $1X10^{-5}$.

[f] Screening concentrations from 1999 Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels (RELs) for Airborne Toxicants (OEHHA 1999).

ug/m^3 = micrograms per cubic meter

mg/kg = milligrams per kilogram

5.1 Discussion of Results

Dispersion modeling was used to predict maximum GLCs of contaminants that occur downwind from the OB 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 (Tables 5-1 and 5-2). 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 5-2. 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 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 OB 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 OB at LANL, and the quantity of waste assessed was the maximum amount of waste that could possibly be treated at the OB 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 modification request for the OB 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

Bjorklund, J. R. and J. F. Bowers, 1982. *User's instructions for the SHORTZ and LONGZ computer programs, vols. I and II*. Report Nos. EPA-903/9-82-004a and 004b, U.S. Environmental Protection Agency, Region 3, Philadelphia, PA.

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.

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.

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.

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.

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

California Office of Environmental Health Hazardous Assessment (OEHHA) 1999. *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

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, 1998a. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. Office of Solid Waste and Emergency Response, Washington, DC.

EPA, 1998b. *Open Burn/Open Detonation Dispersion Model (OBODM) User's Guide*. DPG Document No. DPG-TR-96-008a, February 1998

EPA, 1998c. *Emission Factors for the Disposal of Energetic Materials by Open Burning and Open Detonation (OB/OD),* Research Triangle Park, NC, August 1998.

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

Heath, David, Gi-Dong Kim, Sufi Mstafa, Eric Peters, 2006. *Air Dispersion Modeling Guidelines.* New Mexico Air Quality Bureau, Revised February 2006.

New Mexico Environment Department (NMED), 2012. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation*. February 2012. http://www.nmenv.state.nm.us/HWB/documents/NMED_RA_Guidance_for_SI_and_Remediation_Feb_2012.pdf.

Scire, Joseph S., David G. Strimatis, Robert J. Yamartino, 2000. *A User's Guide for the CALPUFF Dispersion Model (Version 5).* Earth Tech, Inc., Concord, MA, 01742.

[This page has been left intentionally blank.]

Attachment A

EXCEL Tables Used for Model Results Evaluation

[This page has been left intentionally blank.]

TA-16 Burn Ground 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
Model 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
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
3.86E-02	8th highest overall 24-hour maximum value, ug/m^3 per g/sec contaminant
1.93E-03	Annual maximum value, ug/m^3 per g/sec contaminant

Pollutant	Averaging Time	Emisson Factor lb/lb waste	Emission Rate, Waste g/sec	Maximum Concentration, Waste ug/m^3	Emission Factor, lb/lb propane	Emission Rate, Propane g/sec	Maximum Concentration, Propane 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							
	1-hour		1.89E+00	1.58E+00		4.91E-02	4.10E-02	1.6		188.1	none	No
	24-hour		1.89E+00	3.25E-01		4.91E-02	8.44E-03	0.3		none	143.0	No
	Annual		6.47E-03	1.25E-05		1.68E-04	3.25E-07	0.00001		99.7	71.5	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	11400.4	No
	8-hour		7.51E-01	3.81E-01		2.84E-02	1.44E-02	0.4		10303.6	7571.2	No
Sulfur Dioxide		1.22E-03			2.12E-03							
	3-hour		3.07E-02	2.91E-02		3.40E-02	3.22E-02	0.06		1309.4	none	No
	24-hour		3.07E-02	5.28E-03		3.40E-02	5.84E-03	0.01		366.6	199.1	No
	Annual		1.05E-04	2.03E-07		1.17E-04	2.25E-07	0.0000004		78.6	39.8	No
PM_{10}		9.10E-01			1.65E-04							
	24-hour		2.29E+01	3.61E+00		2.65E-03	4.16E-04	23.6		150.0	none	No
Background				2.00E+01								
Total				2.36E+01								
$PM_{2.5}$		9.10E-01			1.65E-04							
	24-hour		2.29E+01	8.85E-01		2.65E-03	1.02E-04	8.2		35.0	none	No
Background				7.30E+00								
Total				8.18E+00								
	Annual		7.85E-02	1.52E-04		9.06E-06	1.75E-08	7.3		12.0	none	No
Background				7.30E+00								
Total				7.30E+00								
TSP		9.00E-02			1.65E-04							
	24-hour		2.27E+00	3.90E-01		2.65E-03	4.55E-04	27.0		none	150.0	No
Background				2.66E+01								
Total				2.70E+01								
	Annual		7.77E-03	1.50E-05		9.06E-06	1.75E-08	26.6		none	60.0	No
Background				2.66E+01								
Total				2.66E+01								

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, March 2010. 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 2010.
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 2010.
7 Ambient standards for gases in ppm converted to ug/m^3 using equation from NMED Air Dispersion Modeling Guidelines, March 2010.
8 NMED does not require dispersion modeling for the new 1-hour SO_2 NAAQS at this time.

TA16 Burn Ground 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, ug/m^3 per g/sec contaminant

Name of Pollutant	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (ug/m^3)	Acute Air Limits (ug/m3)	Screening Level Exceeded?
1,2,4-Trimethylbenzene	2.43E-04	6.12E-03	6.43E-02		-
1,2,4-Trimethylbenzene & sec-Butylbe	5.09E-04	1.28E-02	1.35E-01		-
1,3,5-Trimethylbenzene	5.57E-04	1.40E-02	1.47E-01	1.25E+05	No
1,3-Butadiene	1.34E-06	3.38E-05	3.55E-04		-
1-Butene	4.69E-06	1.18E-04	1.24E-03		-
1-Hexene	2.19E-06	5.52E-05	5.79E-04		-
1-Pentene	1.72E-06	4.33E-05	4.55E-04		-
2,2,4-Trimethylpentane	6.97E-06	1.76E-04	1.84E-03		-
2,2-Dimethylbutane	4.29E-08	1.08E-06	1.14E-05		-
2,3,4-Trimethylpentane	1.38E-06	3.48E-05	3.65E-04		-
2,3-Dimethylbutane	2.06E-06	5.19E-05	5.45E-04		-
2,3-Dimethylhexane	5.40E-06	1.36E-04	1.43E-03		-
2,3-Dimethylpentane	3.33E-06	8.39E-05	8.81E-04		-
2,4,4-Trimethyl-1-pentene	1.99E-07	5.01E-06	5.27E-05		-
2,4-Dimethylhexane	6.42E-06	1.62E-04	1.70E-03		-
2,4-Dimethylpentane	2.16E-06	5.44E-05	5.72E-04		-
2,5-Dimethylhexane	1.11E-05	2.80E-04	2.94E-03		-
2-Methyl-1-butene	1.05E-06	2.65E-05	2.78E-04		-
2-Methyl-2-butene	9.07E-08	2.29E-06	2.40E-05		-
2-Methylheptane	4.42E-05	1.11E-03	1.17E-02		-
2-Methylhexane	1.38E-05	3.48E-04	3.65E-03		-
2-Methylnaphthalene	2.18E-05	5.49E-04	5.77E-03		-
2-Methylpentane	9.47E-06	2.39E-04	2.51E-03		-
3-Ethylhexane, 3-Methylheptane	5.90E-05	1.49E-03	1.56E-02		-
3-Methyl-1-butene	1.99E-07	5.01E-06	5.27E-05		-
3-Methylhexane	1.55E-05	3.91E-04	4.10E-03		-
3-Methylpentane	5.08E-06	1.28E-04	1.34E-03		-
Acenaphthylene	6.71E-06	1.69E-04	1.78E-03		-
Acetophenone	1.74E-07	4.38E-06	4.60E-05	3.00+E04	No
Acetylene	9.52E-05	2.40E-03	2.52E-02		-
Aluminum	7.13E-07	1.80E-05	1.89E-04		-
Anthracene	1.02E-07	2.57E-06	2.70E-05	6.00+E03	No
Aromative (e.g. Styrene)	2.29E-03	5.77E-02	6.06E-01		-
Barium	4.20E-07	1.06E-05	1.11E-04	1.50E+03	No
Benzene	7.84E-05	1.98E-03	2.07E-02	1.30E+03	No
Benzo(a)anthracene	9.81E-07	2.47E-05	2.60E-04	3.00E+02	No
Benzo(a)pyrene	7.42E-07	1.87E-05	1.96E-04	6.00E+02	No

Name of Pollutant	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (ug/m^3)	Acute Air Limits (ug/m3)	Screening Level Exceeded?
Benzo(b)fluoranthene	7.84E-07	1.98E-05	2.07E-04	6.00E+02	No
Benzo(ghi)perylene	3.45E-07	8.69E-06	9.13E-05		-
Benzo(k)fluoranthene	7.46E-07	1.88E-05	1.97E-04	6.00E+02	No
Benzyl alcohol	3.96E-05	9.98E-04	1.05E-02	6.00E+04	No
Biphenyl	6.45E-06	1.63E-04	1.71E-03		-
Butylbenzyl phthalate	1.22E-07	3.07E-06	3.23E-05	1.50E+04	No
Carbon Tetrachloride	6.89E-08	1.74E-06	1.82E-05	1.90E+03	No
Chromium	3.97E-07	1.00E-05	1.05E-04	1.50E+03	No
Chrysene	9.33E-07	2.35E-05	2.47E-04	6.00E+02	No
cis-2-Butene	1.99E-07	5.01E-06	5.27E-05		-
cis-2-Pentene	9.07E-08	2.29E-06	2.40E-05		-
CO	2.98E-02	7.51E-01	8.18E+00		-
CO2	1.63E+00	4.11E+01	4.31E+02		-
Copper	6.31E-06	1.59E-04	1.67E-03		-
Cyclohexane	2.67E-05	6.73E-04	7.06E-03		-
Cyclopentane	1.53E-06	3.86E-05	4.05E-04		-
Dibenz(a,h)anthracene	2.00E-07	5.04E-06	5.29E-05		-
Diethyl phthalate	7.00E-08	1.76E-06	1.85E-05	1.50E+04	No
Dimethyl phthalate	1.88E-07	4.74E-06	4.97E-05		-
Di-n-butyl phthalate	3.30E-07	8.32E-06	8.73E-05	1.50E+04	No
Di-n-octyl phthalate	9.19E-07	2.32E-05	2.43E-04	5.00E+04	No
Ethane	1.15E-05	2.90E-04	3.04E-03		-
Ethyl chloride	6.89E-08	1.74E-06	1.82E-05	2.50E+05	No
Ethylbenzene	5.49E-05	1.38E-03	1.45E-02	5.00E+05	No
Ethylene	7.43E-05	1.87E-03	1.97E-02		-
Fluoranthene	7.85E-07	1.98E-05	2.08E-04	1.50E+01	No
HCL	9.97E-04	2.51E-02	2.64E-01	2.10E+03	No
i-Butane	1.24E-06	3.12E-05	3.28E-04		-
i-Butene	2.26E-06	5.70E-05	5.98E-04		-
Indeno(1,2,3-cd)pyrene	2.83E-07	7.13E-06	7.49E-05	5.00E+02	No
i-Pentane	1.08E-05	2.72E-04	2.86E-03		-
i-Propylbenzene	1.03E-04	2.60E-03	2.73E-02	2.46E+05	No
m- & p-Xylene	4.52E-04	1.14E-02	1.20E-01	2.20E+04	No
Methane	8.72E-05	2.20E-03	2.31E-02		-
Methyl chloroform	3.44E-08	8.67E-07	9.10E-06	6.80E+04	No
Methylchloride	2.84E-07	7.16E-06	7.51E-05	2.00E+05	No
Methylcyclohexane	1.56E-04	3.93E-03	4.13E-02		-
Methylcyclopentane	9.93E-06	2.50E-04	2.63E-03		-
Methylenechloride	7.46E-07	1.88E-05	1.97E-04	1.40E+04	No
m-Ethyltoluene	1.28E-04	3.23E-03	3.39E-02		-
Naphthalene	8.38E-05	2.11E-03	2.22E-02	7.50E+04	No
n-Butane	4.60E-06	1.16E-04	1.22E-03		-
n-Decane	1.97E-03	4.96E-02	5.21E-01		-
n-Heptane	5.90E-05	1.49E-03	1.56E-02		-
n-Hexane	1.60E-05	4.03E-04	4.23E-03		-
Nitrogen dioxide (peroxide)	4.69E-04	1.18E-02	1.24E-01		-
Nitrogen Oxide	6.28E-03	1.58E-01	1.66E+00		-

Name of Pollutant	Emission Factor (lb/lb of waste)	Emission Rate (g/sec)	Maximum 1-hour Concentration (ug/m^3)	Acute Air Limits (ug/m3)	Screening Level Exceeded?
Nitrogen Oxides	7.50E-02	1.89E+00	2.04E+01		-
n-Nonane	1.03E-03	2.60E-02	2.73E-01		-
n-Octane	2.48E-04	6.25E-03	6.56E-02		-
Non-methane Organic Compound	7.84E-03	1.98E-01	2.07E+00		-
n-Pentane	9.05E-06	2.28E-04	2.39E-03		-
n-Propylbenzene	8.16E-05	2.06E-03	2.16E-02		-
OCDD *Screening Limits are for TCDD	1.03E-11	2.60E-10	2.73E-09	7.50E+01	No
o-Ethyltoluene	3.90E-07	9.83E-06	1.03E-04		-
o-Xylene	1.25E-04	3.15E-03	3.31E-02	2.20E+04	No
Particulates	9.00E-02	2.27E+00	2.38E+01		-
Perylene	1.72E-07	4.33E-06	4.55E-05		-
p-Ethyltoluene	1.53E-04	3.86E-03	4.05E-02		-
Phenanthrene	7.17E-06	1.81E-04	1.90E-03	1.00E+03	No
Phenol	1.56E-05	3.93E-04	4.13E-03	5.80E+03	No
PM10	9.10E-01	2.29E+01	2.41E+02		-
Propane	2.22E-06	5.59E-05	5.87E-04		-
Propene	1.30E-05	3.28E-04	3.44E-03		-
Pyrene	7.06E-07	1.78E-05	1.87E-04	1.50E+04	No
Styrene	4.99E-05	1.26E-03	1.32E-02	2.10E+04	No
Sulfur Dioxide	1.22E-03	3.07E-02	6.80E-01	6.60E+02	No
Toluene	1.22E-04	3.07E-03	3.23E-02	3.70E+04	No
Total Alkanes (Paraffins) (e.g. Octa)	3.50E-03	8.82E-02	9.26E-01		-
Total Alkenes (Olefins) (e.g. Ethyle)	1.93E-04	4.86E-03	5.11E-02		-
Total Non-methane Hydrocarbons	1.20E-02	3.02E-01	3.21E+00		-
Total Unidentified Hydrocarbons	6.04E-03	1.52E-01	1.60E+00		-
trans-2-Butene	2.91E-06	7.33E-05	7.70E-04		-
trans-2-Pentene	1.08E-06	2.72E-05	2.86E-04		-
Vinyl Chloride	2.23E-07	5.62E-06	5.90E-05	2.23E-07	No
Vinylidene Chloride	2.15E-07	5.42E-06	5.69E-05		-
Volatile Organic Compounds	5.50E-04	1.39E-02	1.46E-01		-
Zinc	6.26E-05	1.58E-03	1.66E-02	3.00E+04	No

Notes

1 Impacts from propane combustion have been added to waste impact concentrations for nitrogen oxides, carbon monoxide, particulate matter, PM10, sulfure dioxide, and non-methane hydrocarbons.

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/m^3 per g/sec contaminant

Contaminant	Emisson Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration ug/m^3	RSL ug/m^3	Screening Level Exceeded?
1,2,4-Trimethylbenzene	2.43E-04	2.10E-05	1.95E-07	7.30E+00	No
1,2,4-Trimethylbenzene & sec-Butylbe	5.09E-04	4.39E-05	4.09E-07		-
1,3,5-Trimethylbenzene	5.57E-04	4.81E-05	4.48E-07		-
1,3-Butadiene	1.34E-06	1.16E-07	1.08E-09	8.10E-01	No
1-Butene	4.69E-06	4.05E-07	3.77E-09		-
1-Hexene	2.19E-06	1.89E-07	1.76E-09		-
1-Pentene	1.72E-06	1.48E-07	1.38E-09		-
2,2,4-Trimethylpentane	6.97E-06	6.02E-07	5.61E-09		-
2,2-Dimethylbutane	4.29E-08	3.70E-09	3.45E-11		-
2,3,4-Trimethylpentane	1.38E-06	1.19E-07	0.00E+00		-
2,3-Dimethylbutane	2.06E-06	1.78E-07	1.66E-09		-
2,3-Dimethylhexane	5.40E-06	4.66E-07	4.34E-09		-
2,3-Dimethylpentane	3.33E-06	2.87E-07	2.68E-09		-
2,4,4-Trimethyl-1-pentene	1.99E-07	1.72E-08	1.60E-10		-
2,4-Dimethylhexane	6.42E-06	5.54E-07	5.16E-09		-
2,4-Dimethylpentane	2.16E-06	1.86E-07	1.74E-09		-
2,5-Dimethylhexane	1.11E-05	9.58E-07	8.93E-09		-
2-Methyl-1-butene	1.05E-06	9.06E-08	8.45E-10		-
2-Methyl-2-butene	9.07E-08	7.83E-09	7.30E-11		-
2-Methylheptane	4.42E-05	3.81E-06	3.56E-08		-
2-Methylhexane	1.38E-05	1.19E-06	1.11E-08		-
2-Methylnaphthalene	2.18E-05	1.88E-06	1.75E-08		-
2-Methylpentane	9.47E-06	8.17E-07	7.62E-09		-
3-Ethylhexane, 3-Methylheptane	5.90E-05	5.09E-06	4.75E-08		-
3-Methyl-1-butene	1.99E-07	1.72E-08	1.60E-10		-
3-Methylhexane	1.55E-05	1.34E-06	1.25E-08		-
3-Methylpentane	5.08E-06	4.38E-07	4.09E-09		-
Acenaphthylene	6.71E-06	5.79E-07	5.40E-09		-
Acetophenone	1.74E-07	1.50E-08	1.40E-10		-
Acetylene	9.52E-05	8.22E-06	7.66E-08		-
Aluminum	7.13E-07	6.15E-08	5.73E-10		-
Anthracene	1.02E-07	8.80E-09	8.20E-11		-
Aromative (e.g. Styrene)	2.29E-03	1.98E-04	1.84E-06		-
Barium	4.20E-07	3.62E-08	3.38E-10		-
Benzene	7.84E-05	6.77E-06	6.31E-08		-
Benzo(a)anthracene	9.81E-07	8.47E-08	7.89E-10	8.70E-02	No
Benzo(a)pyrene	7.42E-07	6.40E-08	5.97E-10	8.70E-03	No
Benzo(b)fluoranthene	7.84E-07	6.77E-08	6.31E-10	8.70E-02	No
Benzo(ghi)perylene	3.45E-07	2.98E-08	2.77E-10		-
Benzo(k)fluoranthene	7.46E-07	6.44E-08	6.00E-10	8.70E-02	No
Benzyl alcohol	3.96E-05	3.42E-06	3.19E-08		-
Biphenyl	6.45E-06	5.57E-07	5.19E-09	4.20E-01	No
Butylbenzyl phthalate	1.22E-07	1.05E-08	9.81E-11		-
Carbon Tetrachloride	6.89E-08	5.95E-09	5.54E-11	4.10E+00	No
Chromium	3.97E-07	3.43E-08	3.19E-10		-
Chrysene	9.33E-07	8.05E-08	7.50E-10	8.70E-01	No
cis-2-Butene	1.99E-07	1.72E-08	1.60E-10		-
cis-2-Pentene	9.07E-08	7.83E-09	7.30E-11		-
CO	2.98E-02	2.57E-03	2.49E-05		-
CO2	1.63E+00	1.41E-01	1.31E-03		-
Copper	6.31E-06	5.45E-07	5.08E-09		-
Cyclohexane	2.67E-05	2.30E-06	2.15E-08		-
Cyclopentane	1.53E-06	1.32E-07	1.23E-09		-
Dibenz(a,h)anthracene	2.00E-07	1.73E-08	1.61E-10		-
Diethyl phthalate	7.00E-08	6.04E-09	5.63E-11		-
Dimethyl phthalate	1.88E-07	1.62E-08	1.51E-10		-
Di-n-butyl phthalate	3.30E-07	2.85E-08	2.65E-10		-
Di-n-octyl phthalate	9.19E-07	7.93E-08	7.39E-10		-
Ethane	1.15E-05	9.92E-07	9.25E-09		-
Ethyl chloride	6.89E-08	5.95E-09	5.54E-11	1.00E+04	No
Ethylbenzene	5.49E-05	4.74E-06	4.42E-08	9.70E+00	No
Ethylene	7.43E-05	6.41E-06	5.98E-08		-
Fluoranthene	7.85E-07	6.77E-08	6.31E-10		-
HCL	9.97E-04	8.60E-05	8.02E-07	2.10E+01	No
i-Butane	1.24E-06	1.07E-07	9.97E-10		-
i-Butene	2.26E-06	1.95E-07	1.82E-09		-

Contaminant	Emisson Factor lb/lb waste	Emission Rate g/sec	Maximum Annual Concentration ug/m^3	RSL ug/m^3	Screening Level Exceeded?
Indeno(1,2,3-cd)pyrene	2.83E-07	2.44E-08	2.28E-10	8.70E-02	No
i-Pentane	1.08E-05	9.32E-07	8.69E-09		-
i-Propylbenzene	1.03E-04	8.89E-06	8.28E-08	4.20E+02	No
m- & p-Xylene	4.52E-04	3.90E-05	3.64E-07	1.00E+02	No
Methane	8.72E-05	7.53E-06	7.01E-08		-
Methyl chloroform	3.44E-08	2.97E-09	2.77E-11	5.20E+03	No
Methylchloride	2.84E-07	2.45E-08	2.28E-10	9.40E+01	No
Methylcyclohexane	1.56E-04	1.35E-05	1.25E-07		-
Methylcyclopentane	9.93E-06	8.57E-07	7.99E-09		-
Methylenechloride	7.46E-07	6.44E-08	6.00E-10	9.60E+02	No
m-Ethyltoluene	1.28E-04	1.10E-05	1.03E-07		-
Naphthalene	8.38E-05	7.23E-06	6.74E-08	7.20E-01	No
n-Butane	4.60E-06	3.97E-07	3.70E-09		-
n-Decane	1.97E-03	1.70E-04	1.58E-06		-
n-Heptane	5.90E-05	5.09E-06	4.75E-08		-
n-Hexane	1.60E-05	1.38E-06	1.29E-08	7.30E+02	No
Nitrogen dioxide (peroxide)	4.69E-04	4.05E-05	3.77E-07		-
Nitrogen Oxide	6.28E-03	5.42E-04	5.05E-06		-
Nitrogen Oxides	7.50E-02	6.47E-03	6.19E-05		-
n-Nonane	1.03E-03	8.89E-05	8.28E-07	2.10E+02	No
n-Octane	2.48E-04	2.14E-05	1.99E-07		-
Non-methane Organic Compound	7.84E-03	6.77E-04	6.31E-06		-
n-Pentane	9.05E-06	7.81E-07	7.28E-09	1.00E+03	No
n-Propylbenzene	8.16E-05	7.04E-06	6.56E-08	1.00E+03	No
OCDD *Screening Limits are for TCDD	1.03E-11	8.89E-13	8.28E-15	6.40E-07	No
o-Ethyltoluene	3.90E-07	3.37E-08	3.14E-10		-
o-Xylene	1.25E-04	1.08E-05	1.01E-07	1.00E+02	No
Particulates	9.00E-02	7.77E-03	7.25E-05		-
Perylene	1.72E-07	1.48E-08	1.38E-10		-
p-Ethyltoluene	1.53E-04	1.32E-05	1.23E-07		-
Phenanthrene	7.17E-06	6.19E-07	5.77E-09		-
Phenol	1.56E-05	1.35E-06	1.25E-08		-
PM10	9.10E-01	7.85E-02	7.32E-04		-
Propane	2.22E-06	1.92E-07	1.79E-09		-
Propene	1.30E-05	1.12E-06	1.05E-08	3.10E+03	No
Pyrene	7.06E-07	6.09E-08	5.68E-10		-
Styrene	4.99E-05	4.31E-06	4.01E-08	1.00E+03	No
Sulfur Dioxide	1.22E-03	1.05E-04	2.07E-06		-
Toluene	1.22E-04	1.05E-05	9.81E-08	5.20E+03	No
Total Alkanes (Paraffins) (e.g. Octa)	3.50E-03	3.02E-04	2.82E-06		-
Total Alkenes (Olefins) (e.g. Ethyle)	1.93E-04	1.67E-05	1.55E-07		-
Total Non-methane Hydrocarbons	1.20E-02	1.04E-03	9.77E-06		-
Total Unidentified Hydrocarbons	6.04E-03	5.21E-04	4.86E-06		-
trans-2-Butene	2.91E-06	2.51E-07	2.34E-09		-
trans-2-Pentene	1.08E-06	9.32E-08	8.69E-10		-
Vinyl Chloride	2.23E-07	1.92E-08	1.79E-10	1.60E+00	No
Vinylidene Chloride	2.15E-07	1.86E-08	1.73E-10	2.10E+02	No
Volatile Organic Compounds	5.50E-04	4.75E-05	4.42E-07		-
Zinc	6.26E-05	5.40E-06	5.04E-08		-

Notes

1 Impacts from propane combustion have been added to waste impact concentrations for nitrogen oxides, carbon monoxide, particulate matter, PM10, sulfure dioxide, and non-methane hydrocarbons.

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/m^3 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	Human Health Soil Screening Levels (mg/kg)	Ecological Screening Levels (mg/kg)	Screening Level Exceeded?
1,2,4-Trimethylbenzene	1.95E-07	8.44E-04	1.00E+08	6.93E-09	4.62E-02	1.16E-04	6.20E+01	-	No
Butylbenzene	4.09E-07	1.77E-03	1.00E+08	6.93E-09	4.62E-02	2.42E-04	62 & 3900	-	No
1,3,5-Trimethylbenzene	4.48E-07	1.94E-03	1.00E+08	6.93E-09	4.62E-02	2.65E-04	7.80E+02	-	No
1,3-Butadiene	1.08E-09	4.66E-06	1.00E+08	6.93E-09	4.62E-02	6.37E-07	8.08E-01	-	No
1-Butene	3.77E-09	1.63E-05	1.00E+08	6.93E-09	4.62E-02	2.23E-06			-
1-Hexene	1.76E-09	7.61E-06	1.00E+08	6.93E-09	4.62E-02	1.04E-06			-
1-Pentene	1.38E-09	5.98E-06	1.00E+08	6.93E-09	4.62E-02	8.18E-07			-
2,2,4-Trimethylpentane	5.61E-09	2.42E-05	1.00E+08	6.93E-09	4.62E-02	3.32E-06			-
2,2-Dimethylbutane	3.45E-11	1.49E-07	1.00E+08	6.93E-09	4.62E-02	2.04E-08			-
2,3,4-Trimethylpentane	6.97E-06	3.01E-02	1.00E+08	6.93E-09	4.62E-02	4.12E-03			-
2,3-Dimethylbutane	1.66E-09	7.16E-06	1.00E+08	6.93E-09	4.62E-02	9.80E-07			-
2,3-Dimethylhexane	4.34E-09	1.88E-05	1.00E+08	6.93E-09	4.62E-02	2.57E-06			-
2,3-Dimethylpentane	2.68E-09	1.16E-05	1.00E+08	6.93E-09	4.62E-02	1.58E-06			-
2,4,4-Trimethyl-1-pentene	1.60E-10	6.91E-07	1.00E+08	6.93E-09	4.62E-02	9.47E-08			-
2,4-Dimethylhexane	5.16E-09	2.23E-05	1.00E+08	6.93E-09	4.62E-02	3.05E-06			-
2,4-Dimethylpentane	1.74E-09	7.51E-06	1.00E+08	6.93E-09	4.62E-02	1.03E-06			-
2,5-Dimethylhexane	8.93E-09	3.86E-05	1.00E+08	6.93E-09	4.62E-02	5.28E-06			-
2-Methyl-1-butene	8.45E-10	3.65E-06	1.00E+08	6.93E-09	4.62E-02	5.00E-07			-
2-Methyl-2-butene	7.30E-11	3.15E-07	1.00E+08	6.93E-09	4.62E-02	4.31E-08			-
2-Methylheptane	3.56E-08	1.54E-04	1.00E+08	6.93E-09	4.62E-02	2.10E-05			-
2-Methylhexane	1.11E-08	4.80E-05	1.00E+08	6.93E-09	4.62E-02	6.56E-06			-
2-Methylnaphthalene	1.75E-08	7.57E-05	1.00E+08	6.93E-09	4.62E-02	1.04E-05	2.30E+02	1.60E+01	No
2-Methylpentane	7.62E-09	3.29E-05	1.00E+08	6.93E-09	4.62E-02	4.51E-06			-
3-Ethylhexane, 3-Methylheptane	4.75E-08	2.05E-04	1.00E+08	6.93E-09	4.62E-02	2.81E-05			-
3-Methyl-1-butene	1.60E-10	6.91E-07	1.00E+08	6.93E-09	4.62E-02	9.47E-08			-
3-Methylhexane	1.25E-08	5.39E-05	1.00E+08	6.93E-09	4.62E-02	7.37E-06			-
3-Methylpentane	4.09E-09	1.77E-05	1.00E+08	6.93E-09	4.62E-02	2.42E-06			-
Acenaphthylene	5.40E-09	2.33E-05	1.00E+08	6.93E-09	4.62E-02	3.19E-06	3.44E+03	1.20E+02	No
Acetophenone	1.40E-10	6.05E-07	1.00E+08	6.93E-09	4.62E-02	8.28E-08	7.82E+03		No
Acetylene	7.66E-08	3.31E-04	1.00E+08	6.93E-09	4.62E-02	4.53E-05			-
Aluminum	5.73E-10	2.48E-06	1.00E+08	6.93E-09	4.62E-02	3.39E-07	7.80E+04	pH dependent	No
Anthracene	8.20E-11	3.54E-07	1.00E+08	6.93E-09	4.62E-02	4.85E-08	1.72E+04	6.80E+00	No
Aromative (e.g. Styrene)	1.84E-06	7.96E-03	1.00E+08	6.93E-09	4.62E-02	1.09E-03			-
Barium	3.38E-10	1.46E-06	1.00E+08	6.93E-09	4.62E-02	2.00E-07	1.56E+04	1.10E+02	No
Benzene	6.31E-08	2.72E-04	1.00E+08	6.93E-09	4.62E-02	3.73E-05	1.54E+01	2.40E+01	No
Benzo(a)anthracene	7.89E-10	3.41E-06	1.00E+08	6.93E-09	4.62E-02	4.67E-07	1.48E+00	8.00E-01	No
Benzo(a)pyrene	5.97E-10	2.58E-06	1.00E+08	6.93E-09	4.62E-02	3.53E-07	1.48E-01	5.30E+01	No
Benzo(b)fluoranthene	6.31E-10	2.72E-06	1.00E+08	6.93E-09	4.62E-02	3.73E-07	1.48E+00	1.80E+01	No
Benzo(ghi)perylene	2.77E-10	1.20E-06	1.00E+08	6.93E-09	4.62E-02	1.64E-07	1.72E+03	2.40E+01	No
Benzo(k)fluoranthene	6.00E-10	2.59E-06	1.00E+08	6.93E-09	4.62E-02	3.55E-07	1.48E+01	6.20E+01	No
Benzyl alcohol	3.19E-08	1.38E-04	1.00E+08	6.93E-09	4.62E-02	1.88E-05	6.10E+03	1.20E+02	No
Biphenyl	5.19E-09	2.24E-05	1.00E+08	6.93E-09	4.62E-02	3.07E-06	5.71E+01		No
Butylbenzyl phthalate	9.81E-11	4.24E-07	1.00E+08	6.93E-09	4.62E-02	5.80E-08	2.60E+03	9.00E+01	No
Carbon Tetrachloride	5.54E-11	2.39E-07	1.00E+08	6.93E-09	4.62E-02	3.28E-08	1.08E+01		No
Chromium	3.19E-10	1.38E-06	1.00E+08	6.93E-09	4.62E-02	1.89E-07	1.17E+05	2.80E+01	No
Chrysene	7.50E-10	3.24E-06	1.00E+08	6.93E-09	4.62E-02	4.44E-07	1.48E+02	2.40E+00	No
cis-2-Butene	1.60E-10	6.91E-07	1.00E+08	6.93E-09	4.62E-02	9.47E-08			-
cis-2-Pentene	7.30E-11	3.15E-07	1.00E+08	6.93E-09	4.62E-02	4.31E-08			-
CO	2.49E-05	1.07E-01	1.00E+08	6.93E-09	4.62E-02	1.47E-02			-
CO2	1.31E-03	5.66E+00	1.00E+08	6.93E-09	4.62E-02	7.75E-01			-
Copper	5.08E-09	2.19E-05	1.00E+08	6.93E-09	4.62E-02	3.00E-06	3.13E+03	1.50E+01	No
Cyclohexane	2.15E-08	9.28E-05	1.00E+08	6.93E-09	4.62E-02	1.27E-05			-
Cyclopentane	1.23E-09	5.32E-06	1.00E+08	6.93E-09	4.62E-02	7.28E-07			-
Dibenz(a,h)anthracene	1.61E-10	6.95E-07	1.00E+08	6.93E-09	4.62E-02	9.51E-08	1.48E-01	1.20E+01	No
Diethyl phthalate	5.63E-11	2.43E-07	1.00E+08	6.93E-09	4.62E-02	3.33E-08	4.89E+04	1.00E+02	No
Dimethyl phthalate	1.51E-10	6.53E-07	1.00E+08	6.93E-09	4.62E-02	8.94E-08	6.11E+05	1.00E+01	No
Di-n-butyl phthalate	2.65E-10	1.15E-06	1.00E+08	6.93E-09	4.62E-02	1.57E-07	6.11E+03	1.10E-02	No
Di-n-octyl phthalate	7.39E-10	3.19E-06	1.00E+08	6.93E-09	4.62E-02	4.37E-07	6.11E+03	9.10E-01	No
Ethane	9.25E-09	4.00E-05	1.00E+08	6.93E-09	4.62E-02	5.47E-06			-
Ethyl chloride	5.54E-11	2.39E-07	1.00E+08	6.93E-09	4.62E-02	3.28E-08	2.98E+04		No
Ethylbenzene	4.42E-08	1.91E-04	1.00E+08	6.93E-09	4.62E-02	2.61E-05	6.84E+01		No
Ethylene	5.98E-08	2.58E-04	1.00E+08	6.93E-09	4.62E-02	3.53E-05			-
Fluoranthene	6.31E-10	2.73E-06	1.00E+08	6.93E-09	4.62E-02	3.73E-07	2.29E+03	1.00E+01	No
HCL	8.02E-07	3.46E-03	1.00E+08	6.93E-09	4.62E-02	4.74E-04			-
i-Butane	9.97E-10	4.31E-06	1.00E+08	6.93E-09	4.62E-02	5.90E-07			-
i-Butene	1.82E-09	7.85E-06	1.00E+08	6.93E-09	4.62E-02	1.08E-06			-
Indeno(1,2,3-cd)pyrene	2.28E-10	9.83E-07	1.00E+08	6.93E-09	4.62E-02	1.35E-07	1.48E+00	6.20E+01	No
i-Pentane	8.69E-09	3.75E-05	1.00E+08	6.93E-09	4.62E-02	5.14E-06			-
i-Propylbenzene	8.28E-08	3.58E-04	1.00E+08	6.93E-09	4.62E-02	4.90E-05			-
m- & p-Xylene	3.64E-07	1.57E-03	1.00E+08	6.93E-09	4.62E-02	2.15E-04	8.14E+02	1.40E+00	No
Methane	7.01E-08	3.03E-04	1.00E+08	6.93E-09	4.62E-02	4.15E-05			-
Methyl chloroform	2.77E-11	1.20E-07	1.00E+08	6.93E-09	4.62E-02	1.64E-08	1.56E+04	2.60E+02	No
Methylchloride	2.28E-10	9.87E-07	1.00E+08	6.93E-09	4.62E-02	1.35E-07	2.75E+02		No
Methylcyclohexane	1.25E-07	5.42E-04	1.00E+08	6.93E-09	4.62E-02	7.42E-05	5.63E+03		-
Methylcyclopentane	7.99E-09	3.45E-05	1.00E+08	6.93E-09	4.62E-02	4.72E-06			-
Methylenechloride	6.00E-10	2.59E-06	1.00E+08	6.93E-09	4.62E-02	3.55E-07	4.09E+02	2.60E+00	No
m-Ethyltoluene	1.03E-07	4.45E-04	1.00E+08	6.93E-09	4.62E-02	6.09E-05			-
Naphthalene	6.74E-08	2.91E-04	1.00E+08	6.93E-09	4.62E-02	3.99E-05	4.30E+01	1.00E+00	No
n-Butane	3.70E-09	1.60E-05	1.00E+08	6.93E-09	4.62E-02	2.19E-06			-
n-Decane	1.58E-06	6.85E-03	1.00E+08	6.93E-09	4.62E-02	9.37E-04			-
n-Heptane	4.75E-08	2.05E-04	1.00E+08	6.93E-09	4.62E-02	2.81E-05			-
n-Hexane	1.29E-08	5.56E-05	1.00E+08	6.93E-09	4.62E-02	7.61E-06	9.38E+02		No
Nitrogen dioxide (peroxide)	3.77E-07	1.63E-03	1.00E+08	6.93E-09	4.62E-02	2.23E-04			-
Nitrogen Oxide	5.05E-06	2.18E-02	1.00E+08	6.93E-09	4.62E-02	2.99E-03			-

Contaminant	Maximum Annual Concentration ug/m3	Deposition (Dep) ug/m2/day	$t_{1/2}$ days	K_s	X		10 Year Soil Concentration mg/kg	Human Health Soil Screening Levels (mg/kg)	Ecological Screening Levels (mg/kg)	Screening Level Exceeded?
Nitrogen Oxides	6.19E-05	2.67E-01	1.00E+08	6.93E-09	4.62E-02		3.66E-02			-
n-Nonane	8.28E-07	3.58E-03	1.00E+08	6.93E-09	4.62E-02		4.90E-04			-
n-Octane	1.99E-07	8.62E-04	1.00E+08	6.93E-09	4.62E-02		1.18E-04			-
Non-methane Organic Compound	6.31E-06	2.72E-02	1.00E+08	6.93E-09	4.62E-02		3.73E-03			-
n-Pentane	7.28E-09	3.14E-05	1.00E+08	6.93E-09	4.62E-02		4.31E-06			-
n-Propylbenzene	6.56E-08	2.84E-04	1.00E+08	6.93E-09	4.62E-02		3.88E-05	3.40E+03		No
OCDD *Screening Limits are for TCDD	8.28E-15	3.58E-11	1.00E+08	6.93E-09	4.62E-02		4.90E-12	4.50E-05	2.90E-07	No
o-Ethyltoluene	3.14E-10	1.36E-06	1.00E+08	6.93E-09	4.62E-02		1.86E-07			-
o-Xylene	1.01E-07	4.34E-04	1.00E+08	6.93E-09	4.62E-02		5.95E-05	8.98E+02	1.40E+00	No
Particulates	7.25E-05	3.13E-01	1.00E+08	6.93E-09	4.62E-02		4.29E-02			-
Perylene	1.38E-10	5.98E-07	1.00E+08	6.93E-09	4.62E-02		8.18E-08			-
p-Ethyltoluene	1.23E-07	5.32E-04	1.00E+08	6.93E-09	4.62E-02		7.28E-05			-
Phenanthrene	5.77E-09	2.49E-05	1.00E+08	6.93E-09	4.62E-02		3.41E-06	1.83E+03	5.50E+00	No
Phenol	1.25E-08	5.42E-05	1.00E+08	6.93E-09	4.62E-02		7.42E-06	1.83E+04	7.90E-01	No
PM10	7.32E-04	3.16E+00	1.00E+08	6.93E-09	4.62E-02		4.33E-01			-
Propane	1.79E-09	7.71E-06	1.00E+08	6.93E-09	4.62E-02		1.06E-06			-
Propene	1.05E-08	4.52E-05	1.00E+08	6.93E-09	4.62E-02		6.18E-06			-
Pyrene	5.68E-10	2.45E-06	1.00E+08	6.93E-09	4.62E-02		3.36E-07	1.72E+03	1.00E+01	No
Styrene	4.01E-08	1.73E-04	1.00E+08	6.93E-09	4.62E-02		2.37E-05	7.28E+03	1.20E+00	No
Sulfur Dioxide	2.07E-06	8.93E-03	1.00E+08	6.93E-09	4.62E-02		1.22E-03			-
Toluene	9.81E-08	4.24E-04	1.00E+08	6.93E-09	4.62E-02		5.80E-05	5.27E+03	2.30E+01	No
Total Alkanes (Paraffins) (e.g. Octa)	2.82E-06	1.22E-02	1.00E+08	6.93E-09	4.62E-02		1.67E-03			-
Total Alkenes (Olefins) (e.g. Ethyle)	1.55E-07	6.71E-04	1.00E+08	6.93E-09	4.62E-02		9.18E-05			-
Total Non-methane Hydrocarbons	9.77E-06	4.22E-02	1.00E+08	6.93E-09	4.62E-02		5.78E-03			-
Total Unidentified Hydrocarbons	4.86E-06	2.10E-02	1.00E+08	6.93E-09	4.62E-02		2.87E-03			-
trans-2-Butene	2.34E-09	1.01E-05	1.00E+08	6.93E-09	4.62E-02		1.38E-06			-
trans-2-Pentene	8.69E-10	3.75E-06	1.00E+08	6.93E-09	4.62E-02		5.14E-07			-
Vinyl Chloride	1.79E-10	7.75E-07	1.00E+08	6.93E-09	4.62E-02		1.06E-07	7.28E-01	1.20E-01	No
Vinylidene Chloride	1.73E-10	7.47E-07	1.00E+08	6.93E-09	4.62E-02		1.02E-07	4.49E+02	1.10E+01	No
Volatile Organic Compounds	4.42E-07	1.91E-03	1.00E+08	6.93E-09	4.62E-02		2.62E-04			-
Zinc	5.04E-08	2.18E-04	1.00E+08	6.93E-09	4.62E-02		2.98E-05	2.35E+04	4.80E+01	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 = [{$e^{-Ks * Tf}$ - $e^{-Ks * To}$} / 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)

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)

Attachment H

Technical Area 16 Burn Ground Human Health and Ecological Risk-Screening Assessments

LA-UR-13-24177

EXECUTIVE SUMMARY

The areas around two open burn units at Technical Area 16 within the Los Alamos National Laboratory were sampled. Surface soil samples were collected and analyzed for inorganic chemicals and organic chemicals. Data from these samples were used to conduct human health and ecological risk-screening assessments.

For the human health risk-screening assessment, the industrial and residential scenarios were evaluated. The exposure point concentrations for the chemicals of potential concern were less than or similar to their respective industrial and residential soil screening levels. The potential risks for the industrial and residential scenarios were equivalent to or less than the New Mexico Environment Department target risk 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 deer mouse, shrew, and plant. However, spatial analysis of a small area northeast of unit TA-16-388 with elevated dioxin concentrations and the remainder of the open burn unit area found no potential adverse effects to the small mammal populations. In addition, recent field studies found no adverse impacts to the small mammal population in the vicinity of unit TA-16-388. The plant community around the TA-16 burn ground (including unit TA-16-388) was observed to be typical of the surrounding area and healthy; no evidence was found that there are any adverse impacts to the plant community from contaminants. Therefore, no potential unacceptable risks to human and ecological receptors are present at the TA-16 burn ground or at unit TA-16-388.

CONTENTS

Tables

Figures

Attachments

1.0 INTRODUCTION

Two open burn units within the Los Alamos National Laboratory (LANL or the Laboratory) are located at Technical Area 16 (TA-16), and are referred to individually as TA-16-388 and TA-16-399 and, collectively, as the TA-16 Burn Ground. Soil sampling was conducted for the purpose of characterizing the TA-16 Burn Ground to establish baseline conditions for continued treatment operations at the TA-16-388 hazardous waste treatment unit.

Human health and ecological risk-screening assessments were conducted using surface soil data collected in 2009, 2012, and 2013. 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 TA-16 Burn Ground, 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 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. Residential exposure is also assessed and provided for comparison purposes.

The release of contaminants from the open burn operations has occurred for more than 50 yr. Releases are transported primarily by winds, which rapidly disperses the material in ambient air. Most material is deposited close to the source(s) and concentrations decrease with distance from the source.

Exposure to a site worker is through surface soil. Potential exposure pathways include incidental ingestion of soil, inhalation of fugitive dust or vapors, and dermal contact with soil.

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 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. 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 this pathway is negligible (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

Thirty-seven surface samples (0–1 ft) were collected from 37 locations across the TA-16 Burn Ground in 2009 and analyzed for Resource Conservation and Recovery Act (RCRA) metals and/or dioxin and furan congeners (Figure 1.2-1). One sample (09RCRA462) is a background sample and is not included in the calculation of the risks from dioxin and furan congeners. Twelve surface soil samples (0–2 in) were collected from 12 locations in 2012 and analyzed for target analyte list (TAL) metals, perchlorate, semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), explosive compounds, and dioxins/furans (Figure 1.2-1). An additional seven surface soil samples (0–2 in) were collected from seven locations in 2013 and analyzed for TAL metals, perchlorate, SVOCs, explosive compounds, and dioxins/furans (Figure 1.2-1).

The data set represents a sampling area inclusive of units TA-16-388 and TA-16-399. However, because unit TA-16-399 is scheduled for closure in the near future, an evaluation of the potential risk at unit TA-16-388 only is also presented. As a result, data from the area around TA-16-399 was excluded from the assessment as it is not related to TA-16-388 operations. In doing this, several 2,3,7,8-tetrachlorodibenzodioxin (TCDD) equivalent concentrations as well as barium and silver concentrations were deleted from the data set and the 95% upper confidence limits (UCLs) of the mean were recalculated. In addition, bis(2-ethylhexyl)phthalate and hexahydro-1,3,5-trinitro-1,3,5-triazine (i.e., Royal Demolition Explosive or RDX) were eliminated as chemicals of potential concern (COPCs) because they were not detected in the area around unit TA-16-388.

1.2.2 Evaluation of Inorganic Chemicals

Thirty-one surface samples were collected from 31 locations in 2009 and analyzed for RCRA metals. Twelve surface samples were collected from 12 locations in 2012 and seven surface samples were collected in 2013 and analyzed for TAL metals and perchlorate. Table 1.2-1 presents the inorganic chemicals detected or detected above soil background values (BVs) (LANL 1998). Barium, cadmium, cobalt, silver, and zinc were detected above BVs in at least one soil sample and perchlorate was detected in six samples but has no BV. Cadmium, cobalt, and zinc site data sets were statistically compared with their respective soil background data sets to determine whether they should be retained as COPCs. The statistical comparisons found that the site data for each of the three inorganic chemicals are not statistically different from soil background data ($p>0.05$). These three inorganic chemicals are not retained as COPCs. The results of the statistical comparisons and the box plots are provided in Attachment 1. Barium and silver are retained as COPCs because they were detected substantially above background and perchlorate is a COPC because it was detected (no background data are available). Figure 1.2-2 presents the concentrations of barium and silver detected above the soil BVs and the detected concentrations of perchlorate.

1.2.3 Evaluation of Organic Chemicals

Fifty -five surface samples were collected from 55 locations in 2009, 2012, and 2013, and analyzed for dioxin/furan congeners. Dioxin/furan congeners were detected in each sample (Table 1.2-2). The number of congeners detected ranged from 2 to 17. Figure 1.2-3 presents the 2,3,7,8-TCDD equivalent concentrations for each sample. Twelve surface samples were collected from 12 locations in 2012 and analyzed for SVOCs, VOCs, and explosive compounds. Seven samples were collected from seven locations in 2013 and analyzed for SVOCs and explosive compounds. All detected organic chemicals were retained as COPCs (Table 1.2-3). Figure 1.2-4 presents the detected concentrations of the other organic chemicals.

1.3 Exposure Point Concentration Calculations

The exposure point concentrations (EPCs) are the 95% UCL 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 World Health Organization (WHO) Toxic Equivalency Factors (TEFs) (http://www.who.int/ipcs/assessment/tef_update/en/index.html) for mammals (humans and wildlife) and weighted by Van den Berg et al. (1998) TEFs for birds; the sum is expressed as the 2,3,7,8-TCDD equivalent concentration. The TEFs used are presented in Table 1.3-1. The results of the TEF calculations and the TCDD equivalent concentrations for the TA-16 Burn Ground samples are presented in Tables 1.3-2 and 1.3-3 for mammals and birds, respectively. The results of the TEF calculations and the TCDD equivalent concentrations for unit TA-16-388 samples are presented in Tables 1.3-4 and 1.3-5 for mammals and birds, respectively.

The 95% UCLs were calculated as described in U.S. Environmental Protection Agency (EPA) guidance (EPA 2002). Tests for distributions were performed using ProUCL 4.1.00 (http://www.epa.gov/osp/hstl/tsc/software.htm) to determine the appropriate method for UCL calculations. The ProUCL inputs and outputs are presented as Attachment 2. The recommended 95% UCL for barium at unit TA-16-388 was calculated as the 95% H-UCL, which ProUCL recommends not using. The 95% UCL for barium used in the risk screening assessments for this site was the 95% Chebyshev (MVUE) UCL (Attachment 2).

2.0 HUMAN HEALTH RISK SCREENING ASSESSMENT

The following sections present the human health risk-screening assessments for the TA-16 Burn Ground and unit TA-16-388. The EPCs for each COPC are presented in Table 2.1-1 for the TA-16 Burn Ground and in Table 2.1-2 for unit TA-16-388 only.

The EPC for each COPC was compared with the industrial and residential soil screening levels (SSLs). The chemical SSLs used in the evaluations were obtained from New Mexico Environment Department (NMED) guidance (NMED 2012) or the 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 were conducted separately for carcinogens and noncarcinogens for the industrial and residential scenarios (Tables 2.1-3 through 2.1-10).

2.1 Screening Evaluation

The EPCs for noncarcinogenic COPCs were less than their respective industrial and residential SSLs at the TA-16 Burn Ground and unit TA-16-388. The industrial and residential hazard indexes (HIs) at the TA-16 Burn Ground and unit TA-16-388 were approximately 0.007 and 0.1 (Tables 2.1-3 and 2.1-7) and 0.007 and 0.09 (Tables 2.1-5 and 2.1-9), respectively, which were less than NMED's target HI of 1 (NMED 2012).

The EPCs for carcinogenic COPCs were less than or similar to their respective industrial and residential SSLs at the TA-16 Burn Ground and for unit TA-16-388. The industrial and residential total excess cancer risks were approximately 3×10^{-6} and 1×10^{-5} for both areas (Tables 2.1-4, 2.1-6, 2.1-8, and 2.1-10), which were less than or equivalent to the NMED target risk level of 1×10^{-5} (NMED 2012).

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 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 95% UCL as the EPC for each COPC. Use of the 95% UCL may result in an overestimation of risk for analytes that have 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 used in the assessment 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 Laboratory worker who is outside for 8 h/d for 225 d/yr (NMED 2012) and spends the entire 8 h 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 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, 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 99th 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 that a contaminant is a human carcinogen.

COPCs may be bound to the environmental matrix and not available for absorption into the human body. However, the exposure scenarios default to the assumption that the COPCs are 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 (0.007) were less than NMED's target level of 1 and the cancer risks (3×10^{-6}) were less than the NMED target level of 1×10^{-5}. For the residential scenario, the HIs (0.1 and 0.09) were less than NMED's target level of 1 and the cancer risks (1×10^{-5}) were equivalent to the NMED target level of 1×10^{-5}. The screening assessments indicated no potential unacceptable risks to human health at the TA-16 Burn Ground and at unit TA-16-388.

3.0 ECOLOGICAL SCREENING ASSESSMENT

Ecological risk-screening assessments for the TA-16 Burn Ground and unit TA-16-388 are 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 ESLs in accordance with Laboratory guidance (LANL 2012a). The EPCs used in the assessments are presented in Tables 2.1-6 and 2.1-7. The ESLs obtained from the ECORISK Database, Version 3.1 (LANL 2012b) are presented in Table 3.1-1. In addition, the avian ESLs for 2,3,7,8-TCDD from ECORISK Database, Version 2.0 (LANL 2003a) are presented in Table 3.1-1. 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 2003a; LANL 2012b).

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 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 an HI; an HI greater than 1 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.

3.1 Screening Evaluation

For the TA-16 Burn Ground, the HQs using the minimum ESLs exceeded 0.3 for barium, silver, benzoic acid, bis(2-ethylhexyl)phthalate, triaminotrinitrobenzene (TATB), and 2,3,7,8-TCDD (Table 3.1-2). In addition, perchlorate was detected but has no ESLs for comparison. These COPCs were retained as COPECs. An HQ for each COPEC/receptor combination was calculated and summed to obtain an HI for each receptor. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed nonradionuclides have common toxicological effects and HQs may be added. The HQ/HI calculations indicated all receptors, except the robin (herbivore), which has an HI equivalent to 1, have HIs greater than 1 (Table 3.1-3). The results are discussed further in the uncertainty section.

For unit TA-16-388, the HQs using the minimum ESLs exceeded 0.3 for barium, silver, benzoic acid, TATB, and 2,3,7,8-TCDD (Table 3.1-4). In addition, perchlorate was detected but has no ESLs for comparison. These COPCs were retained as COPECs. Bis(2-ethylhexyl)phthalate and RDX were eliminated as COPCs because they were not detected in the area around unit TA-16-388. The HQ/HI calculations indicated all receptors, except the robin (herbivore), which has an HI equivalent to 1, have HIs greater than 1 (Table 3.1-5). 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 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. 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 COPECs 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. 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. 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.

3.2.2 Exposure Assumptions

The EPCs used are conservative estimates of exposure to each COPEC. The sampling efforts focused on areas of known contamination, and receptors were assumed to ingest 100% of their food and spend

100% of their time at the site. These assumptions regarding the exposure of terrestrial receptors within the TA-16 Burn Ground are likely to result in an overestimation of potential ecological exposure and risk.

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. Therefore, 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 2,3,7,8-TCDD obtained from ECORISK Database, Version 2.0 (LANL 2003a) are based on a toxicity value using intraperitoneal injections. This route of exposure does not occur naturally and assumes that 2,3,7,8-TCDD 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 2,3,7,8-TCDD by the receptor and thereby overestimates the potential effect on the receptor.

3.2.4 Area Use Factors

Threatened and endangered species, such as the Mexican spotted owl, must be assessed on an individual basis (EPA 1999). Therefore, 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 and is applicable for the Mexican spotted owl. The kestrel (top carnivore) is used as the surrogate receptor for the Mexican spotted owl. The unadjusted HIs for the kestrel (top carnivore) were 8 (TA-16 Burn Ground) and 5 (unit TA-16-388) (Tables 3.1-3 and 3.1-5) and the AUFs for the Mexican spotted owl were 0.007 and 0.005. Application of the AUFs for the Mexican spotted owl to the HQs for the kestrel (top carnivore) resulted in adjusted HIs of 0.06 and 0.03, respectively. Therefore, no potential exists for adverse impacts to the Mexican spotted owl at the TA-16 Burn Ground and unit TA-16-388.

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 that 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 2.6 hectares [ha] for the TA-16 Burn Ground) by the population area of the receptor (Table 3.2-1). The HQs and HIs are recalculated by multiplying by the 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 for the TA-16 Burn Ground were less than 1 for the kestrel, robin (herbivore), cottontail, and red fox (Table 3.2-2). The adjusted HIs for the robin (insectivore and omnivore), deer mouse, shrew, earthworm, and plant were greater than 1 (Table 3.2-2). The elevated HIs for the robin (insectivore and omnivore), deer mouse, and shrew were due in whole or in part from 2,3,7,8-TCDD. In addition, the elevated HIs for the earthworm and plant were from barium, while bis(2-ethylhexyl)phthalate contributed to the robin HIs and TATB contributed to the deer mouse HI (Table 3.2-2).

The evaluation of unit TA-16-388 reduces the site area to approximately 1.9 ha, which also changes the PAUFs (Table 3.2-3). The HQs were adjusted by the revised PAUFs for unit TA-16-388 (Table 3.2-4). The results indicated the adjusted HIs were less than or equivalent to 1 for the kestrel, robin (herbivore and omnivore), cottontail, and red fox and were greater than 1 for the robin (insectivore), deer mouse, shrew, earthworm, and plant (Table 3.2-4). The HIs for the robin (insectivore), deer mouse, and shrew were due in whole or in part from 2,3,7,8-TCDD, while TATB contributed to the deer mouse HI, and the elevated HIs for the earthworm and plant were from barium (Table 3.2-4).

3.2.6 LOAEL Analysis

The ESLs used in the above assessments are based on NOAELs and were obtained from the ECORISK Database, Version 3.1 (LANL 2012b). To address the elevated 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 and are presented in Table 3.2-5. 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 2003a) by an uncertainty factor of 10.

The LOAEL screening analysis of the TA-16 Burn Ground resulted in HIs less than or equivalent to 1 for the robin (omnivore) and earthworm, and HIs greater than 1 for the robin (insectivore), deer mouse, shrew, and plant (Table 3.2-6). The PAUF-adjusted LOAEL HIs ranged from 0.3 for the robin (insectivore) to 12 for the deer mouse (Table 3.2-7). The elevated adjusted HIs were from 2,3,7,8-TCDD for the deer mouse and shrew (12 and 5), and from barium for the plant (3).

The LOAEL screening analysis for the area around unit TA-16-388 resulted in HIs less than 1 for the earthworm and HIs greater than 1 for the robin (insectivore), deer mouse, shrew, and plant (Table 3.2-8). The PAUF-adjusted LOAEL HIs ranged from 0.2 for the robin (insectivore) to 11 for the deer mouse (Table 3.2-9). The elevated adjusted HIs were from 2,3,7,8-TCDD for the deer mouse and shrew (11 and 4), and from barium for the plant (2).

The HIs for the plant ranged from 2 to 3 depending on the area assessed and were from barium. The barium ESLs for the plant (110 mg/kg and 260 mg/kg) were less than the soil BV (295 mg/kg) and the maximum soil background concentration (410 mg/kg). A comparison of the barium EPCs with the maximum soil background concentration resulted in ratios of 1.9 and 1.4. Therefore, the EPCs were less than twice background and not likely to impact the plant.

In addition, substantially higher concentrations of barium were reported in Cañon de Valle below the 260 Outfall at TA-16 as part of the RCRA facility investigations conducted from 1998 to 2002 (LANL 2003b). Despite the substantially elevated barium concentrations (maximum concentration of 37,300 mg/kg) in the canyon sediment, the plant community was observed to be typical of the surrounding area and is luxuriant and healthy; no evidence of adverse impacts from contamination in Cañon de Valle to the plant community was found. Similarly, the plant community around the TA-16 Burn Ground was observed to be typical of the surrounding area and appears healthy; no evidence was found that there are any adverse impacts from barium (or other COPECs) to the plant community. Field observations made during the site visit also revealed the plant community is limited due to active maintenance related safety and fire prevention. These observations support the conclusions that barium is not impacting the plant community at the TA-16 Burn Ground or the area around unit TA-16-388.

3.2.7 Spatial Analysis of Unit TA-16-388

The 2,3,7,8-TCDD equivalent concentrations were relatively consistent across the TA-16-388 site, except for the highest concentrations located in an area northeast of the burn unit between Burning Ground Road and the road accessing the burn unit (Figure 1.2-3). The outlier test in ProUCL 4.1.00 indicated that the elevated 2,3,7,8-TCDD equivalent concentrations in this small area were outliers for the data set. The small area northeast of unit TA-16-388 is approximately 25 ft X 25 ft or approximately 0.006 ha, which comprises less than 10% of an individual deer mouse HR (HR=0.077 ha) and less than 1% of the deer mouse population area (population area=3 ha). However, the dioxin and furan congener concentrations in this small area substantially biased the 2,3,7,8-TCDD equivalent EPC and overestimated the potential risk to the receptor populations. Comparing the maximum 2,3,7,8-TCDD equivalent concentration in this area (2.98E-04 mg/kg) to the ESLs resulted in HQs ranging from approximately 1 for the robin (herbivore) to 1029 for the shrew (Table 3.2-10). Adjusting the HQs with the PAUFs (Table 3.2-11) resulted in HQs ranging from 0.00002 (kestrel and red fox) to 4 (plant) for this area (Table 3.2-12).

The rest of the area around unit TA-16-388 is approximately 1.9 ha. Recalculating the 2,3,7,8-TCDD equivalent EPCs without the highest concentrations in the area northeast of unit TA-16-388 resulted in 95% UCLs of approximately 1.23E-06 mg/kg (mammalian) and 1.74E-06 mg/kg (avian). Comparing the revised 95% UCLs to the ESLs resulted in HIs ranging from 0.1 (kestrel) to 5 (deer mouse, shrew, and plant) (Table 3.2-13). Adjusting the HQs by the PAUFs (Table 3.2-3) resulted in HIs ranging from 0.00005 (red fox) to 5 (plant) for the larger area (Table 3.2-14).

The small area has an adjusted HI greater than 1 for one receptor (plant) and the larger area has adjusted HIs greater than 1 for three receptors (deer mouse, earthworm, and plant). To address the HIs and reduce the associated uncertainty, analyses were conducted using ESLs calculated based on a LOAEL rather than a NOAEL. The LOAEL-based ESLs were calculated based on toxicity information in the ECORISK Database, Release 3.1 (LANL 2012, 226667) and are presented in Table 3.2-5.

The adjusted plant HI for the small area northeast of unit TA-16-388 was greater than 1 with barium being the primary COPEC. The HI analysis using the LOAEL-based ESL resulted in an HI of approximately 2 for the plant (Table 3.2-15). The adjusted HIs for the larger area of unit TA-16-388 were greater than 1 for the deer mouse, earthworm, and plant with 2,3,7,8-TCDD and TATB being the primary COPECs for the deer mouse and barium being the primary COPEC for the earthworm and plant. The HI analysis using LOAEL-based ESLs resulted in HIs of 0.6 and 0.2 for the deer mouse and earthworm, and an HI of approximately 2 for the plant (Table 3.2-16).

The barium ESLs for the plant (110 mg/kg and 260 mg/kg) are less than the soil BV (295 mg/kg) and the maximum soil background concentration (410 mg/kg). A comparison of the barium EPCs for the two areas with the maximum soil background concentration resulted in ratios of 1.1 and 1.2. Therefore, the

EPCs are background (the EPC for the small area is the maximum detected concentration) and not likely to impact the plant. In addition, as noted previously, substantially higher concentrations of barium were reported in Cañon de Valle below the 260 Outfall at TA-16 as part of the RCRA facility investigations conducted from 1998 to 2002 (LANL 2003b). The plant community around the TA-16 Burn Ground (including unit TA-16-388) was observed to be typical of the surrounding area and appears healthy; no evidence was found that there are any adverse impacts from barium (or other COPECs) to the plant community. Field observations made during the site visit also revealed the plant community is limited due to active maintenance related safety and fire prevention. These observations support the conclusions that barium is not impacting the plant community at the TA-16 Burn Ground or the area around unit TA-16-388.

3.2.8 Small-Mammal Field Investigations

Because the risk-screening assessment resulted in HIs above 1 for the deer mouse and shrew, small-mammal trapping and analysis of whole organisms were conducted in the area around unit TA-16-388 in 2011 and 2012 (because unit TA-16-399 is scheduled for closure in the near future small mammal trapping was not performed around this unit). 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 included as Attachment 3).

Barium, cadmium, and nickel were detected in two to three whole body samples, and lead was detected in one whole body sample 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 cadmium, nickel, and lead concentrations were slightly above the RSRLs, while barium concentrations were 3 to 4 times the RSRL. However, all concentrations were below the Laboratory soil BVs (LANL 1998) and all concentrations were below the deer mouse and shrew ESLs (LANL 2012b). In addition, lead and nickel were not detected above the soil BVs, cadmium concentrations were found not to be statistically different from soil background concentrations, and the mean barium concentrations were only slightly above the maximum soil background concentration at the TA-16 Burn Ground. No high explosives were detected in any of the animals collected, and perchlorate concentrations were 1 or 2 orders of magnitude below the RSRL. Both the animals collected and analyzed for PCBs had detected concentrations: one animal had a total PCB concentration below the RSRL for nonurban sites, while the other had a total PCB concentration above the RSRL for nonurban sites but similar to the RSRL for urban sites. The PCB homolog distribution of the animal samples collected overlaps the distribution pattern of Aroclor-1260. The total PCB concentrations were well below the deer mouse ESLs for all Aroclors, including Aroclor-1260 (LANL 2012b), and according to Fresquez et al. (2013) were below the average whole body concentration that resulted in population alterations and changes in organ function in field mice (Battey et al. 1990).

Dioxin and furan congeners were not detected above the detection 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 the concentrations detected in the soil, had fewer congeners detected than in 40% of the soil samples, and were below the deer mouse ESL for TCDD (LANL 2012b). The dioxin and furan data are similar to other dioxin/furan field-mouse uptake studies at LANL (Fresquez 2011b) and 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. 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 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]). 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 represented by the ESLs and the lack of adverse effects may be related to the low bioavailability of dioxins and furans in soil.

3.2.9 COPECs without ESLs

Several chemicals do not have ESLs for any receptor in release 3.1 of the ECORISK Database (LANL 2012b). In an effort to address this uncertainty and to 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. Toxicity data were obtained for some chemicals and receptors as a result of this online database search. However, some chemicals did not have any relevant toxicity data in the online databases listed above.

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).

No ESLs are available in the ECORISK Database for perchlorate. In addition, no toxicity data were found as a result of the online database searches and no surrogate chemical has been identified.

Perchlorate was detected in three to six soil samples depending on the area evaluated, with a maximum concentration of 0.00173 mg/kg. The NMED residential SSL for perchlorate is 54.8 mg/kg, indicating its potential toxicity is low. Because of the potentially low toxicity, perchlorate is eliminated as a COPEC.

4.0 CONCLUSIONS

The human-health screening assessments found potential risks were below or equivalent to the NMED target levels for the industrial and residential scenarios for the TA-16 Burn Ground and for unit TA-16-388. The HQs and HIs calculated based on NOAEL-based ESLs are conservative and overestimate the potential risk to receptors. Therefore, LOAEL-based ESLs were also used in the screening assessment and resulted in HIs of 12 and 11 for the deer mouse and 5 and 4 for the shrew based on the area assessed. In addition, 2,3,7,8-TCDD concentrations were relatively consistent across the TA-16-388 site, except for a small area northeast of the burn unit between Burning Ground Road and the road accessing the burn unit. Ecological risk screenings of both the small area and the remaining larger area of unit TA-16-388 resulted in HIs of 1 or less for all receptors, except the plant. Although the HIs exceeded 1 for the deer mouse and shrew for unit TA-16-388 as a whole, recent field studies found no substantial accumulation of contaminants in small mammals and no adverse impacts to the small mammal population in the vicinity of unit TA-16-388. The plant HIs (2 and 3) were also above 1, but are overestimated based on field observations of the plant community at the site and a previous canyon study. These lines of evidence indicate there are no adverse ecological impacts to the plant community at the site. Therefore, no potential unacceptable risks to human and ecological receptors are present at the TA-16 Burn Ground or at unit TA-16-388.

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)

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), 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), 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. "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 2011a)

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 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)

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 2003a)

LANL (Los Alamos National Laboratory), September 2003. “Phase III RFI for Solid Waste Management Unit 16-021(c)-99,” Los Alamos National Laboratory document LA-UR-03-5248, Los Alamos, New Mexico. (LANL 2003b)

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)

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-16 Burn Ground

Sample ID	Depth (ft)	Media	Barium (mg/kg)	Cadmium (mg/kg)	Cobalt (mg/kg)	Perchlorate (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Soil BV[a] (mg/kg)			**295**	**0.4**	**8.64**	**na[b]**	**1**	**48.8**
Industrial SSLs[c] (mg/kg)			**223000**	**897**	**300[d]**	**795**	**5680**	**341000**
Residential SSLs[c] (mg/kg)			**15600**	**70.3**	**23[d]**	**54.8**	**391**	**23500**
09RCRA696[e]	0-1	Soil	**1180**	0.33	NA[f]	NA	0.574	NA
09RCRA698[e]	0-1	Soil	**470**	**0.493**	NA	NA	0.634	NA
09RCRA700[e]	0-1	Soil	242	0.326	NA	NA	0.398(J)	NA
09RCRA702	0-1	Soil	196	**0.487**	NA	NA	0.452(J)	NA
09RCRA704[e]	0-1	Soil	229	**0.555**	NA	NA	0.537	NA
09RCRA706[e]	0-1	Soil	**298**	**0.562**	NA	NA	0.39(J)	NA
09RCRA708[e]	0-1	Soil	**970**	0.319	NA	NA	0.692	NA
09RCRA710[e]	0-1	Soil	**1780**	**0.453**	NA	NA	**7.95**	NA
09RCRA712[e]	0-1	Soil	**1730**	**0.425**	NA	NA	**1.59**	NA
09RCRA714	0-1	Soil	105	0.325	NA	NA	0.373(J)	NA
09RCRA716	0-1	Soil	**434**	**0.579**	NA	NA	0.446(J)	NA
09RCRA718	0-1	Soil	**1260**	**0.68**	NA	NA	0.876	NA
09RCRA720	0-1	Soil	199	0.313	NA	NA	0.439(J)	NA
09RCRA722	0-1	Soil	243	**0.46**	NA	NA	0.375(J)	NA
09RCRA724	0-1	Soil	**356**	0.362	NA	NA	0.622	NA
09RCRA726	0-1	Soil	98.8	0.358	NA	NA	0.352(J)	NA
09RCRA728	0-1	Soil	**314**	0.389	NA	NA	0.413(J)	NA
09RCRA730	0-1	Soil	230	0.366	NA	NA	0.331(J)	NA
09RCRA732	0-1	Soil	267	**0.414**	NA	NA	0.297(J)	NA
09RCRA734	0-1	Soil	**345**	0.381	NA	NA	0.471(J)	NA
09RCRA736	0-1	Soil	275	0.385	NA	NA	0.449(J)	NA
09RCRA738	0-1	Soil	141	0.219	NA	NA	0.164(J)	NA
09RCRA740	0-1	Soil	**612**	**0.439**	NA	NA	**1.12**	NA
09RCRA742	0-1	Soil	**488**	**0.408**	NA	NA	0.923	NA
09RCRA744	0-1	Soil	**948**	**0.621**	NA	NA	**1.17**	NA
09RCRA746	0-1	Soil	270	0.317	NA	NA	0.509(J)	NA
09RCRA748	0-1	Soil	**417**	**0.487**	NA	NA	0.771	NA
09RCRA750	0-1	Soil	**414**	0.32	NA	NA	0.821	NA
09RCRA752	0-1	Soil	**486**	0.306	NA	NA	0.64	NA
09RCRA754	0-1	Soil	**401**	0.373	NA	NA	0.552	NA
09RCRA756	0-1	Soil	**915**	**0.438**	NA	NA	**1.7**	NA
RE16-12-17672[e]	0-0.2	Soil	**658**	—[g]	2.08	0.000599(J)	0.845	**57.1**
RE16-12-17679[e]	0-0.2	Soil	**1450**	—	3.4	0.000623(J)	**4.56**	**65.7**
RE16-12-17680[e]	0-0.2	Soil	**543**	—	2.64	0.000594(J)	0.438(J)	26.4
RE16-12-17681	0-0.2	Soil	**345**	—	2.81	0.00173(J)	0.319(J)	35.9
RE16-12-17682	0-0.2	Soil	**463**	—	4.71	0.00138(J)	0.815	27.4
RE16-12-17683	0-0.2	Soil	**297**	—	3.71	—	0.4(J)	17.6
RE16-12-17684	0-0.2	Soil	127	—	**10**	—	0.275(J)	16.1
RE16-12-17685	0-0.2	Soil	156	—	2.33	—	0.282(J)	14.8
RE16-12-17686	0-0.2	Soil	269	—	5.25	0.000545(J)	0.257(J)	28.1

Table 1.2-1 (continued)

Sample ID	Depth (ft)	Media	Barium (mg/kg)	Cadmium (mg/kg)	Cobalt (mg/kg)	Perchlorate (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Soil BV[a] (mg/kg)			**295**	**0.4**	**8.64**	**na[b]**	**1**	**48.8**
Industrial SSLs[c] (mg/kg)			**223000**	**897**	**300[d]**	**795**	**5680**	**341000**
Residential SSLs[c] (mg/kg)			**15600**	**70.3**	**23[d]**	**54.8**	**391**	**23500**
RE16-12-17687	0-0.2	Soil	146	—	1.94	—	0.228(J)	36.5
RE16-12-17688	0-0.2	Soil	**1850**	0.119	**9.15**	—	**5.65**	**61.1**
RE16-12-17689[e]	0-0.2	Soil	239	—	2.67	—	0.331(J)	32.2
WST16-13-29794	0-0.2	Soil	123	—	2.81	—	0.164(J)	29.5
WST16-13-29795	0-0.2	Soil	**463**	—	2.95	0.000597	0.287(J)	39.8
WST16-13-29796	0-0.2	Soil	230	—	3.31	—	0.157(J)	33.3
WST16-13-29797	0-0.2	Soil	206	—	3.05	—	0.161(J)	32.8
WST16-13-29798	0-0.2	Soil	**388**	—	2.99	—	0.303(J)	36.6
WST16-13-29799	0-0.2	Soil	263	—	3.87	0.00069	0.205(J)	30.5
WST16-13-29800	0-0.2	Soil	262	—	4.25	—	0.439(J)	30.7

Note: Bolded values are above the soil BV.

[a] Source of BVs is LANL (1998).

[b] na = Not available.

[c] SSLs from NMED (2012), unless otherwise noted.

[d] SSLs from EPA regional screening tables (http://www.epa.gov/region06/6pd/rcra_c/pd-n/screen.htm).

[e] Samples not included in data set for unit TA-16-388.

[f] NA = Not analyzed.

[g] — = Not detected.

Table 1.2-2
Dioxin and Furan Congener Concentrations in Samples Collected from the TA-16 Burn Ground

Congener	09RCRA460 (mg/kg)	09RCRA461 (mg/kg)	09RCRA463 (mg/kg)	09RCRA464 (mg/kg)	09RCRA465* (mg/kg)	09RCRA695* (mg/kg)	09RCRA697* (mg/kg)	09RCRA699* (mg/kg)	09RCRA701 (mg/kg)	09RCRA703* (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.03E-07	1.33E-07	Not detected	6.18E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	1.92E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	4.19E-07	Not detected	Not detected	Not detected	5.38E-06	Not detected	Not detected	Not detected	Not detected	7.33E-07
1,2,3,6,7,8-HxCDD	7.15E-07	Not detected	Not detected	Not detected	1.06E-05	Not detected	4.67E-07	5.61E-07	Not detected	1.58E-06
1,2,3,7,8,9-HxCDD	7.26E-07	Not detected	Not detected	Not detected	1.14E-05	Not detected	5.18E-07	5.20E-07	Not detected	1.65E-06
1,2,3,4,6,7,8-HpCDD	2.08E-05	4.22E-06	4.41E-06	1.08E-05	2.92E-04	4.50E-06	8.35E-06	1.31E-05	8.37E-06	3.67E-05
OCDD	1.41E-04	2.07E-05	2.70E-05	3.22E-05	1.55E-03	3.41E-05	8.61E-05	1.02E-04	5.06E-05	2.09E-04
2,3,7,8-TCDF	1.83E-07	Not detected	Not detected	Not detected	2.01E-07	3.14E-06	6.59E-07	5.72E-07	1.14E-06	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.59E-06	4.83E-07	8.30E-07	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	6.33E-07	7.15E-07	Not detected	5.13E-07	Not detected	Not detected	4.66E-07
1,2,3,4,7,8-HxCDF	4.95E-07	Not detected	Not detected	7.30E-07	3.21E-06	6.73E-07	5.88E-07	5.83E-07	Not detected	9.55E-07
1,2,3,6,7,8-HXCDF	5.39E-07	Not detected	Not detected	1.02E-06	3.96E-06	Not detected	4.53E-07	4.82E-07	Not detected	8.90E-07
2,3,4,6,7,8-HxCDF	7.23E-07	Not detected	Not detected	1.09E-06	5.33E-06	Not detected	6.30E-07	5.67E-07	Not detected	1.13E-06
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	1.04E-05	1.63E-06	1.20E-06	5.09E-06	8.44E-05	2.33E-06	3.50E-06	4.30E-06	3.05E-06	1.27E-05
1,2,3,4,7,8,9-HpCDF	5.35E-07	Not detected	Not detected	1.38E-06	5.95E-06	Not detected	Not detected	Not detected	Not detected	1.02E-06
OCDF	1.77E-05	2.54E-06	2.83E-06	1.07E-05	1.87E-04	3.98E-06	1.25E-05	1.27E-05	5.82E-06	2.93E-05

Table 1.2-2 (continued)

Congener	09RCRA705* (mg/kg)	09RCRA707* (mg/kg)	09RCRA709* (mg/kg)	09RCRA711* (mg/kg)	09RCRA713 (mg/kg)	09RCRA715 (mg/kg)	09RCRA717 (mg/kg)	09RCRA719 (mg/kg)	09RCRA721 (mg/kg)	09RCRA723 (mg/kg)
2,3,7,8-TCDD	Not detected	1.69E-07	5.49E-07	1.34E-06	1.38E-07	2.52E-07	1.50E-07	Not detected	1.28E-07	2.22E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	5.13E-07	6.99E-06	6.73E-07	5.39E-07	6.33E-07	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	7.41E-07	Not detected	7.71E-07	1.79E-05	1.47E-06	1.21E-06	5.53E-07	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	1.40E-06	7.53E-07	1.28E-06	3.33E-05	2.80E-06	2.45E-06	1.01E-06	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	1.49E-06	8.03E-07	1.40E-06	4.07E-05	3.42E-06	3.06E-06	1.01E-06	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	3.66E-05	2.01E-05	3.23E-05	9.00E-04	5.81E-05	6.85E-05	2.02E-05	6.22E-07	4.64E-06	1.95E-05
OCDD	2.08E-04	1.29E-04	1.85E-04	4.80E-03	2.38E-04	3.69E-04	1.01E-04	2.92E-06	2.68E-05	1.06E-04
2,3,7,8-TCDF	5.45E-07	9.19E-07	5.95E-07	1.51E-06	3.84E-07	3.38E-07	1.65E-06	1.46E-07	3.25E-07	3.23E-07
1,2,3,7,8-PeCDF	Not detected	5.72E-07	4.76E-07	1.65E-06	Not detected	Not detected	1.87E-06	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	6.77E-07	4.97E-07	1.97E-06	Not detected	Not detected	1.82E-06	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	7.64E-07	7.87E-07	7.66E-07	1.21E-05	9.65E-07	1.01E-06	2.02E-06	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	7.60E-07	7.41E-07	7.37E-07	1.44E-05	1.52E-06	1.28E-06	1.50E-06	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	9.33E-07	9.19E-07	8.63E-07	1.78E-05	1.69E-06	1.56E-06	1.82E-06	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	2.02E-06	Not detected	Not detected	4.86E-07	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.13E-05	7.27E-06	8.71E-06	2.88E-04	2.34E-05	2.38E-05	1.01E-05	Not detected	1.49E-06	3.03E-06
1,2,3,4,7,8,9-HpCDF	9.20E-07	7.30E-07	7.41E-07	1.92E-05	8.20E-07	1.29E-06	7.29E-07	Not detected	Not detected	Not detected
OCDF	2.79E-05	1.95E-05	2.19E-05	6.57E-04	2.33E-05	4.71E-05	1.62E-05	Not detected	3.42E-06	6.36E-06

Table 1.2-2 (continued)

Congener	09RCRA725 (mg/kg)	09RCRA727 (mg/kg)	09RCRA729 (mg/kg)	09RCRA731 (mg/kg)	09RCRA733 (mg/kg)	09RCRA735 (mg/kg)	09RCRA737 (mg/kg)	09RCRA739 (mg/kg)	09RCRA741 (mg/kg)	09RCRA743 (mg/kg)
2,3,7,8-TCDD	Not detected	2.76E-07	9.45E-08	4.61E-07	1.73E-07	Not detected	Not detected	Not detected	2.41E-07	1.33E-07
1,2,3,7,8-PeCDD	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-HxCDD	Not detected	5.22E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	Not detected	9.35E-07	5.88E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	Not detected	1.12E-06	7.07E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	6.76E-07	2.26E-05	1.36E-05	5.93E-06	2.00E-06	3.55E-06	8.76E-07	3.76E-06	3.17E-06	4.19E-06
OCDD	4.00E-06	1.36E-04	7.97E-05	3.18E-05	1.10E-05	2.29E-05	3.57E-06	1.91E-05	1.38E-05	1.65E-05
2,3,7,8-TCDF	2.22E-07	3.17E-07	4.13E-07	2.45E-07	2.00E-07	3.19E-07	2.65E-07	2.86E-07	3.83E-07	3.42E-07
1,2,3,7,8-PeCDF	Not detected	Not detected	6.28E-07	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	Not detected	5.51E-07	5.90E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	Not detected	5.39E-07	4.38E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	Not detected	6.73E-07	5.17E-06	Not detected	Not detected	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	Not detected	8.01E-06	5.17E-06	2.02E-06	7.45E-07	1.68E-06	Not detected	7.53E-07	6.40E-07	6.87E-07
1,2,3,4,7,8,9-HpCDF	Not detected	5.06E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	Not detected	1.55E-05	8.65E-06	3.64E-06	1.19E-06	3.59E-06	Not detected	1.91E-06	1.51E-06	1.34E-06

Table 1.2-2 (continued)

Congener	09RCRA745 (mg/kg)	09RCRA747 (mg/kg)	09RCRA749 (mg/kg)	09RCRA751 (mg/kg)	09RCRA753 (mg/kg)	09RCRA755 (mg/kg)	RE16-12-17672* (mg/kg)	RE16-12-17679* (mg/kg)
2,3,7,8-TCDD	Not detected	1.82E-07	1.76E-07	1.33E-07	Not detected	Not detected	Not detected	4.17E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.39E-07
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	6.08E-07	Not detected	1.61E-06
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	8.00E-07	1.23E-07	3.69E-06
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	8.24E-07	Not detected	4.34E-06
1,2,3,4,6,7,8-HpCDD	1.54E-06	7.12E-06	6.39E-06	4.88E-06	4.89E-06	1.20E-05	1.20E-05	8.02E-05
OCDD	8.98E-06	4.47E-05	3.34E-05	2.83E-05	2.89E-05	3.76E-05	6.68E-05	4.81E-04
2,3,7,8-TCDF	3.25E-07	3.83E-07	4.38E-07	4.23E-07	3.77E-07	4.11E-07	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	7.18E-07	5.05E-07	Not detected	7.01E-07	6.50E-07
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	4.88E-07	Not detected	Not detected	9.68E-06	9.85E-07
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	9.02E-06	1.32E-06
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	7.80E-07	1.57E-06
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	Not detected	1.61E-06	1.38E-06	8.28E-07	1.12E-06	1.38E-06	5.75E-06	2.57E-05
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.50E-06
OCDF	Not detected	5.33E-06	3.29E-06	2.57E-06	3.11E-06	4.04E-06	8.05E-06	4.94E-05

Table 1.2-2 (continued)

Congener	RE16-12-17680* (mg/kg)	RE16-12-17681 (mg/kg)	RE16-12-17682 (mg/kg)	RE16-12-17683 (mg/kg)	RE16-12-17684 (mg/kg)	RE16-12-17685 (mg/kg)	RE16-12-17686 (mg/kg)	RE16-12-17687 (mg/kg)
2,3,7,8-TCDD	1.49E-06	3.09E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	1.11E-05	5.63E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	3.08E-05	1.52E-04	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	7.18E-05	3.33E-04	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	8.71E-05	3.71E-04	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	1.70E-03	8.77E-03	5.63E-06	6.42E-06	1.11E-06	1.50E-06	2.28E-06	3.87E-06
OCDD	Rejected	Rejected	3.15E-05	3.54E-05	7.68E-06	8.34E-06	1.51E-05	2.51E-05
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	1.77E-06	7.35E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	3.00E-06	1.25E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	1.69E-05	8.36E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	2.23E-05	1.07E-04	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	2.66E-05	1.37E-04	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	2.88E-06	1.41E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	5.61E-04	2.35E-03	1.17E-06	1.63E-06	Not detected	Not detected	9.08E-07	1.76E-06
1,2,3,4,7,8,9-HpCDF	3.30E-05	1.59E-04	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	1.28E-03	6.32E-03	2.25E-06	3.73E-06	Not detected	Not detected	1.26E-06	2.77E-06

Table 1.2-2 (continued)

Congener	RE16-12-17688 (mg/kg)	RE16-12-17689* (mg/kg)	WST16-13-29794 (mg/kg)	WST16-13-29795 (mg/kg)	WST16-13-29796 (mg/kg)	WST16-13-29797 (mg/kg)	WST16-13-29798 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	3.44E-07	Not detected	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	6.20E-07	3.83E-05	7.93E-06	3.22E-05	5.83E-06
1,2,3,4,7,8-HxCDD	Not detected	Not detected	2.45E-06	1.41E-04	2.48E-05	1.24E-04	1.89E-05
1,2,3,6,7,8-HxCDD	6.05E-07	Not detected	4.76E-06	3.02E-04	5.18E-05	2.74E-04	4.40E-05
1,2,3,7,8,9-HxCDD	Not detected	Not detected	5.94E-06	3.23E-04	6.26E-05	2.82E-04	5.09E-05
1,2,3,4,6,7,8-HpCDD	5.84E-06	3.99E-06	9.21E-05	7.44E-03	8.08E-04	6.81E-03	9.64E-04
OCDD	2.82E-05	4.07E-05	5.63E-04	5.51E-02	6.70E-03	5.06E-02	6.65E-03
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	7.44E-07	Not detected	Not detected	Not detected	1.18E-06	Not detected	8.73E-07
2,3,4,7,8-PeCDF	7.21E-07	Not detected	Not detected	1.05E-05	1.81E-06	7.67E-06	1.42E-06
1,2,3,4,7,8-HxCDF	1.35E-06	Not detected	1.15E-06	8.96E-05	1.27E-05	7.31E-05	1.18E-05
1,2,3,6,7,8-HXCDF	1.63E-06	Not detected	1.87E-06	9.84E-05	1.93E-05	8.49E-05	1.47E-05
2,3,4,6,7,8-HxCDF	1.79E-06	Not detected	2.21E-06	1.37E-04	2.41E-05	1.10E-04	1.84E-05
1,2,3,7,8,9-HxCDF	6.65E-07	Not detected	Not detected	Not detected	1.93E-06	Not detected	1.87E-06
1,2,3,4,6,7,8-HpCDF	9.29E-06	1.31E-06	3.96E-05	2.51E-03	4.11E-04	2.22E-03	3.37E-04
1,2,3,4,7,8,9-HpCDF	2.40E-06	Not detected	1.97E-06	1.49E-04	1.78E-05	1.44E-04	2.01E-05
OCDF	1.81E-05	4.64E-06	6.17E-05	7.03E-03	7.40E-04	7.63E-03	8.40E-04

Table 1.2-2 (continued)

Congener	WST16-13-29799 (mg/kg)	WST16-13-29800 (mg/kg)
2,3,7,8-TCDD	2.77E-07	Not detected
1,2,3,7,8-PeCDD	9.08E-07	Not detected
1,2,3,4,7,8-HxCDD	2.50E-06	6.69E-07
1,2,3,6,7,8-HxCDD	5.87E-06	2.14E-06
1,2,3,7,8,9-HxCDD	6.66E-06	2.30E-06
1,2,3,4,6,7,8-HpCDD	1.31E-04	4.40E-05
OCDD	8.93E-04	3.26E-04
2,3,7,8-TCDF	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected
1,2,3,4,7,8-HxCDF	1.89E-06	5.41E-07
1,2,3,6,7,8-HXCDF	2.64E-06	6.22E-07
2,3,4,6,7,8-HxCDF	2.63E-06	7.01E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	4.88E-05	1.53E-05
1,2,3,4,7,8,9-HpCDF	2.87E-06	Not detected
OCDF	1.06E-04	4.05E-05

* Samples not included in data set for unit TA-16-388.

Table 1.2-3
Organic Chemicals Other than Dioxins/Furans Detected at the TA-16 Burn Ground

Sample ID	Depth (ft)	Media	Amino-4,6-dinitrotoluene[2-]	Benzoic acid	Bis(2-ethylhexyl)phthalate	HMX	Methylnaphthalene[2-]	RDX	Styrene	TATB	Trinitrotoluene[2,4,6-]
Industrial SSLs[a]			**2000[b]**	**2500000[b]**	**1370**	**56800**	**2200[b]**	**3410**	**50000**	**27000[b,c]**	**568**
Residential SSLs[a]			**150[b]**	**250000[b]**	**347**	**3910**	**230[b]**	**58.2**	**7280**	**2200[b,c]**	**39.1**
RE16-12-17672[d]	0-0.2	Soil	—[e]	0.483(J)	—	—	—	—	—	3.29	—
RE16-12-17679[d]	0-0.2	Soil	—	—	0.149(J)	—	—	0.55	—	1.88	—
RE16-12-17680[d]	0-0.2	Soil	—	—	—	—	—	—	—	4.55	—
RE16-12-17681	0-0.2	Soil	—	0.49(J)	—	—	—	—	—	–	—
RE16-12-17682	0-0.2	Soil	—	0.499(J)	—	—	—	—	—	2.72	—
RE16-12-17683	0-0.2	Soil	—	0.489(J)	—	—	—	—	—	—	—
RE16-12-17684	0-0.2	Soil	—	—	—	—	—	—	—	—	—
RE16-12-17685	0-0.2	Soil	—	0.477(J)	—	—	—	—	—	—	—
RE16-12-17686	0-0.2	Soil	—	—	—	—	—	—	0.000688(J)	—	—
RE16-12-17687	0-0.2	Soil	—	—	—	—	—	—	—	—	—
RE16-12-17688	0-0.2	Soil	0.186(J)	—	—	0.302(J)	—	—	—	20.5	1.5(J-)
RE16-12-17689[d]	0-0.2	Soil	—	—	—	—	—	—	—	—	—
WST16-13-29795	0-0.2	Soil	—	—	—	—	0.0131(J)	—	—	—	—

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] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[d] Samples not included in data set for unit TA-16-388.
[e] — = Not detected.

Table 1.3-1
Toxic Equivalency Factors (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] http://www.who.int/ipcs/assessment/tef_update/en/index.html.
[b] Van den Berg et al. (1998).

Table 1.3-2
Dioxin and Furan Congener Concentrations
and 2,3,7,8-TCDD Equivalent Concentrations for the TA-16 Burn Ground Based on Mammalian TEFs

Congener	09RCRA460 (mg/kg)	09RCRA461 (mg/kg)	09RCRA463 (mg/kg)	09RCRA464 (mg/kg)	09RCRA465 (mg/kg)	09RCRA695 (mg/kg)	09RCRA697 (mg/kg)	09RCRA699 (mg/kg)	09RCRA701 (mg/kg)	09RCRA703 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.03E-07	1.33E-07	Not detected	6.18E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	1.92E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	4.19E-08	Not detected	Not detected	Not detected	5.38E-07	Not detected	Not detected	Not detected	Not detected	7.33E-08
1,2,3,6,7,8-HxCDD	7.15E-08	Not detected	Not detected	Not detected	1.06E-06	Not detected	4.67E-08	5.61E-08	Not detected	1.58E-07
1,2,3,7,8,9-HxCDD	7.26E-08	Not detected	Not detected	Not detected	1.14E-06	Not detected	5.18E-08	5.20E-08	Not detected	1.65E-07
1,2,3,4,6,7,8,-HpCDD	2.08E-07	4.22E-08	4.41E-08	1.08E-07	2.92E-06	4.50E-08	8.35E-08	1.31E-07	8.37E-08	3.67E-07
OCDD	4.23E-08	6.21E-09	8.10E-09	9.66E-09	4.65E-07	1.02E-08	2.58E-08	3.06E-08	1.52E-08	6.27E-08
2,3,7,8-TCDF	1.83E-08	Not detected	Not detected	Not detected	2.01E-08	3.14E-07	6.59E-08	5.72E-08	1.14E-07	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	4.77E-07	1.45E-07	2.49E-07	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	1.90E-07	2.15E-07	Not detected	1.54E-07	Not detected	Not detected	1.40E-07
1,2,3,4,7,8-HxCDF	4.95E-08	Not detected	Not detected	7.30E-08	3.21E-07	6.73E-08	5.88E-08	5.83E-08	Not detected	9.55E-08
1,2,3,6,7,8-HXCDF	5.39E-08	Not detected	Not detected	1.02E-07	3.96E-07	Not detected	4.53E-08	4.82E-08	Not detected	8.90E-08
2,3,4,6,7,8-HxCDF	7.23E-08	Not detected	Not detected	1.09E-07	5.33E-07	Not detected	6.30E-08	5.67E-08	Not detected	1.13E-07
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	1.04E-07	1.63E-08	1.20E-08	5.09E-08	8.44E-07	2.33E-08	3.50E-08	4.30E-08	3.05E-08	1.27E-07
1,2,3,4,7,8,9-HpCDF	5.35E-09	Not detected	Not detected	1.38E-08	5.95E-08	Not detected	Not detected	Not detected	Not detected	1.02E-08
OCDF	5.31E-09	7.62E-10	8.49E-10	3.21E-09	5.61E-08	1.19E-09	3.75E-09	3.81E-09	1.75E-09	8.79E-09
TCDD[2,3,7,8-] equivalent concentration	**7.45E-07**	**6.55E-08**	**6.50E-08**	**6.59E-07**	**1.05E-05**	**9.38E-07**	**8.81E-07**	**9.19E-07**	**2.45E-07**	**2.03E-06**

Table 1.3-2 (continued)

Congener	09RCRA705 (mg/kg)	09RCRA707 (mg/kg)	09RCRA709 (mg/kg)	09RCRA711 (mg/kg)	09RCRA713 (mg/kg)	09RCRA715 (mg/kg)	09RCRA717 (mg/kg)	09RCRA719 (mg/kg)	09RCRA721 (mg/kg)	09RCRA723 (mg/kg)
2,3,7,8-TCDD	Not detected	1.69E-07	5.49E-07	1.34E-06	1.38E-07	2.52E-07	1.50E-07	Not detected	1.28E-07	2.22E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	5.13E-07	6.99E-06	6.73E-07	5.39E-07	6.33E-07	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	7.41E-08	Not detected	7.71E-08	1.79E-06	1.47E-07	1.21E-07	5.53E-08	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	1.40E-07	7.53E-08	1.28E-07	3.33E-06	2.80E-07	2.45E-07	1.01E-07	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	1.49E-07	8.03E-08	1.40E-07	4.07E-06	3.42E-07	3.06E-07	1.01E-07	Not detected	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	3.66E-07	2.01E-07	3.23E-07	9.00E-06	5.81E-07	6.85E-07	2.02E-07	6.22E-09	4.64E-08	1.05E-07
OCDD	6.24E-08	3.87E-08	5.55E-08	1.44E-06	7.14E-08	1.11E-07	3.03E-08	8.76E-10	8.04E-09	3.18E-08
2,3,7,8-TCDF	5.45E-08	9.19E-08	5.95E-08	1.51E-07	3.84E-08	3.38E-08	1.65E-07	1.46E-08	3.25E-08	3.23E-08
1,2,3,7,8-PeCDF	Not detected	1.72E-07	1.43E-07	4.95E-07	Not detected	Not detected	5.61E-07	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	2.03E-07	1.49E-07	5.91E-07	Not detected	Not detected	5.46E-07	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	7.64E-08	7.87E-08	7.66E-08	1.21E-06	9.65E-08	1.01E-07	2.02E-07	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	7.60E-08	7.41E-08	7.37E-08	1.44E-06	1.52E-07	1.28E-07	1.50E-07	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	9.33E-08	9.19E-08	8.63E-08	1.78E-06	1.69E-07	1.56E-07	1.82E-07	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	2.02E-07	Not detected	Not detected	4.86E-08	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.13E-07	7.27E-08	8.71E-08	2.88E-06	2.34E-07	2.38E-07	1.01E-07	Not detected	1.49E-08	3.03E-08
1,2,3,4,7,8,9-HpCDF	9.20E-09	7.30E-09	7.41E-09	1.92E-05	8.20E-09	1.29E-08	7.29E-09	Not detected	Not detected	Not detected
OCDF	8.37E-09	5.85E-09	6.57E-09	1.97E-07	6.99E-09	1.41E-08	4.86E-09	Not detected	1.03E-09	1.91E-09
TCDD[2,3,7,8-] equivalent concentration	**1.22E-06**	**1.36E-06**	**2.47E-06**	**3.71E-05**	**2.94E-06**	**2.92E-06**	**3.38E-06**	**2.17E-08**	**2.31E-07**	**4.23E-07**

Table 1.3-2 (continued)

Congener	09RCRA725 (mg/kg)	09RCRA727 (mg/kg)	09RCRA729 (mg/kg)	09RCRA731 (mg/kg)	09RCRA733 (mg/kg)	09RCRA735 (mg/kg)	09RCRA737 (mg/kg)	09RCRA739 (mg/kg)	09RCRA741 (mg/kg)	09RCRA743 (mg/kg)
2,3,7,8-TCDD	Not detected	2.76E-07	9.45E-08	4.61E-07	1.73E-07	Not detected	Not detected	Not detected	2.41E-07	1.33E-07
1,2,3,7,8-PeCDD	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-HxCDD	Not detected	5.22E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	Not detected	9.35E-08	5.88E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	Not detected	1.12E-07	7.07E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	6.76E-09	2.26E-07	1.36E-07	5.93E-08	2.00E-08	3.55E-08	8.76E-09	3.76E-08	3.17E-08	4.19E-08
OCDD	1.20E-09	4.08E-08	2.39E-08	9.54E-09	3.30E-09	6.87E-09	1.07E-09	5.73E-09	4.14E-09	4.95E-09
2,3,7,8-TCDF	2.22E-08	3.17E-08	4.13E-08	2.45E-08	2.00E-08	3.19E-08	2.65E-08	2.86E-08	3.83E-08	3.42E-08
1,2,3,7,8-PeCDF	Not detected	Not detected	1.88E-07	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	Not detected	5.51E-08	5.90E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	Not detected	5.39E-08	4.38E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	Not detected	6.73E-08	5.17E-07	Not detected	Not detected	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	Not detected	8.01E-08	5.17E-08	2.02E-08	7.45E-09	1.68E-08	Not detected	7.53E-09	6.40E-09	6.87E-09
1,2,3,4,7,8,9-HpCDF	Not detected	5.06E-09	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	Not detected	4.65E-09	2.60E-09	1.09E-09	3.57E-10	1.08E-09	Not detected	5.83E-10	4.53E-10	4.02E-10
TCDD[2,3,7,8-] equivalent concentration	**3.02E-08**	**1.10E-06**	**1.29E-06**	**5.76E-07**	**2.24E-07**	**9.21E-08**	**3.64E-08**	**8.00E-08**	**3.22E-07**	**2.21E-07**

Table 1.3-2 (continued)

Congener	09RCRA745 (mg/kg)	09RCRA747 (mg/kg)	09RCRA749 (mg/kg)	09RCRA751 (mg/kg)	09RCRA753 (mg/kg)	09RCRA755 (mg/kg)	RE16-12-17672 (mg/kg)	RE16-12-17679 (mg/kg)
2,3,7,8-TCDD	Not detected	1.82E-07	1.76E-07	1.33E-07	Not detected	Not detected	Not detected	4.17E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.39E-07
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	6.08E-08	Not detected	1.61E-07
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	8.00E-08	8.23E-08	3.69E-07
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	8.24E-08	Not detected	4.34E-07
1,2,3,4,6,7,8-HpCDD	1.54E-08	7.12E-08	6.39E-08	4.88E-08	4.89E-08	1.20E-07	1.20E-07	8.02E-07
OCDD	2.69E-09	1.34E-08	1.00E-08	8.49E-09	8.67E-09	1.13E-08	2.00E-08	1.44E-07
2,3,7,8-TCDF	3.25E-08	3.83E-08	4.38E-08	4.23E-08	3.77E-08	4.11E-08	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	2.15E-07	1.52E-07	Not detected	2.10E-07	1.95E-07
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	4.88E-08	Not detected	Not detected	9.68E-08	9.85E-08
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	9.02E-08	1.32E-07
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	7.80E-08	1.57E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	Not detected	1.61E-08	1.38E-08	8.28E-09	1.12E-08	1.38E-08	5.75E-08	2.57E-07
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.50E-08
OCDF	Not detected	1.60E-09	9.87E-10	7.71E-10	9.33E-10	1.21E-09	2.42E-09	1.48E-08
TCDD[2,3,7,8-] equivalent concentration	**5.06E-08**	**3.23E-07**	**3.09E-07**	**5.06E-07**	**2.59E-07**	**4.11E-07**	**7.58E-07**	**4.04E-06**

Table 1.3-2 (continued)

Congener	RE16-12-17680 (mg/kg)	RE16-12-17681 (mg/kg)	RE16-12-17682 (mg/kg)	RE16-12-17683 (mg/kg)	RE16-12-17684 (mg/kg)	RE16-12-17685 (mg/kg)	RE16-12-17686 (mg/kg)	RE16-12-17687 (mg/kg)
2,3,7,8-TCDD	1.49E-06	3.09E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	1.11E-05	5.63E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	3.08E-06	1.52E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	7.18E-06	3.33E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	8.71E-06	3.71E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	1.70E-05	8.77E-05	5.63E-08	6.42E-08	1.11E-08	1.50E-08	2.28E-08	3.87E-08
OCDD	Rejected	Rejected	9.45E-09	1.06E-08	2.30E-09	2.50E-09	4.53E-09	7.53E-09
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	5.31E-08	2.12E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	9.00E-07	3.75E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	1.69E-06	8.36E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	2.23E-06	1.07E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	2.66E-06	1.37E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	2.88E-07	1.41E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	5.61E-06	2.35E-05	1.17E-08	1.63E-08	Not detected	Not detected	9.08E-09	1.76E-08
1,2,3,4,7,8,9-HpCDF	3.08E-07	1.59E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	3.84E-07	1.90E-06	6.75E-10	1.12E-09	Not detected	Not detected	3.78E-10	8.31E-10
TCDD[2,3,7,8-] equivalent concentration	**6.27E-05**	**2.98E-04**	**7.81E-08**	**9.22E-08**	**1.34E-08**	**1.75E-08**	**3.68E-08**	**6.47E-08**

Table 1.3-2 (continued)

Congener	RE16-12-17688 (mg/kg)	RE16-12-17689 (mg/kg)	WST16-13-29794 (mg/kg)	WST16-13-29795 (mg/kg)	WST16-13-29796 (mg/kg)	WST16-13-29797 (mg/kg)	WST16-13-29798 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	3.44E-07	Not detected	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	6.20E-07	3.83E-05	7.93E-06	3.22E-05	5.83E-06
1,2,3,4,7,8-HxCDD	Not detected	Not detected	2.45E-07	1.41E-05	2.48E-06	1.24E-05	1.89E-06
1,2,3,6,7,8-HxCDD	6.05E-08	Not detected	4.76E-07	3.02E-05	5.18E-06	2.74E-05	4.40E-06
1,2,3,7,8,9-HxCDD	Not detected	Not detected	5.94E-07	3.23E-05	6.26E-06	2.82E-05	5.09E-06
1,2,3,4,6,7,8-HpCDD	5.84E-08	3.99E-08	9.21E-07	7.44E-05	1.11E-05	6.81E-05	9.64E-06
OCDD	8.46E-09	1.22E-08	1.69E-07	1.65E-05	2.01E-06	1.52E-05	2.00E-06
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	2.23E-07	Not detected	Not detected	Not detected	3.54E-08	Not detected	2.62E-07
2,3,4,7,8-PeCDF	2.16E-07	Not detected	Not detected	3.15E-06	5.43E-07	2.30E-06	4.26E-07
1,2,3,4,7,8-HxCDF	1.35E-07	Not detected	1.15E-07	8.96E-06	1.27E-06	7.31E-06	1.18E-06
1,2,3,6,7,8-HXCDF	1.63E-07	Not detected	1.87E-07	9.84E-06	1.93E-06	8.49E-06	1.47E-06
2,3,4,6,7,8-HxCDF	1.79E-07	Not detected	2.21E-07	1.37E-05	2.41E-06	1.10E-05	1.84E-06
1,2,3,7,8,9-HxCDF	6.65E-08	Not detected	Not detected	Not detected	1.93E-07	Not detected	1.87E-07
1,2,3,4,6,7,8-HpCDF	9.29E-08	1.31E-08	3.96E-07	2.51E-05	4.11E-06	2.22E-05	3.37E-06
1,2,3,4,7,8,9-HpCDF	2.40E-08	Not detected	1.97E-08	1.49E-06	1.78E-07	1.44E-06	2.01E-07
OCDF	5.43E-09	1.39E-09	1.85E-08	2.11E-06	2.22E-07	2.29E-06	2.52E-07
TCDD[2,3,7,8-] equivalent concentration	**1.23E-06**	**6.66E-08**	**3.98E-06**	**2.70E-04**	**4.62E-05**	**1.70E-04**	**3.80E-05**

Table 1.3-2 (continued)

Congener	WST16-13-29799 (mg/kg)	WST16-13-29800 (mg/kg)
2,3,7,8-TCDD	2.77E-07	Not detected
1,2,3,7,8-PeCDD	9.08E-07	Not detected
1,2,3,4,7,8-HxCDD	2.50E-07	6.69E-08
1,2,3,6,7,8-HxCDD	5.87E-07	2.14E-07
1,2,3,7,8,9-HxCDD	6.66E-07	2.30E-07
1,2,3,4,6,7,8-HpCDD	1.31E-06	4.40E-07
OCDD	2.68E-07	9.78E-08
2,3,7,8-TCDF	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected
1,2,3,4,7,8-HxCDF	1.89E-07	5.41E-08
1,2,3,6,7,8-HXCDF	2.64E-07	6.22E-08
2,3,4,6,7,8-HxCDF	2.63E-07	7.01E-08
1,2,3,7,8,9-HxCDF	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	4.88E-07	1.53E-07
1,2,3,4,7,8,9-HpCDF	2.87E-08	Not detected
OCDF	3.18E-08	1.22E-08
TCDD[2,3,7,8-] equivalent concentration	**5.53E-06**	**1.40E-06**

Table 1.3-3
Dioxin and Furan Congener Concentrations
and 2,3,7,8-TCDD Equivalent Concentrations for the TA-16 Burn Ground Based on Avian TEFs

Congener	09RCRA460 (mg/kg)	09RCRA461 (mg/kg)	09RCRA463 (mg/kg)	09RCRA464 (mg/kg)	09RCRA465 (mg/kg)	09RCRA695 (mg/kg)	09RCRA697 (mg/kg)	09RCRA699 (mg/kg)	09RCRA701 (mg/kg)	09RCRA703 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.03E-07	1.33E-07	Not detected	6.18E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	1.92E-06	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	2.10E-08	Not detected	Not detected	Not detected	2.69E-07	Not detected	Not detected	Not detected	Not detected	3.67E-08
1,2,3,6,7,8-HxCDD	7.15E-09	Not detected	Not detected	Not detected	1.06E-07	Not detected	4.67E-09	5.61E-09	Not detected	1.58E-08
1,2,3,7,8,9-HxCDD	7.26E-08	Not detected	Not detected	Not detected	1.14E-06	Not detected	5.18E-08	5.20E-08	Not detected	1.65E-07
1,2,3,4,6,7,8,-HpCDD	2.08E-08	4.22E-09	4.41E-09	1.08E-08	2.92E-07	4.50E-09	8.35E-09	1.31E-08	8.37E-09	3.67E-08
OCDD	1.41E-08	2.07E-09	2.70E-09	3.22E-09	1.55E-07	3.41E-09	8.61E-09	1.02E-08	5.06E-09	2.09E-08
2,3,7,8-TCDF	1.83E-07	Not detected	Not detected	Not detected	2.01E-07	3.14E-06	6.59E-07	5.72E-07	1.14E-06	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.59E-07	4.83E-08	8.30E-08	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	6.33E-07	7.15E-07	Not detected	5.13E-07	Not detected	Not detected	4.66E-07
1,2,3,4,7,8-HxCDF	4.95E-07	Not detected	Not detected	7.30E-07	3.21E-06	6.73E-07	5.88E-07	5.83E-07	Not detected	9.55E-07
1,2,3,6,7,8-HXCDF	5.39E-08	Not detected	Not detected	1.02E-07	3.96E-07	Not detected	4.53E-08	4.82E-08	Not detected	8.90E-08
2,3,4,6,7,8-HxCDF	7.23E-08	Not detected	Not detected	1.09E-07	5.33E-07	Not detected	6.30E-08	5.67E-08	Not detected	1.13E-07
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	1.04E-07	1.63E-08	1.20E-08	5.09E-08	8.44E-07	2.33E-08	3.50E-08	4.30E-08	3.05E-08	1.27E-07
1,2,3,4,7,8,9-HpCDF	5.35E-09	Not detected	Not detected	1.38E-08	5.95E-08	Not detected	Not detected	Not detected	Not detected	1.02E-08
OCDF	1.77E-09	2.54E-10	2.83E-10	1.07E-09	1.87E-08	3.98E-10	1.25E-09	1.27E-09	5.82E-10	2.93E-09
TCDD[2,3,7,8-] equivalent concentration	**1.05E-06**	**2.28E-08**	**1.94E-08**	**1.65E-06**	**9.86E-06**	**4.00E-06**	**2.13E-06**	**1.60E-06**	**1.18E-06**	**2.66E-06**

Table 1.3-3 (continued)

Congener	09RCRA705 (mg/kg)	09RCRA707 (mg/kg)	09RCRA709 (mg/kg)	09RCRA711 (mg/kg)	09RCRA713 (mg/kg)	09RCRA715 (mg/kg)	09RCRA717 (mg/kg)	09RCRA719 (mg/kg)	09RCRA721 (mg/kg)	09RCRA723 (mg/kg)
2,3,7,8-TCDD	Not detected	1.69E-07	5.49E-07	1.34E-06	1.38E-07	2.52E-07	1.50E-07	Not detected	1.28E-07	2.22E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	5.13E-07	6.99E-06	6.73E-07	5.39E-07	6.33E-07	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	3.71E-08	Not detected	3.86E-08	8.95E-07	7.35E-08	6.05E-08	2.77E-08	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	1.40E-08	7.53E-09	1.28E-08	3.33E-07	2.80E-08	2.45E-08	1.01E-08	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	1.49E-07	8.03E-08	1.40E-07	4.07E-06	3.42E-07	3.06E-07	1.01E-07	Not detected	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	3.66E-08	2.01E-08	3.23E-08	9.00E-07	5.81E-08	6.85E-08	2.02E-08	6.22E-010	4.64E-09	1.95E-08
OCDD	2.08E-08	1.29E-08	1.85E-08	4.80E-07	2.38E-08	3.69E-08	1.01E-08	2.92E-10	2.68E-09	1.06E-08
2,3,7,8-TCDF	5.45E-07	9.19E-07	5.95E-07	1.51E-06	3.84E-07	3.36E-07	1.65E-06	1.46E-07	3.25E-07	3.23E-07
1,2,3,7,8-PeCDF	Not detected	5.72E-08	4.76E-08	1.65E-07	Not detected	Not detected	1.87E-07	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	6.77E-07	4.97E-07	1.97E-06	Not detected	Not detected	1.82E-06	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	7.64E-07	7.87E-07	7.66E-07	1.21E-05	9.65E-07	1.01E-06	2.02E-06	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	7.60E-08	7.41E-08	7.37E-08	1.44E-06	1.52E-07	1.28E-07	1.50E-07	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	9.33E-08	9.19E-08	8.63E-08	1.78E-06	1.69E-07	1.56E-07	1.82E-07	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	2.02E-07	Not detected	Not detected	4.86E-08	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.13E-07	7.27E-08	8.71E-08	2.88E-06	2.34E-07	2.38E-07	1.01E-07	Not detected	1.49E-08	3.03E-08
1,2,3,4,7,8,9-HpCDF	9.20E-09	7.30E-09	7.41E-09	1.92E-07	8.20E-09	1.29E-08	7.29E-09	Not detected	Not detected	Not detected
OCDF	2.79E-09	1.95E-09	2.19E-09	6.57E-08	2.33E-09	4.71E-09	1.62E-09	Not detected	3.42E-10	6.36E-10
TCDD[2,3,7,8-] equivalent concentration	**1.86E-06**	**2.98E-06**	**3.47E-06**	**3.73E-05**	**3.25E-06**	**3.18E-06**	**7.12E-06**	**1.47E-07**	**4.76E-07**	**6.06E-07**

Table 1.3-3 (continued)

Congener	09RCRA725 (mg/kg)	09RCRA727 (mg/kg)	09RCRA729 (mg/kg)	09RCRA731 (mg/kg)	09RCRA733 (mg/kg)	09RCRA735 (mg/kg)	09RCRA737 (mg/kg)	09RCRA739 (mg/kg)	09RCRA741 (mg/kg)	09RCRA743 (mg/kg)
2,3,7,8-TCDD	Not detected	2.76E-07	9.45E-08	4.61E-07	1.73E-07	Not detected	Not detected	Not detected	2.41E-07	1.33E-07
1,2,3,7,8-PeCDD	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-HxCDD	Not detected	2.61E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	Not detected	9.35E-09	5.88E-09	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	Not detected	1.12E-07	7.07E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	6.76E-10	2.26E-08	1.36E-08	5.93E-09	2.00E-09	3.55E-09	8.76E-10	3.76E-09	3.17E-09	4.19E-09
OCDD	4.00E-10	1.36E-08	7.97E-09	3.18E-09	1.10E-09	2.29E-09	3.57E-10	1.91E-09	1.38E-09	1.65E-09
2,3,7,8-TCDF	2.22E-07	3.17E-07	4.13E-07	2.45E-07	2.00E-07	3.19E-07	2.65E-07	2.86E-07	3.83E-07	3.42E-07
1,2,3,7,8-PeCDF	Not detected	Not detected	6.28E-08	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	Not detected	5.51E-07	5.90E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	Not detected	5.39E-08	4.38E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	Not detected	6.73E-08	5.17E-07	Not detected	Not detected	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	Not detected	8.01E-08	5.17E-08	2.02E-08	7.45E-09	1.68E-08	Not detected	7.53E-09	6.40E-09	6.87E-09
1,2,3,4,7,8,9-HpCDF	Not detected	5.06E-09	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	Not detected	1.55E-09	8.65E-10	3.64E-10	1.19E-10	3.59E-10	Not detected	1.91E-10	1.51E-10	1.34E-10
TCDD[2,3,7,8-] equivalent concentration	**2.23E-07**	**1.54E-06**	**1.87E-06**	**7.36E-07**	**3.84E-07**	**3.42E-07**	**2.66E-07**	**2.99E-07**	**6.35E-07**	**4.88E-07**

Table 1.3-3 (continued)

Congener	09RCRA745 (mg/kg)	09RCRA747 (mg/kg)	09RCRA749 (mg/kg)	09RCRA751 (mg/kg)	09RCRA753 (mg/kg)	09RCRA755 (mg/kg)	RE16-12-17672 (mg/kg)	RE16-12-17679 (mg/kg)
2,3,7,8-TCDD	Not detected	1.82E-07	1.76E-07	1.33E-07	Not detected	Not detected	Not detected	4.17E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.39E-07
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	3.04E-08	Not detected	8.05E-08
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	8.00E-09	1.23E-09	3.69E-08
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	8.24E-08	Not detected	4.34E-07
1,2,3,4,6,7,8-HpCDD	1.54E-09	7.12E-09	6.39E-09	4.88E-09	4.89E-09	1.20E-08	1.20E-08	8.02E-08
OCDD	8.98E-10	4.47E-09	3.34E-09	2.83E-09	2.89E-09	3.76E-09	6.68E-08	4.81E-08
2,3,7,8-TCDF	3.25E-07	3.83E-07	4.38E-07	4.23E-07	3.77E-07	4.11E-07	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	7.18E-08	5.05E-08	Not detected	7.01E-08	6.50E-08
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	4.88E-07	Not detected	Not detected	9.68E-06	9.85E-07
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	9.02E-07	1.32E-07
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	7.80E-08	1.57E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	Not detected	1.61E-08	1.38E-08	8.28E-09	1.12E-08	1.38E-08	5.75E-08	2.57E-07
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.50E-08
OCDF	Not detected	5.33E-10	3.29E-10	2.57E-10	3.11E-10	4.04E-10	8.05E-10	4.94E-09
TCDD[2,3,7,8-] equivalent concentration	**3.27E-07**	**5.93E-07**	**6.38E-07**	**1.13E-06**	**4.47E-07**	**5.62E-07**	**1.08E-05**	**3.55E-06**

Table 1.3-3 (continued)

Congener	RE16-12-17680 (mg/kg)	RE16-12-17681 (mg/kg)	RE16-12-17682 (mg/kg)	RE16-12-17683 (mg/kg)	RE16-12-17684 (mg/kg)	RE16-12-17685 (mg/kg)	RE16-12-17686 (mg/kg)	RE16-12-17687 (mg/kg)
2,3,7,8-TCDD	1.49E-06	3.09E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	1.11E-05	5.63E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDD	1.54E-06	7.60E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	7.18E-07	3.33E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	8.71E-06	3.71E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDD	1.70E-06	8.77E-06	5.63E-09	6.42E-09	1.11E-09	1.50E-09	2.28E-09	3.87E-09
OCDD	Rejected	Rejected	3.15E-09	3.54E-09	7.68E-10	8.34E-10	1.51E-09	2.51E-09
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	1.77E-07	7.35E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,7,8-PeCDF	3.00E-06	1.25E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,7,8-HxCDF	1.69E-05	8.36E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	2.23E-06	1.07E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	2.66E-06	1.37E-05	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDF	2.88E-07	1.41E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	5.61E-06	2.35E-05	1.17E-08	1.63E-08	Not detected	Not detected	9.08E-09	1.76E-08
1,2,3,4,7,8,9-HpCDF	3.30E-07	1.59E-06	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	1.28E-07	6.32E-07	2.25E-10	3.73E-10	Not detected	Not detected	1.26E-10	2.77E-10
TCDD[2,3,7,8-] equivalent concentration	**5.66E-05**	**2.65E-04**	**2.07E-08**	**2.66E-08**	**1.88E-09**	**2.33E-09**	**1.30E-08**	**2.43E-08**

Table 1.3-3 (continued)

Congener	RE16-12-17688 (mg/kg)	RE16-12-17689 (mg/kg)	WST16-13-29794 (mg/kg)	WST16-13-29795 (mg/kg)	WST16-13-29796 (mg/kg)	WST16-13-29797 (mg/kg)	WST16-13-29798 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	3.44E-07	Not detected	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	6.20E-07	3.83E-05	7.93E-06	3.22E-05	5.83E-06
1,2,3,4,7,8-HxCDD	Not detected	Not detected	1.23E-07	7.05E-05	1.24E-06	6.20E-06	9.45E-07
1,2,3,6,7,8-HxCDD	6.05E-09	Not detected	4.76E-08	3.02E-06	5.18E-07	2.74E-06	4.40E-07
1,2,3,7,8,9-HxCDD	Not detected	Not detected	5.94E-07	3.23E-05	6.26E-06	2.82E-05	5.09E-06
1,2,3,4,6,7,8-HpCDD	5.84E-09	3.99E-09	9.21E-08	7.44E-06	1.11E-06	6.81E-06	9.64E-07
OCDD	2.82E-09	4.07E-09	5.63E-08	5.51E-06	6.70E-07	5.06E-06	6.65E-07
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	7.44E-08	Not detected	Not detected	Not detected	1.18E-07	Not detected	8.73E-08
2,3,4,7,8-PeCDF	7.21E-07	Not detected	Not detected	1.05E-05	1.81E-06	7.67E-06	1.42E-06
1,2,3,4,7,8-HxCDF	1.35E-06	Not detected	1.15E-06	8.96E-05	1.27E-05	7.31E-05	1.18E-05
1,2,3,6,7,8-HXCDF	1.63E-07	Not detected	1.87E-07	9.84E-06	1.93E-06	8.49E-06	1.47E-06
2,3,4,6,7,8-HxCDF	1.79E-07	Not detected	2.21E-07	1.37E-05	2.41E-06	1.10E-05	1.84E-06
1,2,3,7,8,9-HxCDF	6.65E-08	Not detected	Not detected	Not detected	1.93E-07	Not detected	1.87E-07
1,2,3,4,6,7,8-HpCDF	9.29E-08	1.31E-08	3.96E-07	2.51E-05	4.11E-06	2.22E-05	3.37E-06
1,2,3,4,7,8,9-HpCDF	2.40E-08	Not detected	1.97E-08	1.49E-06	1.78E-07	1.44E-06	2.01E-07
OCDF	1.81E-09	4.64E-10	6.17E-09	7.03E-07	7.40E-08	7.63E-07	8.40E-08
TCDD[2,3,7,8-] equivalent concentration	**2.69E-06**	**2.16E-08**	**3.51E-06**	**3.08E-04**	**4.16E-05**	**1.99E-04**	**3.44E-05**

Table 1.3-3 (continued)

Congener	WST16-13-29799 (mg/kg)	WST16-13-29800 (mg/kg)
2,3,7,8-TCDD	2.77E-07	Not detected
1,2,3,7,8-PeCDD	9.08E-07	Not detected
1,2,3,4,7,8-HxCDD	1.25E-07	3.35E-08
1,2,3,6,7,8-HxCDD	5.87E-08	2.14E-08
1,2,3,7,8,9-HxCDD	6.66E-07	2.30E-07
1,2,3,4,6,7,8-HpCDD	1.31E-07	4.40E-08
OCDD	8.93E-08	3.26E-08
2,3,7,8-TCDF	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected
1,2,3,4,7,8-HxCDF	1.89E-06	5.41E-07
1,2,3,6,7,8-HXCDF	2.64E-07	6.22E-08
2,3,4,6,7,8-HxCDF	2.63E-07	7.01E-08
1,2,3,7,8,9-HxCDF	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	4.88E-07	1.53E-07
1,2,3,4,7,8,9-HpCDF	2.87E-08	Not detected
OCDF	1.06E-08	4.05E-09
TCDD[2,3,7,8-] equivalent concentration	**5.53E-06**	**1.19E-06**

Table 1.3-4
Dioxin and Furan Congener Concentrations
and 2,3,7,8-TCDD Equivalent Concentrations for Unit TA-16-388 Based on Mammalian TEFs

Congener	09RCRA460 (mg/kg)	09RCRA461 (mg/kg)	09RCRA463 (mg/kg)	09RCRA464 (mg/kg)	09RCRA701 (mg/kg)	09RCRA713 (mg/kg)	09RCRA715 (mg/kg)	09RCRA717 (mg/kg)	09RCRA719 (mg/kg)	09RCRA721 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	1.38E-07	2.52E-07	1.50E-07	Not detected	1.28E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	6.73E-07	5.39E-07	6.33E-07	Not detected	Not detected
1,2,3,4,7,8-HxCDD	4.19E-08	Not detected	Not detected	Not detected	Not detected	1.47E-07	1.21E-07	5.53E-08	Not detected	Not detected
1,2,3,6,7,8-HxCDD	7.15E-08	Not detected	Not detected	Not detected	Not detected	2.80E-07	2.45E-07	1.01E-07	Not detected	Not detected
1,2,3,7,8,9-HxCDD	7.26E-08	Not detected	Not detected	Not detected	Not detected	3.42E-07	3.06E-07	1.01E-07	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	2.08E-07	4.22E-08	4.41E-08	1.08E-07	8.37E-08	5.81E-07	6.85E-07	2.02E-07	6.22E-09	4.64E-08
OCDD	4.23E-08	6.21E-09	8.10E-09	9.66E-09	1.52E-08	7.14E-08	1.11E-07	3.03E-08	8.76E-10	8.04E-09
2,3,7,8-TCDF	1.83E-08	Not detected	Not detected	Not detected	1.14E-07	3.84E-08	3.38E-08	1.65E-07	1.46E-08	3.25E-08
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	5.61E-07	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	1.90E-07	Not detected	Not detected	Not detected	5.46E-07	Not detected	Not detected
1,2,3,4,7,8-HxCDF	4.95E-08	Not detected	Not detected	7.30E-08	Not detected	9.65E-08	1.01E-07	2.02E-07	Not detected	Not detected
1,2,3,6,7,8-HXCDF	5.39E-08	Not detected	Not detected	1.02E-07	Not detected	1.52E-07	1.28E-07	1.50E-07	Not detected	Not detected
2,3,4,6,7,8-HxCDF	7.23E-08	Not detected	Not detected	1.09E-07	Not detected	1.69E-07	1.56E-07	1.82E-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	4.86E-08	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.04E-07	1.63E-08	1.20E-08	5.09E-08	3.05E-08	2.34E-07	2.38E-07	1.01E-07	Not detected	1.49E-08
1,2,3,4,7,8,9-HpCDF	5.35E-09	Not detected	Not detected	1.38E-08	Not detected	8.20E-09	1.29E-08	7.29E-09	Not detected	Not detected
OCDF	5.31E-09	7.62E-10	8.49E-10	3.21E-09	1.75E-09	6.99E-09	1.41E-08	4.86E-09	Not detected	1.03E-09
TCDD[2,3,7,8-] equivalent concentration	**7.45E-07**	**6.55E-08**	**6.50E-08**	**6.59E-07**	**2.45E-07**	**2.94E-06**	**2.92E-06**	**3.38E-06**	**2.17E-08**	**2.31E-07**

Table 1.3-4 (continued)

Congener	09RCRA723 (mg/kg)	09RCRA725 (mg/kg)	09RCRA727 (mg/kg)	09RCRA729 (mg/kg)	09RCRA731 (mg/kg)	09RCRA733 (mg/kg)	09RCRA735 (mg/kg)	09RCRA737 (mg/kg)	09RCRA739 (mg/kg)	09RCRA741 (mg/kg)
2,3,7,8-TCDD	2.22E-07	Not detected	2.76E-07	9.45E-08	4.61E-07	1.73E-07	Not detected	Not detected	Not detected	2.41E-07
1,2,3,7,8-PeCDD	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-HxCDD	Not detected	Not detected	5.22E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	Not detected	Not detected	9.35E-08	5.88E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	Not detected	Not detected	1.12E-07	7.07E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	1.05E-07	6.76E-09	2.26E-07	1.36E-07	5.93E-08	2.00E-08	3.55E-08	8.76E-09	3.76E-08	3.17E-08
OCDD	3.18E-08	1.20E-09	4.08E-08	2.39E-08	9.54E-09	3.30E-09	6.87E-09	1.07E-09	5.73E-09	4.14E-09
2,3,7,8-TCDF	3.23E-08	2.22E-08	3.17E-08	4.13E-08	2.45E-08	2.00E-08	3.19E-08	2.65E-08	2.86E-08	3.83E-08
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	1.88E-07	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	Not detected	Not detected	5.51E-08	5.90E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	Not detected	Not detected	5.39E-08	4.38E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	Not detected	Not detected	6.73E-08	5.17E-07	Not detected	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	3.03E-08	Not detected	8.01E-08	5.17E-08	2.02E-08	7.45E-09	1.68E-08	Not detected	7.53E-09	6.40E-09
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	5.06E-09	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	1.91E-09	Not detected	4.65E-09	2.60E-09	1.09E-09	3.57E-10	1.08E-09	Not detected	5.83E-10	4.53E-10
TCDD[2,3,7,8-] equivalent concentration	**4.23E-07**	**3.02E-08**	**1.10E-06**	**1.29E-06**	**5.76E-07**	**2.24E-07**	**9.21E-08**	**3.64E-08**	**8.00E-08**	**3.22E-07**

Table 1.3-4 (continued)

Congener	09RCRA743 (mg/kg)	09RCRA745 (mg/kg)	09RCRA747 (mg/kg)	09RCRA749 (mg/kg)	09RCRA751 (mg/kg)	09RCRA753 (mg/kg)	09RCRA755 (mg/kg)	RE16-12-17681 (mg/kg)	RE16-12-17682 (mg/kg)
2,3,7,8-TCDD	1.33E-07	Not detected	1.82E-07	1.76E-07	1.33E-07	Not detected	Not detected	3.09E-06	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	5.63E-05	Not detected
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	6.08E-08	1.52E-05	Not detected
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.00E-08	3.33E-05	Not detected
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.24E-08	3.71E-05	Not detected
1,2,3,4,6,7,8,-HpCDD	4.19E-08	1.54E-08	7.12E-08	6.39E-08	4.88E-08	4.89E-08	1.20E-07	8.77E-05	5.63E-08
OCDD	4.95E-09	2.69E-09	1.34E-08	1.00E-08	8.49E-09	8.67E-09	1.13E-08	Rejected	9.45E-09
2,3,7,8-TCDF	3.42E-08	3.25E-08	3.83E-08	4.38E-08	4.23E-08	3.77E-08	4.11E-08	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	2.15E-07	1.52E-07	Not detected	2.12E-06	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	3.75E-06	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	4.88E-08	Not detected	Not detected	8.36E-06	Not detected
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.07E-05	Not detected
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.37E-05	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.41E-06	Not detected
1,2,3,4,6,7,8-HpCDF	6.87E-09	Not detected	1.61E-08	1.38E-08	8.28E-09	1.12E-08	1.38E-08	2.35E-05	1.17E-08
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.59E-06	Not detected
OCDF	4.02E-10	Not detected	1.60E-09	9.87E-10	7.71E-10	9.33E-10	1.21E-09	1.90E-06	6.75E-10
TCDD[2,3,7,8-] equivalent concentration	**2.21E-07**	**5.06E-08**	**3.23E-07**	**3.09E-07**	**5.06E-07**	**2.59E-07**	**4.11E-07**	**3.00E-04**	**7.81E-08**

Table 1.3-4 (continued)

Congener	RE16-12-17683 (mg/kg)	RE16-12-17684 (mg/kg)	RE16-12-17685 (mg/kg)	RE16-12-17686 (mg/kg)	RE16-12-17687 (mg/kg)	RE16-12-17688 (mg/kg)	WST16-13-29794 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	6.20E-07
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	2.45E-07
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	6.05E-08	4.76E-07
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	5.94E-07
1,2,3,4,6,7,8-HpCDD	6.42E-08	1.11E-08	1.50E-08	2.28E-08	3.87E-08	5.84E-08	9.21E-07
OCDD	1.06E-08	2.30E-09	2.50E-09	4.53E-09	7.53E-09	8.46E-09	1.69E-07
2,3,7,8-TCDF	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	2.23E-07	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	2.16E-07	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.35E-07	1.15E-07
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.63E-07	1.87E-07
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.79E-07	2.21E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	6.65E-08	Not detected
1,2,3,4,6,7,8-HpCDF	1.63E-08	Not detected	Not detected	9.08E-09	1.76E-08	9.29E-08	3.96E-07
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	2.40E-08	1.97E-08
OCDF	1.12E-09	Not detected	Not detected	3.78E-10	8.31E-10	5.43E-09	1.85E-08
TCDD[2,3,7,8-] equivalent concentration	**9.22E-08**	**1.34E-08**	**1.75E-08**	**3.68E-08**	**6.47E-08**	**1.23E-06**	**3.98E-06**

Table 1.3-4 (continued)

Congener	WST16-13-29795 (mg/kg)	WST16-13-29796 (mg/kg)	WST16-13-29797 (mg/kg)	WST16-13-29798 (mg/kg)	WST16-13-29799 (mg/kg)	WST16-13-29800 (mg/kg)
2,3,7,8-TCDD	Not detected	3.44E-07	Not detected	Not detected	2.77E-07	Not detected
1,2,3,7,8-PeCDD	3.83E-05	7.93E-06	3.22E-05	5.83E-06	9.08E-07	Not detected
1,2,3,4,7,8-HxCDD	1.41E-05	2.48E-06	1.24E-05	1.89E-06	2.50E-07	6.69E-08
1,2,3,6,7,8-HxCDD	3.02E-05	5.18E-06	2.74E-05	4.40E-06	5.87E-07	2.14E-07
1,2,3,7,8,9-HxCDD	3.23E-05	6.26E-06	2.82E-05	5.09E-06	6.66E-07	2.30E-07
1,2,3,4,6,7,8-HpCDD	7.44E-05	1.11E-05	6.81E-05	9.64E-06	1.31E-06	4.40E-07
OCDD	1.65E-05	2.01E-06	1.52E-05	2.00E-06	2.68E-07	9.78E-08
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	3.54E-08	Not detected	2.62E-07	Not detected	Not detected
2,3,4,7,8-PeCDF	3.15E-06	5.43E-07	2.30E-06	4.26E-07	Not detected	Not detected
1,2,3,4,7,8-HxCDF	8.96E-06	1.27E-06	7.31E-06	1.18E-06	1.89E-07	5.41E-08
1,2,3,6,7,8-HXCDF	9.84E-06	1.93E-06	8.49E-06	1.47E-06	2.64E-07	6.22E-08
2,3,4,6,7,8-HxCDF	1.37E-05	2.41E-06	1.10E-05	1.84E-06	2.63E-07	7.01E-08
1,2,3,7,8,9-HxCDF	Not detected	1.93E-07	Not detected	1.87E-07	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	2.51E-05	4.11E-06	2.22E-05	3.37E-06	4.88E-07	1.53E-07
1,2,3,4,7,8,9-HpCDF	1.49E-06	1.78E-07	1.44E-06	2.01E-07	2.87E-08	Not detected
OCDF	2.11E-06	2.22E-07	2.29E-06	2.52E-07	3.18E-08	1.22E-08
TCDD[2,3,7,8-] equivalent concentration	**2.70E-04**	**4.62E-05**	**1.70E-04**	**3.80E-05**	**5.53E-06**	**1.40E-06**

Table 1.3-5
Dioxin and Furan Congener Concentrations and 2,3,7,8-TCDD Equivalent Concentrations for Unit TA-16-388 Based on Avian TEFs

Congener	09RCRA460 (mg/kg)	09RCRA461 (mg/kg)	09RCRA463 (mg/kg)	09RCRA464 (mg/kg)	09RCRA701 (mg/kg)	09RCRA713 (mg/kg)	09RCRA715 (mg/kg)	09RCRA717 (mg/kg)	09RCRA719 (mg/kg)	09RCRA721 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	1.38E-07	2.52E-07	1.50E-07	Not detected	1.28E-07
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	6.73E-07	5.39E-07	6.33E-07	Not detected	Not detected
1,2,3,4,7,8-HxCDD	2.10E-08	Not detected	Not detected	Not detected	Not detected	7.35E-08	6.05E-08	2.77E-08	Not detected	Not detected
1,2,3,6,7,8-HxCDD	7.15E-09	Not detected	Not detected	Not detected	Not detected	2.80E-08	2.45E-08	1.01E-08	Not detected	Not detected
1,2,3,7,8,9-HxCDD	7.26E-08	Not detected	Not detected	Not detected	Not detected	3.42E-07	3.06E-07	1.01E-07	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	2.08E-08	4.22E-09	4.41E-09	1.08E-08	8.37E-09	5.81E-08	6.85E-08	2.02E-08	6.22E-010	4.64E-09
OCDD	1.41E-08	2.07E-09	2.70E-09	3.22E-09	5.06E-09	2.38E-08	3.69E-08	1.01E-08	2.92E-10	2.68E-09
2,3,7,8-TCDF	1.83E-07	Not detected	Not detected	Not detected	1.14E-06	3.84E-07	3.36E-07	1.65E-06	1.46E-07	3.25E-07
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.87E-07	Not detected	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	6.33E-07	Not detected	Not detected	Not detected	1.82E-06	Not detected	Not detected
1,2,3,4,7,8-HxCDF	4.95E-07	Not detected	Not detected	7.30E-07	Not detected	9.65E-07	1.01E-06	2.02E-06	Not detected	Not detected
1,2,3,6,7,8-HXCDF	5.39E-08	Not detected	Not detected	1.02E-07	Not detected	1.52E-07	1.28E-07	1.50E-07	Not detected	Not detected
2,3,4,6,7,8-HxCDF	7.23E-08	Not detected	Not detected	1.09E-07	Not detected	1.69E-07	1.56E-07	1.82E-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	4.86E-08	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	1.04E-07	1.63E-08	1.20E-08	5.09E-08	3.05E-08	2.34E-07	2.38E-07	1.01E-07	Not detected	1.49E-08
1,2,3,4,7,8,9-HpCDF	5.35E-09	Not detected	Not detected	1.38E-08	Not detected	8.20E-09	1.29E-08	7.29E-09	Not detected	Not detected
OCDF	1.77E-09	2.54E-10	2.83E-10	1.07E-09	5.82E-10	2.33E-09	4.71E-09	1.62E-09	Not detected	3.42E-10
TCDD[2,3,7,8-] equivalent concentration	**1.05E-06**	**2.28E-08**	**1.94E-08**	**1.65E-06**	**1.18E-06**	**3.25E-06**	**3.18E-06**	**7.12E-06**	**1.47E-07**	**4.76E-07**

Table 1.3-5 (continued)

Congener	09RCRA723 (mg/kg)	09RCRA725 (mg/kg)	09RCRA727 (mg/kg)	09RCRA729 (mg/kg)	09RCRA731 (mg/kg)	09RCRA733 (mg/kg)	09RCRA735 (mg/kg)	09RCRA737 (mg/kg)	09RCRA739 (mg/kg)	09RCRA741 (mg/kg)
2,3,7,8-TCDD	2.22E-07	Not detected	2.76E-07	9.45E-08	4.61E-07	1.73E-07	Not detected	Not detected	Not detected	2.41E-07
1,2,3,7,8-PeCDD	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-HxCDD	Not detected	Not detected	2.61E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HxCDD	Not detected	Not detected	9.35E-09	5.88E-09	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8,9-HxCDD	Not detected	Not detected	1.12E-07	7.07E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,4,6,7,8,-HpCDD	1.95E-08	6.76E-10	2.26E-08	1.36E-08	5.93E-09	2.00E-09	3.55E-09	8.76E-10	3.76E-09	3.17E-09
OCDD	1.06E-08	4.00E-10	1.36E-08	7.97E-09	3.18E-09	1.10E-09	2.29E-09	3.57E-10	1.91E-09	1.38E-09
2,3,7,8-TCDF	3.23E-07	2.22E-07	3.17E-07	4.13E-07	2.45E-07	2.00E-07	3.19E-07	2.65E-07	2.86E-07	3.83E-07
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	6.28E-08	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	Not detected	Not detected	5.51E-07	5.90E-07	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,6,7,8-HXCDF	Not detected	Not detected	5.39E-08	4.38E-08	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2,3,4,6,7,8-HxCDF	Not detected	Not detected	6.73E-08	5.17E-07	Not detected	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	3.03E-08	Not detected	8.01E-08	5.17E-08	2.02E-08	7.45E-09	1.68E-08	Not detected	7.53E-09	6.40E-09
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	5.06E-09	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
OCDF	6.36E-10	Not detected	1.55E-09	8.65E-10	3.64E-10	1.19E-10	3.59E-10	Not detected	1.91E-10	1.51E-10
TCDD[2,3,7,8-] equivalent concentration	**6.06E-07**	**2.23E-07**	**1.54E-06**	**1.87E-06**	**7.36E-07**	**3.84E-07**	**3.42E-07**	**2.66E-07**	**2.99E-07**	**6.35E-07**

Table 1.3-5 (continued)

Congener	09RCRA743 (mg/kg)	09RCRA745 (mg/kg)	09RCRA747 (mg/kg)	09RCRA749 (mg/kg)	09RCRA751 (mg/kg)	09RCRA753 (mg/kg)	09RCRA755 (mg/kg)	RE16-12-17681 (mg/kg)	RE16-12-17682 (mg/kg)
2,3,7,8-TCDD	1.33E-07	Not detected	1.82E-07	1.76E-07	1.33E-07	Not detected	Not detected	3.09E-06	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	5.63E-05	Not detected
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	3.04E-08	7.6E-06	Not detected
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.00E-09	3.33E-06	Not detected
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	8.24E-08	3.71E-05	Not detected
1,2,3,4,6,7,8,-HpCDD	4.19E-09	1.54E-09	7.12E-09	6.39E-09	4.88E-09	4.89E-09	1.20E-08	8.77E-06	5.63E-09
OCDD	1.65E-09	8.98E-10	4.47E-09	3.34E-09	2.83E-09	2.89E-09	3.76E-09	Rejected	3.15E-09
2,3,7,8-TCDF	3.42E-07	3.25E-07	3.83E-07	4.38E-07	4.23E-07	3.77E-07	4.11E-07	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	7.18E-08	5.05E-08	Not detected	7.35E-07	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.25E-05	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	4.88E-07	Not detected	Not detected	8.36E-05	Not detected
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.07E-05	Not detected
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.37E-05	Not detected
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.41E-06	Not detected
1,2,3,4,6,7,8-HpCDF	6.87E-09	Not detected	1.61E-08	1.38E-08	8.28E-09	1.12E-08	1.38E-08	2.35E-05	1.17E-08
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.59E-06	Not detected
OCDF	1.34E-10	Not detected	5.33E-10	3.29E-10	2.57E-10	3.11E-10	4.04E-10	6.32E-07	2.25E-10
TCDD[2,3,7,8-] equivalent concentration	**4.88E-07**	**3.27E-07**	**5.93E-07**	**6.38E-07**	**1.13E-06**	**4.47E-07**	**5.62E-07**	**2.65E-04**	**2.07E-08**

Table 1.3-5 (continued)

Congener	RE16-12-17683 (mg/kg)	RE16-12-17684 (mg/kg)	RE16-12-17685 (mg/kg)	RE16-12-17686 (mg/kg)	RE16-12-17687 (mg/kg)	RE16-12-17688 (mg/kg)	WST16-13-29794 (mg/kg)
2,3,7,8-TCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	6.20E-07
1,2,3,4,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	1.23E-07
1,2,3,6,7,8-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	6.05E-09	4.76E-08
1,2,3,7,8,9-HxCDD	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	5.94E-07
1,2,3,4,6,7,8-HpCDD	6.42E-09	1.11E-09	1.50E-09	2.28E-09	3.87E-09	5.84E-09	9.21E-08
OCDD	3.54E-09	7.68E-10	8.34E-10	1.51E-09	2.51E-09	2.82E-09	5.63E-08
2,3,7,8-TCDF	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	7.44E-08	Not detected
2,3,4,7,8-PeCDF	Not detected	Not detected	Not detected	Not detected	Not detected	7.21E-07	Not detected
1,2,3,4,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.35E-06	1.15E-06
1,2,3,6,7,8-HXCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.63E-07	1.87E-07
2,3,4,6,7,8-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	1.79E-07	2.21E-07
1,2,3,7,8,9-HxCDF	Not detected	Not detected	Not detected	Not detected	Not detected	6.65E-08	Not detected
1,2,3,4,6,7,8-HpCDF	1.63E-08	Not detected	Not detected	9.08E-09	1.76E-08	9.29E-08	3.96E-07
1,2,3,4,7,8,9-HpCDF	Not detected	Not detected	Not detected	Not detected	Not detected	2.40E-08	1.97E-08
OCDF	3.73E-10	Not detected	Not detected	1.26E-10	2.77E-10	1.81E-09	6.17E-09
TCDD[2,3,7,8-] equivalent concentration	**2.66E-08**	**1.88E-09**	**2.33E-09**	**1.30E-08**	**2.43E-08**	**2.69E-06**	**3.51E-06**

Table 1.3-5 (continued)

Congener	WST16-13-29795 (mg/kg)	WST16-13-29796 (mg/kg)	WST16-13-29797 (mg/kg)	WST16-13-29798 (mg/kg)	WST16-13-29799 (mg/kg)	WST16-13-29800 (mg/kg)
2,3,7,8-TCDD	Not detected	3.44E-07	Not detected	Not detected	2.77E-07	Not detected
1,2,3,7,8-PeCDD	3.83E-05	7.93E-06	3.22E-05	5.83E-06	9.08E-07	Not detected
1,2,3,4,7,8-HxCDD	7.05E-05	1.24E-06	6.20E-06	9.45E-07	1.25E-07	3.35E-08
1,2,3,6,7,8-HxCDD	3.02E-06	5.18E-07	2.74E-06	4.40E-07	5.87E-08	2.14E-08
1,2,3,7,8,9-HxCDD	3.23E-05	6.26E-06	2.82E-05	5.09E-06	6.66E-07	2.30E-07
1,2,3,4,6,7,8-HpCDD	7.44E-06	1.11E-06	6.81E-06	9.64E-07	1.31E-07	4.40E-08
OCDD	5.51E-06	6.70E-07	5.06E-06	6.65E-07	8.93E-08	3.26E-08
2,3,7,8-TCDF	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
1,2,3,7,8-PeCDF	Not detected	1.18E-07	Not detected	8.73E-08	Not detected	Not detected
2,3,4,7,8-PeCDF	1.05E-05	1.81E-06	7.67E-06	1.42E-06	Not detected	Not detected
1,2,3,4,7,8-HxCDF	8.96E-05	1.27E-05	7.31E-05	1.18E-05	1.89E-06	5.41E-07
1,2,3,6,7,8-HXCDF	9.84E-06	1.93E-06	8.49E-06	1.47E-06	2.64E-07	6.22E-08
2,3,4,6,7,8-HxCDF	1.37E-05	2.41E-06	1.10E-05	1.84E-06	2.63E-07	7.01E-08
1,2,3,7,8,9-HxCDF	Not detected	1.93E-07	Not detected	1.87E-07	Not detected	Not detected
1,2,3,4,6,7,8-HpCDF	2.51E-05	4.11E-06	2.22E-05	3.37E-06	4.88E-07	1.53E-07
1,2,3,4,7,8,9-HpCDF	1.49E-06	1.78E-07	1.44E-06	2.01E-07	2.87E-08	Not detected
OCDF	7.03E-07	7.40E-08	7.63E-07	8.40E-08	1.06E-08	4.05E-09
TCDD[2,3,7,8-] equivalent concentration	**3.08E-04**	**4.16E-05**	**1.99E-04**	**3.44E-05**	**5.53E-06**	**1.19E-06**

Table 2.1-1
EPCs for the Industrial and Residential Scenarios and Ecological Receptors at the TA-16 Burn Ground

COPC	Number of Analyses	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Mean Concentration (mg/kg)	Distribution	EPC (mg/kg)	EPC Method
Barium	50	98.8	1850	495.8	Nonparametric	771	95% Chebyshev (Mean,SD) UCL
Perchlorate	19	0.000545(J)	0.00173(J)	n/a*	n/a	0.00173	Maximum detected concentration
Silver	50	0.157	7.95	0.863	Nonparametric	1.73	95% Chebyshev(Mean,SD)UCL
Amino-4,6-dinitrotoluene[2-]	12	0.186(J)	0.5(U)	n/a	n/a	0.186	Maximum detected concentration
Benzoic acid	12	0.477(J)	0.703(U)	n/a	n/a	0.499	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	12	0.149(J)	0.36(U)	n/a	n/a	0.149	Maximum detected concentration
HMX	12	0.302(J)	0.5(U)	n/a	n/a	0.302	Maximum detected concentration
Methylnaphthalene[2-]	12	0.0131(J)	0.036	n/a	n/a	0.0131	Maximum detected concentration
RDX	12	0.5(U)	0.55	n/a	n/a	0.55	Maximum detected concentration
Styrene	12	0.000688(J)	0.00108(U)	n/a	n/a	0.000688	Maximum detected concentration
TATB	12	1(U)	20.5	n/a	n/a	20.5	Maximum detected concentration
Trinitrotoluene[2,4,6-]	12	0.5(U)	1.5(J-)	n/a	n/a	1.5	Maximum detected concentration
TCDD[2,3,7,8-] equivalent (mammalian)	55	1.34E-08	2.98E-04	1.78E-05	Nonparametric	0.0000519	95% Chebyshev (Mean, Sd) UCL
TCDD[2,3,7,8-] equivalent (avian)	55	1.88E-09	3.08E-04	1.87E-05	Nonparametric	0.0000539	95% Chebyshev (Mean, Sd) UCL

* n/a = Not applicable.

Table 2.1-2
EPCs for the Industrial and Residential Scenarios and Ecological Receptors at Unit TA-16-388

COPC	Number of Analyses	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Mean Concentration (mg/kg)	Distribution	EPC (mg/kg)	EPC Method
Barium	39	98.8	1850	390.9	Lognormal	565.1	95% Chebyshev (MVUE) UCL
Perchlorate	15	0.000545(J)	0.00173(J)	n/a*	n/a	0.00173	Maximum detected concentration
Silver	39	0.157	5.65	0.631	Nonparametric	1.25	95% Chebyshev(Mean,SD)UCL
Amino-4,6-dinitrotoluene[2-]	8	0.186(J)	0.5(U)	n/a	n/a	0.186	Maximum detected concentration
Benzoic acid	8	0.477(J)	0.7(U)	n/a	n/a	0.499	Maximum detected concentration
HMX	8	0.302(J)	0.5(U)	n/a	n/a	0.302	Maximum detected concentration
Methylnaphthalene[2-]	8	0.0131(J)	0.036	n/a	n/a	0.0131	Maximum detected concentration
Styrene	8	0.000688(J)	0.00108(U)	n/a	n/a	0.000688	Maximum detected concentration
TATB	8	1(U)	20.5	n/a	n/a	20.5	Maximum detected concentration
Trinitrotoluene[2,4,6-]	8	0.5(U)	1.5(J-)	n/a	n/a	1.5	Maximum detected concentration
TCDD[2,3,7,8-] equivalent (mammalian)	42	1.34E-08	2.98E-04	2.03E-05	Nonparametric	0.0000645	95% Chebyshev (Mean, Sd) UCL
TCDD[2,3,7,8-] equivalent (avian)	42	1.88E-09	3.08E-04	2.12E-05	Nonparametric	0.0000668	95% Chebyshev (Mean, Sd) UCL

* n/a = Not applicable.

Table 2.1-3
Industrial Screening Evaluation of Noncarcinogenic COPCs for the TA-16 Burn Ground

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Barium	771	223000	0.003
Silver	1.73	5680	0.0003
Perchlorate	0.00173	795	0.000002
Amino-4,6-dinitrotoluene[2-]	0.186	2000[b]	0.00009
Benzoic acid	0.499	2500000[b]	0.0000002
HMX	0.302	56800	0.000005
Methylnaphthalene[2-]	0.0131	2200[b]	0.000006
Styrene	0.000688	50000	0.00000001
TATB	20.5	27000[b,c]	0.0008
Trinitrotoluene[2,4,6-]	1.5	568	0.003
		HI	**0.007**

[a] SSLs 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] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 2.1-4
Industrial Screening Evaluation of Carcinogenic COPCs for the TA-16 Burn Ground

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.149	1370	1.09×10^{-9}
RDX	0.55	3410	1.61×10^{-9}
TCDD[2,3,7,8-] equivalent	0.0000519	0.000204	2.54×10^{-6}
		Total Excess Cancer Risk	**3×10^{-6}**

* SSLs from NMED (2012).

Table 2.1-5
Industrial Screening Evaluation of Noncarcinogenic COPCs at Unit TA-16-388

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Barium	565.1	223000	0.003
Silver	1.25	5680	0.0002
Perchlorate	0.00173	795	0.000002
Amino-4,6-dinitrotoluene[2-]	0.186	2000[b]	0.00009
Benzoic acid	0.499	2500000[b]	0.0000002
HMX	0.302	56800	0.000005
Methylnaphthalene[2-]	0.0131	2200[b]	0.000006
Styrene	0.000688	50000	0.00000001
TATB	20.5	27000[b,c]	0.0008
Trinitrotoluene[2,4,6-]	1.5	568	0.003
		HI	**0.007**

[a] SSLs 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] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 2.1-6
Industrial Screening Evaluation of Carcinogenic COPCs at Unit TA-16-388

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
TCDD[2,3,7,8-] equivalent	0.0000645	0.000204	3.16×10^{-6}
		Total Excess Cancer Risk	$\mathbf{3 \times 10^{-6}}$

* SSL from NMED (2012).

Table 2.1-7
Residential Screening Evaluation of Noncarcinogenic COPCs for the TA-16 Burn Ground

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Barium	771	15600	0.05
Silver	1.73	391	0.004
Perchlorate	0.00173	54.8	0.00003
Amino-4,6-dinitrotoluene[2-]	0.186	150[b]	0.001
Benzoic acid	0.499	240000[b]	0.000002
HMX	0.302	3910	0.00008
Methylnaphthalene[2-]	0.0131	230[b]	0.00006
TATB	20.5	2200[b,c]	0.009
Trinitrotoluene[2,4,6-]	1.5	39.1	0.04
		HI	**0.1**

[a] SSLs 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] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 2.1-8
Residential Screening Evaluation of Carcinogenic COPCs for the TA-16 Burn Ground

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.149	347	4.29×10^{-9}
RDX	0.55	58.2	9.45×10^{-8}
TCDD[2,3,7,8-] equivalent	0.0000519	0.000045	1.15×10^{-5}
		Total Excess Cancer Risk	$\mathbf{1 \times 10^{-5}}$

* SSLs from NMED (2012).

Table 2.1-9
Residential Screening Evaluation of Noncarcinogenic COPCs at Unit TA-16-388

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Barium	565.1	15600	0.04
Silver	1.25	391	0.003
Perchlorate	0.00173	54.8	0.00003
Amino-4,6-dinitrotoluene[2-]	0.186	150[b]	0.001
Benzoic acid	0.499	240000[b]	0.000002
HMX	0.302	3910	0.00008
Methylnaphthalene[2-]	0.0131	230[b]	0.00006
TATB	20.5	2200[b,c]	0.009
Trinitrotoluene[2,4,6-]	1.5	39.1	0.04
		HI	**0.09**

[a] SSLs 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] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 2.1-10
Residential Screening Evaluation of Carcinogenic COPCs at Unit TA-16-388

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
TCDD[2,3,7,8-] equivalent	0.0000645	0.000045	1.43×10^{-5}
		Total Excess Cancer Risk	**1×10^{-5}**

* SSL from NMED (2012).

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
Barium	11000	37000	820	1000	930	1800	3300	330	110	1300	41000
Silver	19	840	11	2.6	4.3	24	150	na[a]	560	14	4100
Amino-4,6-dinitrotoluene[2-]	na	na	na	na	na	10	14	na	80	27	3700
Benzoic acid	na	na	na	na	na	1.3	4.2	na	na	1	350
Bis(2-ethylhexyl)phthalate	0.045	0.033	20	0.02	0.04	1.1	2700	na	na	0.59	1.2
HMX	na	na	na	na	na	27	29	140	2700	3100	29000
Methylnaphthalene[2-]	na	na	na	na	na	24	100	na	na	16	850
RDX	200	1100	12	22	16	130	210	7.5	na	150	6800
Styrene	na	na	na	na	na	na	na	1.2	3.2	na	na
TATB[b]	na	na	na	na	na	6.6	7.3	na	na	400	3900
Trinitrotoluene[2,4,6-]	1400	2700	6.4	140	12	80	90	32	62	920	17000
TCDD[2,3,7,8-]	0.000014[c]	0.000014[c]	0.00024[c]	0.0000041[c]	0.0000081[c]	0.00000058	0.000048	5	na	0.00000029	0.0000012

Note: ESLs from ECORISK Database, Version 3.1 (LANL 2012b), unless otherwise noted. Units are mg/kg.
[a] na = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] Avian ESLs for TCDD from ECORISK Database, Version 2.0 (LANL 2003a).

Table 3.1-2
Comparison of EPCs with the Minimum ESLs for the TA-16 Burn Ground

COPC	EPC (mg/kg)	Minimum ESL[a] (mg/kg)	Receptor	HQ
Barium	771	110	Plant	**7**
Silver	1.73	2.6	Robin (insectivore)	**0.67**
Amino-4,6-dinitrotoluene[2-]	0.186	10	Deer mouse	0.02
Benzoic acid	0.499	1	Montane shrew	**0.5**
Bis(2-ethylhexyl)phthalate	0.149	0.02	Robin (insectivore)	**7.5**
HMX	0.302	27	Deer mouse	0.01
Methylnaphthalene[2-]	0.0131	16	Montane shrew	0.0008
RDX	0.55	7.5	Earthworm	0.07
Styrene	0.000688	1.2	Earthworm	0.0006
TATB[b]	20.5	6.6	Deer mouse	**3.1**
Trinitrotoluene[2,4,6-]	1.5	6.4	Robin (herbivore)	0.2
TCDD[2,3,7,8-] (mammalian)	0.0000519	0.00000029	Montane shrew	**179**
TCDD[2,3,7,8-] (avian)	0.0000539	0.0000041[c]	Robin (insectivore)	**13.1**

[a] ESLs from ECORISK Database, Version 3.1 (LANL 2012b).
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] ESL from ECORISK Database, Version 2.0 (LANL 2003a).

Table 3.1-3
HI Analysis for the TA-16 Burn Ground

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	771	0.07	0.02	**0.9**	**0.8**	**0.8**	**0.4**	0.2	**2.3**	**7**	**0.6**	0.02
Silver	1.73	0.09	0.002	0.2	**0.7**	**0.4**	0.07	0.01	na[a]	0.003	0.1	0.0004
Benzoic acid	0.499	na	na	na	na	na	**0.4**	0.1	na	na	**0.5**	0.001
Bis(2-ethylhexyl)phthalate	0.149	**3.3**	**4.5**	0.007	**7.45**	**3.7**	0.1	0.00006	na	na	0.3	0.1
TATB[b]	20.5	na	na	na	na	na	**3.1**	**2.8**	na	na	0.05	0.005
TCDD[2,3,7,8-] (mammalian)	5.19E-05	na	na	na	na	na	**89.5**	**1.1**	0.00001	na	**179**	**43.3**
TCDD[2,3,7,8-] (avian)	5.39E-05	**3.8**	**3.8**	0.2	**13.1**	**6.6**	na	na	na	na	na	na
	HI	**7**	**8**	1	**22**	**12**	**94**	**4**	**2**	**7**	**181**	**43**

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.

Table 3.1-4
Comparison of EPCs with the Minimum ESLs for Unit TA-16-388

COPC	EPC (mg/kg)	Minimum ESL[a] (mg/kg)	Receptor	HQ
Barium	565.1	110	Plant	**5.1**
Silver	1.25	2.6	Robin (insectivore)	**0.5**
Amino-4,6-dinitrotoluene[2-]	0.186	10	Deer mouse	0.02
Benzoic acid	0.499	1	Montane shrew	**0.5**
HMX	0.302	27	Deer mouse	0.01
Methylnaphthalene[2-]	0.0131	16	Montane shrew	0.0008
Styrene	0.000688	1.2	Earthworm	0.0006
TATB[b]	20.5	6.6	Deer mouse	**3.1**
Trinitrotoluene[2,4,6-]	1.5	6.4	Robin (herbivore)	0.2
TCDD[2,3,7,8-] (mammalian)	0.0000645	0.00000029	Montane shrew	**222**
TCDD[2,3,7,8-] (avian)	0.0000668	0.0000041[c]	Robin (insectivore)	**16.3**

[a] ESLs from ECORISK Database, Version 3.1 (LANL 2012b).
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] ESL from ECORISK Database, Version 2.0 (LANL 2003a).

Table 3.1-5
HI Analysis for Unit TA-16-388

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	565.1	0.05	0.02	**0.7**	**0.6**	**0.6**	**0.3**	0.2	**1.7**	**5.1**	**0.4**	0.01
Silver	1.25	0.07	0.001	0.1	**0.5**	0.3	0.05	0.008	na[a]	0.002	0.09	0.0003
Benzoic acid	0.499	na	na	na	na	na	**0.4**	0.1	na	na	**0.5**	0.001
TATB[b]	20.5	na	na	na	na	na	**3.1**	**2.8**	na	na	0.05	0.005
TCDD[2,3,7,8-] (mammalian)	6.45E-05	na	na	na	na	na	**111**	**1.3**	0.00001	na	**222**	**53.8**
TCDD[2,3,7,8-] (avian)	6.68E-05	**4.8**	**4.8**	0.3	**16.3**	**8.3**	na	na	na	na	na	na
	HI	**5**	**5**	1	**17**	**9**	**115**	**4**	**2**	**5**	**223**	**54**

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.

Table 3.2-1
PAUFs for Ecological Receptors for the TA-16 Burn Ground

Receptor	HR[a] (ha)	Population Area[b] (ha)	PAUF[c]
Kestrel	106	4240	0.0006
Robin	0.42	16.8	0.15
Deer mouse	0.077	3.0	0.87
Desert cottontail	3.1	124	0.02
Montane shrew	0.39	15.6	0.17
Red fox	1038	41,520	0.00006
Mexican spotted owl	366	n/a[d]	0.007[e]

[a] Values from EPA 1993.
[b] Derived by 40HR.
[c] PAUF is calculated as the area of the site (2.6 ha) divided by the population area.
[d] n/a = Not applicable.
[e] AUF calculated as the area of the site (2.6 ha) divided by the home range.

Table 3.2-2
Adjusted HI Analysis for the TA-16 Burn Ground

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	771	0.00004	0.00001	0.1	0.1	0.1	**0.3**	0.004	**2.3**	**7**	0.1	0.000001
Silver	1.73	0.00005	0.000001	0.03	0.1	0.06	0.06	0.0002	na[a]	0.003	0.02	0.00000002
Benzoic acid	0.499	na	na	na	na	na	**0.3**	0.002	na	na	0.09	0.00000006
Bis(2-ethylhexyl)phthalate	0.149	0.002	0.003	0.001	**1.1**	**0.6**	0.09	0.000001	na	na	0.05	0.000006
TATB[b]	20.5	na	na	na	na	na	**2.7**	0.06	na	na	0.009	0.0000003
TCDD[2,3,7,8-] (mammalian)	5.19E-05	na	na	na	na	na	**77.9**	0.02	0.00001	na	**30.4**	0.003
TCDD[2,3,7,8-] (avian)	5.39E-05	0.002	0.002	0.03	**2**	**1**	na	na	na	na	na	na
Adjusted HI		0.004	0.005	0.2	**3**	**2**	**81**	0.09	**2**	**7**	**31**	0.003

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.

Table 3.2-3
PAUFs for Ecological Receptors for Unit TA-16-388

Receptor	HR[a] (ha)	Population Area[b] (ha)	PAUF[c]
Kestrel	106	4240	0.0005
Robin	0.42	16.8	0.11
Deer mouse	0.077	3.0	0.63
Desert cottontail	3.1	124	0.02
Montane shrew	0.39	15.6	0.12
Red fox	1038	41,520	0.00005
Mexican spotted owl	366	n/a[d]	0.005[e]

[a] Values from EPA 1993.
[b] Derived by 40HR.
[c] PAUF is calculated as the area of the site (1.9 ha) divided by the population area.
[d] n/a = Not applicable.
[e] AUF calculated as the area of the site (1.9 ha) divided by the home range.

Table 3.2-4
Adjusted HI Analysis for Unit TA-16-388

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	565.1	0.00003	0.00001	0.08	0.07	0.07	0.2	0.004	**1.7**	**5.1**	0.05	0.0000005
Silver	1.25	0.00004	0.0000005	0.01	0.06	0.03	0.03	0.0002	na[a]	0.002	0.01	0.00000002
Benzoic acid	0.499	na	na	na	na	na	0.3	0.002	na	na	0.06	0.00000005
TATB[b]	20.5	na	na	na	na	na	**1.95**	0.06	na	na	0.006	0.0000003
TCDD[2,3,7,8-] (mammalian)	6.45E-05	na	na	na	na	na	**69.9**	0.03	0.00001	na	**26.6**	0.003
TCDD[2,3,7,8-] (avian)	6.68E-05	0.002	0.002	0.03	**1.8**	**0.9**	na	na	na	na	na	na
Adjusted HI		0.002	0.002	0.1	**2**	1	**72**	0.1	**2**	**5**	**27**	0.003

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.

Table 3.2-5
LOAEL-Based ESLs for Terrestrial Receptors

COPEC	Receptor	LOAEL–Based ESL[a] (mg/kg)
Barium	Earthworm	3200
	Plant	260
Bis(2-ethylhexyl)phthalate	Robin insectivore	0.2
	Robin omnivore	0.4
TATB[b]	Deer mouse	66
TCDD[2,3,7,8-]	Deer mouse	0.0000039
	Montane shrew	0.0000019
	Robin insectivore	0.000041[c]
	Robin omnivore	0.000081[c]

[a] ESLs from ECORISK Database, Version 3.1 (LANL 2012b).
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] NOAEL-based ESLs from ECORISK Database, Version 2.0 (LANL 2003a) multiplied by an uncertainty factor of 10.

Table 3.2-6

HI Analysis Using LOAEL-Based ESLs at the TA-16 Burn Ground

COPEC	EPC (mg/kg)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Earthworm	Plant	Montane shrew
Barium	771	n/a[a]	n/a	n/a	0.2	**3**	n/a
Bis(2-ethylhexyl)phthalate	0.149	**0.7**	**0.4**	n/a	na[b]	na	n/a
TATB[c]	20.5	n/a	n/a	**0.3**	na	na	n/a
TCDD[2,3,7,8-] (mammalian)	5.19E-05	n/a	n/a	**13.3**	n/a	na	**27.3**
TCDD[2,3,7,8-] (avian)	5.39E-05	**1.3**	**0.7**	n/a	n/a	n/a	n/a
	HI	**2**	1	**14**	0.2	**3**	**27**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] n/a = Not available.
[b] na = Not available.
[c] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 3.2-7

Adjusted HI Analysis Using LOAEL-Based ESLs at the TA-16 Burn Ground

COPEC	EPC (mg/kg)	Robin (insectivore)	Deer mouse	Plant	Montane shrew
Barium	771	n/a[a]	n/a	**3**	n/a
Bis(2-ethylhexyl)phthalate	0.149	0.1	n/a	na[b]	n/a
TATB[c]	20.5	n/a	0.3	na	n/a
TCDD[2,3,7,8-] (mammalian)	5.19E-05	n/a	**11.6**	na	**4.6**
TCDD[2,3,7,8-] (avian)	5.39E-05	0.2	n/a	n/a	n/a
	Adjusted HI	0.3	**12**	**3**	**5**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] n/a = Not available.
[b] na = Not available.
[c] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.

Table 3.2-8
HI Analysis Using LOAEL-Based ESLs at Unit TA-16-388

COPEC	EPC (mg/kg)	Robin (insectivore)	Deer mouse	Earthworm	Plant	Montane shrew
Barium	565.1	n/a[a]	n/a	0.2	**2.2**	n/a
TATB[b]	20.5	n/a	**0.3**	na[c]	na	n/a
TCDD[2,3,7,8-] (mammalian)	6.45E-05	n/a	**16.5**	n/a	na	**33.9**
TCDD[2,3,7,8-] (avian)	6.68E-05	**1.6**	n/a	n/a	na	n/a
	HI	**2**	**17**	0.2	**2**	**34**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] n/a = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] na = Not available.

Table 3.2-9
Adjusted HI Analysis Using LOAEL-Based ESLs at Unit TA-16-388

COPEC	EPC (mg/kg)	Robin (insectivore)	Deer mouse	Plant	Montane shrew
Barium	565.1	n/a[a]	n/a	**2.2**	n/a
TATB[b]	20.5	n/a	0.2	na[c]	n/a
TCDD[2,3,7,8-] (mammalian)	6.45E-05	n/a	**10.4**	na	**4.1**
TCDD[2,3,7,8-] (avian)	6.68E-05	0.2	n/a	na	n/a
	Adjusted HI	0.2	**11**	**2**	**4**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] n/a = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] na = Not available.

Table 3.2-10
HI Analysis for the Area Northeast of Unit TA-16-388

COPEC	EPC[a] (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	463	0.04	0.01	**0.6**	**0.5**	**0.5**	0.3	0.1	**1.4**	**4.2**	**0.4**	0.01
Benzoic acid	0.49	na[b]	na	na	na	na	**0.4**	0.1	na	na	**0.5**	0.001
TCDD[2,3,7,8-]	0.000298	**21.3**	**21.3**	**1.2**	**72.7**	**36.8**	**514**	**6.2**	0.00006	na	**1028**	**248**
	HI	**21**	**21**	**2**	**73**	**37**	**515**	**6**	1	**4**	**1029**	**248**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] EPC is the maximum detected concentration.
[b] na = Not available.

Table 3.2-11
PAUFs for Ecological Receptors for the Area Northeast of Unit TA-16-388

Receptor	HR[a] (ha)	Population Area[b] (ha)	PAUF[c]
Kestrel	106	4240	0.000001
Robin	0.42	16.8	0.0004
Deer mouse	0.077	3.0	0.002
Desert cottontail	3.1	124	0.00005
Montane shrew	0.39	15.6	0.0004
Red fox	1038	41,520	0.0000001
Mexican spotted owl	366	n/a[d]	0.00002[e]

[a] Values from EPA 1993.
[b] Derived by 40HR.
[c] PAUF is calculated as the area of the site (0.006 ha) divided by the population area.
[d] n/a = Not applicable.
[e] AUF calculated as the area of the site (0.006 ha) divided by the home range.

Table 3.2-12
Adjusted HI Analysis for the Area Northeast of Unit TA-16-388

COPEC	EPC[a] (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	463	0.00000004	0.00000001	0.0002	0.0002	0.0002	0.0006	0.000005	**1.4**	**4.2**	0.0002	0.000000001
Benzoic acid	0.49	na[b]	na	na	na	na	0.0008	0.000005	na	na	0.0002	0.0000000001
TCDD[2,3,7,8-]	0.000298	0.00002	0.00002	0.0005	0.03	0.01	**1.03**	0.0003	0.00006	na	**0.4**	0.00002
	Adjusted HI	0.00002	0.00002	0.0007	0.03	0.01	1	0.0003	1	**4**	0.4	0.00002

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] EPC is the maximum detected concentration.
[b] na = Not available.

Table 3.2-13
HI Analysis for Unit TA-16-388 (without the Concentrations in the Area Northeast of Unit TA-16-388)

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	496.9	0.05	0.01	**0.6**	**0.5**	**0.5**	0.3	0.2	**1.5**	**4.5**	**0.4**	0.01
Silver	1.39	0.07	0.002	0.1	**0.5**	**0.3**	0.06	0.009	na[a]	0.002	0.1	0.0003
Benzoic acid	0.499	na	na	na	na	na	**0.4**	0.1	na	na	**0.5**	0.001
TATB[b]	20.5	na	na	na	na	na	**3.1**	**2.8**	na	na	0.05	0.005
TCDD[2,3,7,8-] (mammalian)	1.23E-06	na	na	na	na	na	**2.1**	0.03	0.0000002	na	**4.2**	**1.03**
TCDD[2,3,7,8-] (avian)	1.74E-06	0.1	0.1	0.007	**0.4**	0.2	na	na	na	na	na	na
HI		0.2	0.1	0.7	1	1	**6**	**3**	**2**	**5**	**5**	1

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.

Table 3.2-14
Adjusted HI Analysis for Unit TA-16-388 (without the Concentrations in the Area Northeast of Unit TA-16-388)

COPEC	EPC (mg/kg)	Kestrel (insectivore)	Kestrel (carnivore)	Robin (herbivore)	Robin (insectivore)	Robin (omnivore)	Deer mouse	Desert cottontail	Earthworm	Plant	Montane shrew	Red fox
Barium	496.9	0.00003	0.000005	0.07	0.06	0.06	0.2	0.004	**1.5**	**4.5**	0.05	0.0000005
Silver	1.39	0.00004	0.000001	0.01	0.06	0.03	0.04	0.0002	na[a]	0.002	0.01	0.00000002
Benzoic acid	0.499	na	na	na	na	na	0.3	0.002	na	na	0.06	0.00000005
TATB[b]	20.5	na	na	na	na	na	**1.95**	0.06	na	na	0.006	0.0000003
TCDD[2,3,7,8-] (mammalian)	1.23E-06	na	na	na	na	na	**1.3**	0.0006	0.0000002	na	**0.5**	0.00005
TCDD[2,3,7,8-] (avian)	1.74E-06	0.00005	0.00005	0.0008	0.04	0.02	na	na	na	na	na	na
Adjusted HI		0.0001	0.00006	0.08	0.2	0.1	**4**	0.07	**2**	**5**	0.6	0.00005

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.

Table 3.2-15
HI Analysis Using LOAEL-Based ESLs for the Area Northeast of Unit TA-16-388

COPEC	EPC (mg/kg)	Earthworm	Plant
Barium	463	0.1	**1.8**
	HI	0.1	**2**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.

Table 3.2-16
HI Analysis Using LOAEL-Based ESLs at Unit TA-16-388
(without the Concentrations in the Area Northeast of Unit TA-16-388)

COPEC	EPC (mg/kg)	Deer mouse	Earthworm	Plant
Barium	496.9	n/a[a]	0.2	**1.9**
TATB[b]	20.5	**0.31**	na[c]	na
TCDD[2,3,7,8-] (mammalian)	1.23E-06	**0.32**	n/a	na
	HI	0.6	0.2	**2**

Note: Bolded values indicate HQs greater than 0.3 or HIs greater than 1.
[a] n/a = Not available.
[b] Trinitrobenzene[1,3,5-] used as a surrogate based on structural similarity.
[c] na = Not available.

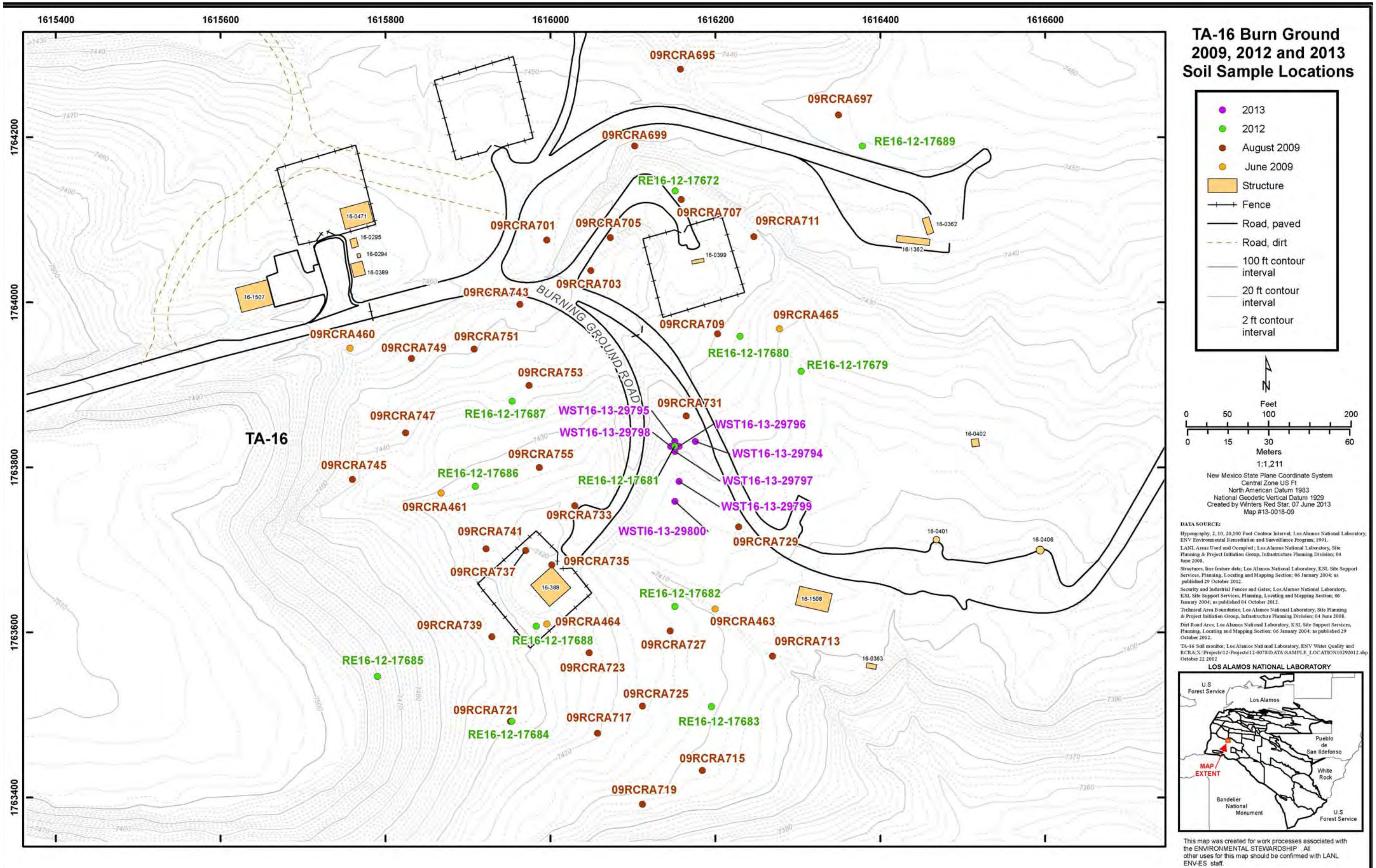


Figure 1.2-1. TA-16 Burn Ground 2009, 2012, and 2013 Soil Sample Locations

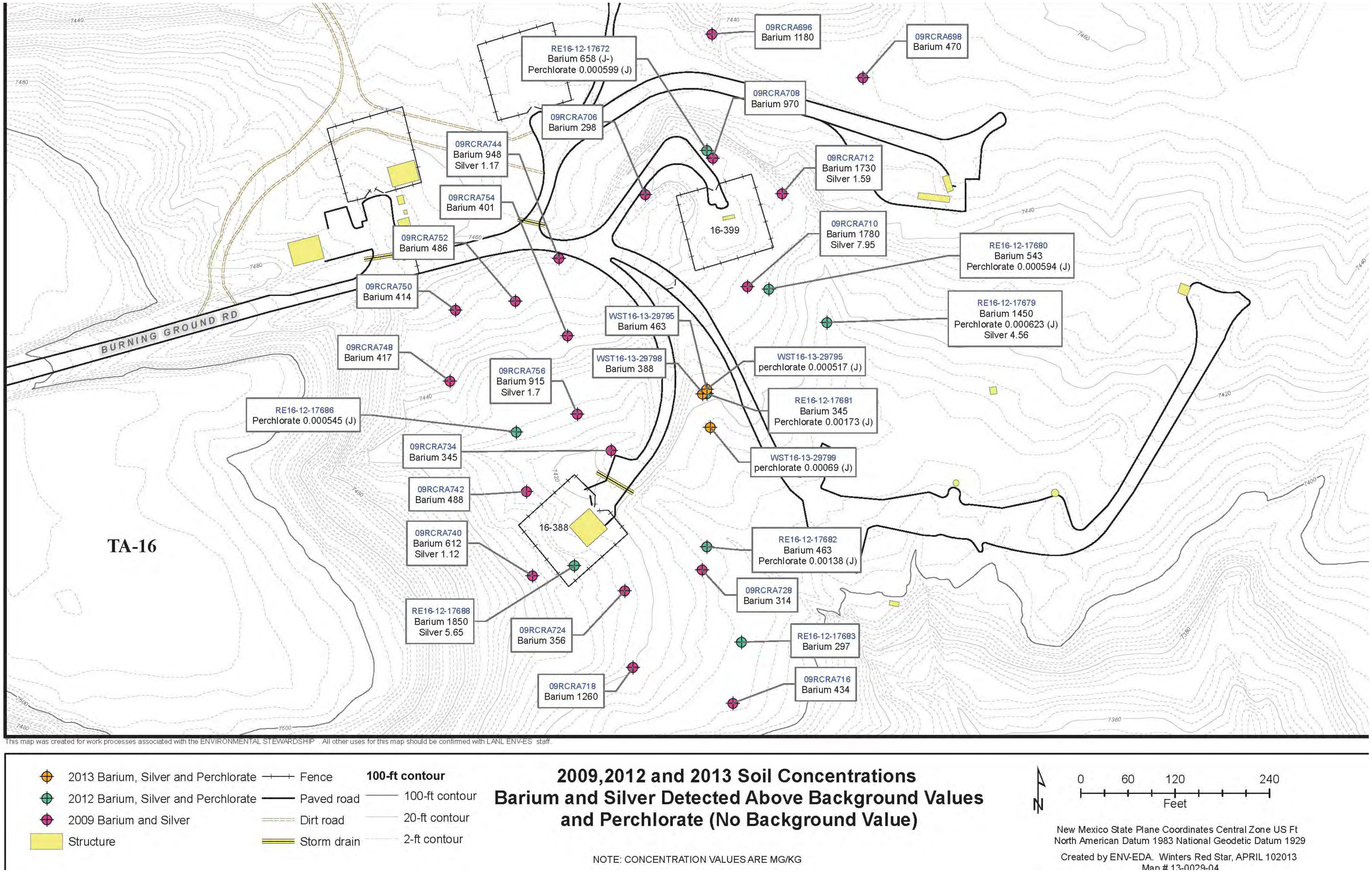
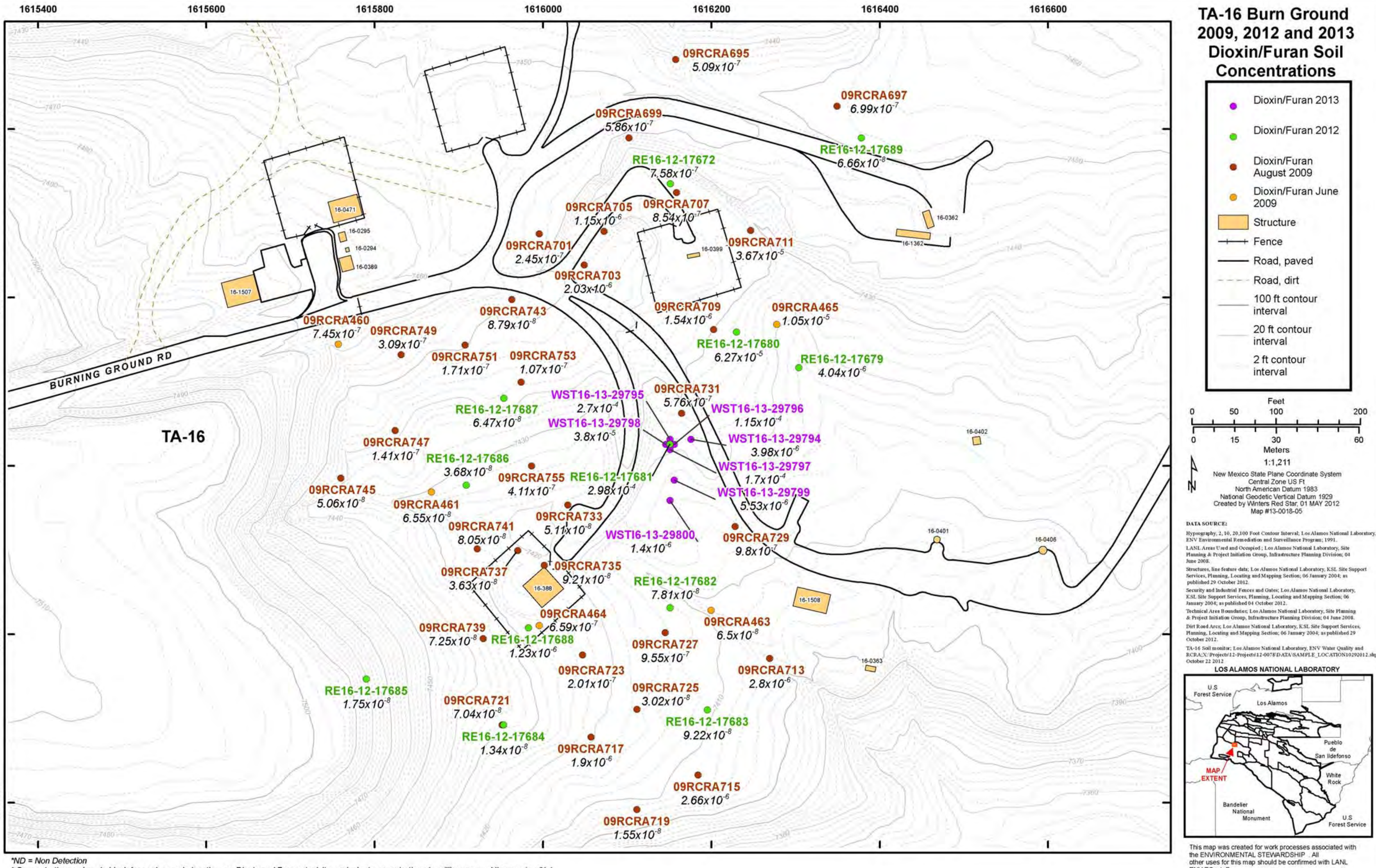


Figure 1.2-2. 2009, 2012 and 2013 Soil Concentrations Barium and Silver Detected Above Background Values and All Detected Perchlorate Concentrations



*ND = Non Detection

* Concentrations values in black for each sample location are Dioxin and Furans toxicity equivalent concentrations in milligrams per kilogram (mg/Kg)

Figure 1.2-3. TA-16 Burn Ground 2009, 2012 and 2013 Dioxin/Furan Soil Concentrations

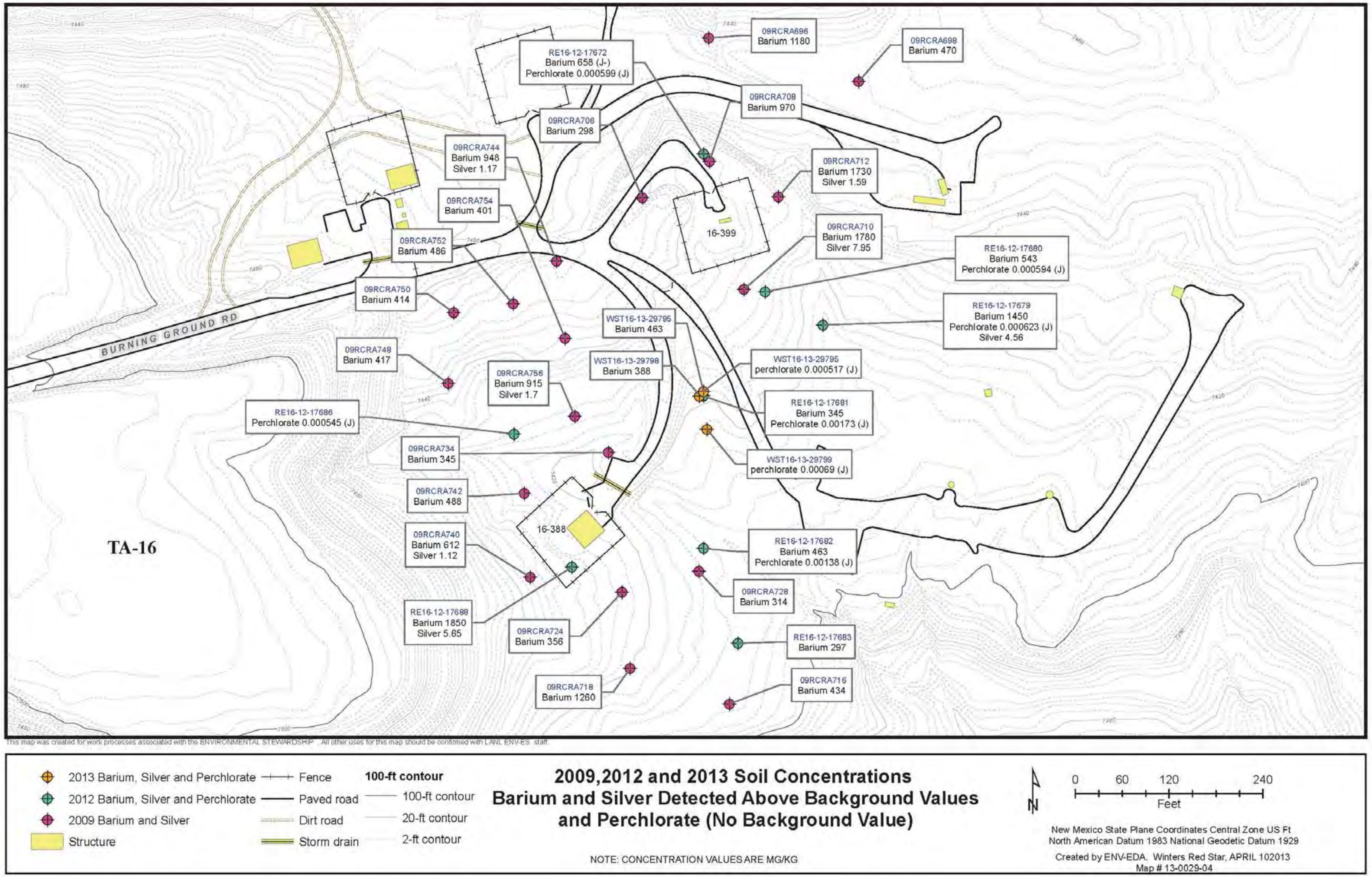


Figure 1.2-4. 2012 and 2013 Soil Concentrations with Detected Organic Chemicals

Attachment 1

Background Statistical Comparisons and Box Plots

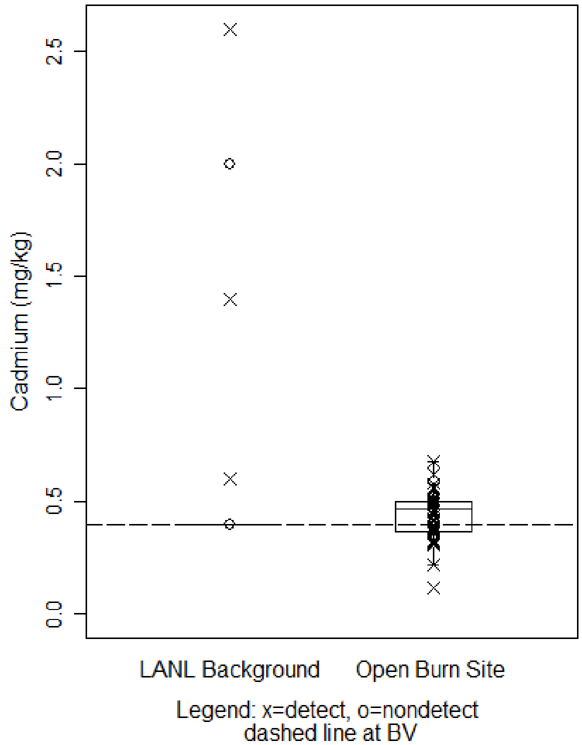


Figure 1 **Box plot for cadmium in soil at the TA-16 Burn Ground**

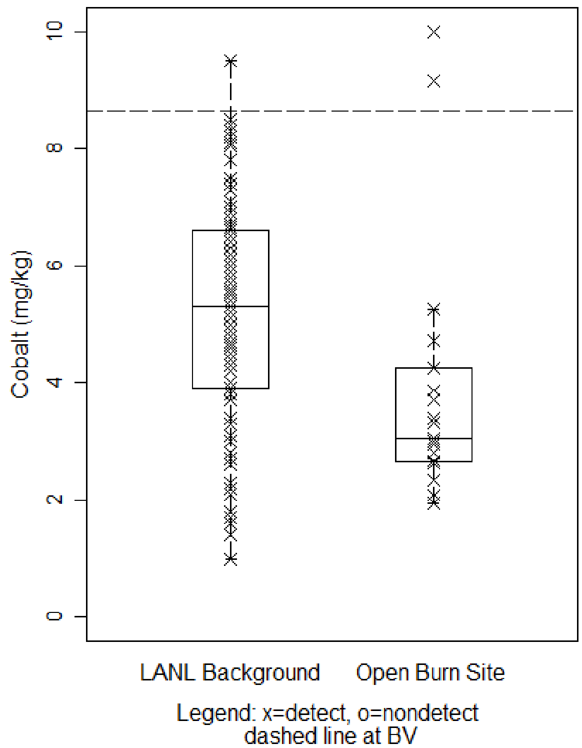


Figure 2 **Box plot for cobalt in soil at the TA-16 Burn Ground**

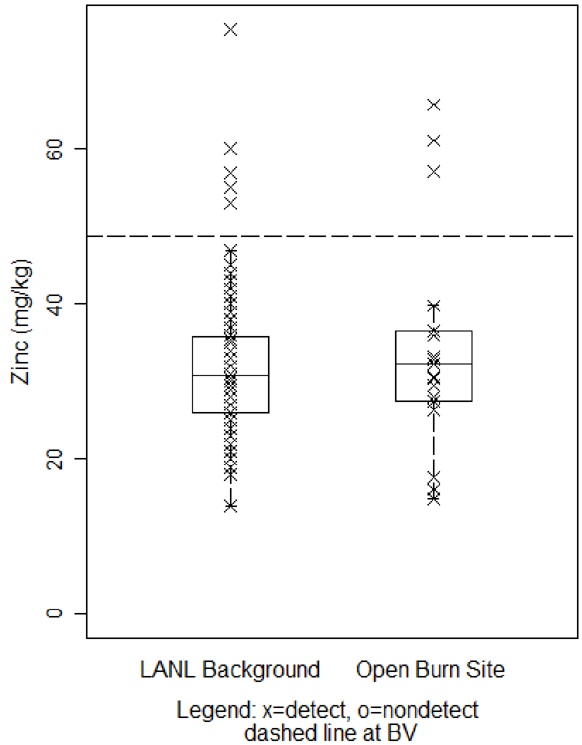


Figure 3 **Box plot for zinc in soil at the TA-16 Burn Ground**

Table 1
Results of Statistical Tests for Inorganic Chemicals in Soil at the TA-16 Burn Ground

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Cadmium	n/a*	1	1	No
Cobalt	0.9787	0.7644	n/a	No
Zinc	0.4365	0.4869	n/a	No

*n/a = Not applicable.

Attachment 2

ProUCL Input and Output Files

ProUCL Input Data for the TA-16 Burn Ground and Unit 16-388

Barium all	Barium 388	Silver all	Silver 388	Dioxins/Furans all	Dioxins/Furans 388	Avian Dioxins/Furans all	Avian Dioxins/Furans 388
1180	242	0.574	0.398	1.34E-08	1.34E-08	1.88E-09	1.88E-09
470	196	0.634	0.452	1.75E-08	1.75E-08	2.33E-09	2.33E-09
242	105	0.398	0.373	2.17E-08	2.17E-08	1.30E-08	1.30E-08
196	434	0.452	0.446	3.02E-08	3.02E-08	1.94E-08	1.94E-08
229	1260	0.537	0.876	3.63E-08	3.64E-08	2.07E-08	2.07E-08
298	199	0.39	0.439	3.68E-08	3.68E-08	2.16E-08	2.28E-08
970	243	0.692	0.375	5.06E-08	5.06E-08	2.28E-08	2.43E-08
1780	356	7.95	0.622	6.47E-08	6.47E-08	2.43E-08	2.66E-08
1730	98.8	1.59	0.352	6.50E-08	6.50E-08	2.66E-08	1.47E-07
105	314	0.373	0.413	6.55E-08	6.55E-08	1.47E-07	2.23E-07
434	230	0.446	0.331	6.66E-08	7.81E-08	2.23E-07	2.66E-07
1260	267	0.876	0.297	7.81E-08	8.00E-08	2.66E-07	2.99E-07
199	345	0.439	0.471	8.00E-08	9.21E-08	2.99E-07	3.27E-07
243	275	0.375	0.44	9.21E-08	9.22E-08	3.27E-07	3.42E-07
356	141	0.622	0.164	9.22E-08	2.21E-07	3.42E-07	3.84E-07
98.8	612	0.352	1.12	2.21E-07	2.24E-07	3.84E-07	4.47E-07
314	488	0.413	0.923	2.24E-07	2.31E-07	4.47E-07	4.76E-07
230	948	0.331	1.17	2.31E-07	2.45E-07	4.76E-07	4.88E-07
267	270	0.297	0.509	2.45E-07	2.59E-07	4.88E-07	5.62E-07
345	417	0.471	0.771	2.59E-07	3.09E-07	5.62E-07	5.93E-07
275	414	0.44	0.821	3.09E-07	3.22E-07	5.93E-07	6.06E-07
141	486	0.164	0.64	3.22E-07	3.23E-07	6.06E-07	6.35E-07
612	401	1.12	0.552	3.23E-07	4.11E-07	6.35E-07	6.38E-07
488	915	0.923	1.7	4.11E-07	4.23E-07	6.38E-07	7.36E-07
948	345	1.17	0.319	4.23E-07	5.06E-07	7.36E-07	1.05E-06
270	463	0.509	0.815	5.06E-07	5.76E-07	1.05E-06	1.13E-06
417	297	0.771	0.4	5.76E-07	6.59E-07	1.13E-06	1.18E-06
414	127	0.821	0.275	6.59E-07	7.45E-07	1.18E-06	1.54E-06
486	156	0.64	0.282	7.45E-07	1.10E-06	1.54E-06	1.65E-06
401	269	0.552	0.257	7.58E-07	1.23E-06	1.60E-06	1.87E-06
915	146	1.7	0.228	8.81E-07	1.29E-06	1.65E-06	2.69E-06
658	1850	0.845	5.65	9.19E-07	2.92E-06	1.86E-06	3.18E-06
1450	123	4.56	0.164	9.38E-07	2.94E-06	1.87E-06	3.25E-06
543	463	0.438	0.287	1.10E-06	3.38E-06	2.13E-06	7.12E-06
345	230	0.319	0.157	1.22E-06	2.98E-04	2.66E-06	2.65E-04
463	206	0.815	0.161	1.23E-06	3.98E-06	2.69E-06	3.51E-06
297	388	0.4	0.303	1.29E-06	2.70E-04	2.98E-06	3.08E-04
127	263	0.275	0.205	1.36E-06	4.62E-05	3.18E-06	4.16E-05
156	262	0.282	0.439	2.03E-06	1.70E-04	3.25E-06	1.99E-04
269		0.257		2.47E-06	3.80E-05	3.47E-06	3.44E-05

ProUCL Input Data for the TA-16 Burn Ground and Unit 16-388

Barium all	Barium 388	Silver all	Silver 388	Dioxins/Furans all	Dioxins/Furans 388	Avian Dioxins/Furans all	Avian Dioxins/Furans 388
146		0.228		2.92E-06	5.53E-06	3.55E-06	5.20E-06
1850		5.65		2.94E-06	1.40E-06	4.00E-06	1.19E-06
239		0.331		3.38E-06		7.12E-06	
123		0.164		4.04E-06		9.86E-06	
463		0.287		1.05E-05		1.08E-05	
230		0.157		3.71E-05		3.73E-05	
206		0.161		6.27E-05		5.66E-05	
388		0.303		2.98E-04		2.65E-04	
263		0.205		3.98E-06		3.51E-06	
262		0.439		2.70E-04		3.08E-04	
				4.62E-05		4.16E-05	
				1.70E-04		1.99E-04	
				3.80E-05		3.44E-05	
				5.53E-06		5.20E-06	
				1.40E-06		1.19E-06	

ProUCL Output for the TA-16 Burn Ground and Unit 16-388

General UCL Statistics for Full Data Sets

User Selected Options	
From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Barium all

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	47
Raw Statistics		**Log-transformed Statistics**	
Minimum	98.8	Minimum of Log Data	4.593
Maximum	1850	Maximum of Log Data	7.523
Mean	495.8	Mean of log Data	5.908
Median	329.5	SD of log Data	0.746
SD	446.4		
Std. Error of Mean	63.13		
Coefficient of Variation	0.9		
Skewness	1.853		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.735	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	601.7	95% H-UCL	606.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	727.6
95% Adjusted-CLT UCL (Chen-1995)	617.3	97.5% Chebyshev (MVUE) UCL	833.6
95% Modified-t UCL (Johnson-1978)	604.4	99% Chebyshev (MVUE) UCL	1042
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.729	Data do not follow a Discernible Distribution (0.05)	
Theta Star	286.9		
MLE of Mean	495.8		
MLE of Standard Deviation	377.1		
nu star	172.9		
Approximate Chi Square Value (.05)	143.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0452	95% CLT UCL	599.7
Adjusted Chi Square Value	142.7	95% Jackknife UCL	601.7
		95% Standard Bootstrap UCL	597.2
Anderson-Darling Test Statistic	1.816	95% Bootstrap-t UCL	627.3
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	612.5
Kolmogorov-Smirnov Test Statistic	0.17	95% Percentile Bootstrap UCL	605.1
Kolmogorov-Smirnov 5% Critical Value	0.127	95% BCA Bootstrap UCL	611.4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	771
		97.5% Chebyshev(Mean, Sd) UCL	890.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1124
95% Approximate Gamma UCL	597.5		
95% Adjusted Gamma UCL	600.8		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	771

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). For additional insight, the user may want to consult a statistician.

Barium 388

General Statistics

Number of Valid Observations	39	Number of Distinct Observations	36

Raw Statistics		Log-transformed Statistics	
Minimum	98.8	Minimum of Log Data	4.593
Maximum	1850	Maximum of Log Data	7.523
Mean	390.9	Mean of log Data	5.735
Median	275	SD of log Data	0.649
SD	338.4		
Std. Error of Mean	54.19		
Coefficient of Variation	0.866		
Skewness	2.802		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.692	Shapiro Wilk Test Statistic	0.961
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	482.3	95% H-UCL	473.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	565.1
95% Adjusted-CLT UCL (Chen-1995)	506	97.5% Chebyshev (MVUE) UCL	645.3
95% Modified-t UCL (Johnson-1978)	486.3	99% Chebyshev (MVUE) UCL	802.9

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.138	Data appear Lognormal at 5% Significance Level	
Theta Star	182.8		
MLE of Mean	390.9		
MLE of Standard Deviation	267.3		
nu star	166.8		
Approximate Chi Square Value (.05)	137.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0437	95% CLT UCL	480
Adjusted Chi Square Value	136.9	95% Jackknife UCL	482.3
		95% Standard Bootstrap UCL	479.4
Anderson-Darling Test Statistic	1.164	95% Bootstrap-t UCL	543
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	653.7
Kolmogorov-Smirnov Test Statistic	0.157	95% Percentile Bootstrap UCL	487.3
Kolmogorov-Smirnov 5% Critical Value	0.143	95% BCA Bootstrap UCL	504.9
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	627.1
		97.5% Chebyshev(Mean, Sd) UCL	729.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	930.1
95% Approximate Gamma UCL	472.7		
95% Adjusted Gamma UCL	476.3		

Potential UCL to Use		Use 95% H-UCL	473.8 Not Used

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.

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). For additional insight, the user may want to consult a statistician.

Silver all

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	47

Raw Statistics		Log-transformed Statistics	
Minimum	0.157	Minimum of Log Data	-1.852
Maximum	7.95	Maximum of Log Data	2.073
Mean	0.863	Mean of log Data	-0.645
Median	0.44	SD of log Data	0.834
SD	1.409		
Std. Error of Mean	0.199		
Coefficient of Variation	1.633		
Skewness	3.891		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.461	Shapiro Wilk Test Statistic	0.886
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	1.197	95% H-UCL	0.962
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.163
95% Adjusted-CLT UCL (Chen-1995)	1.308	97.5% Chebyshev (MVUE) UCL	1.348
95% Modified-t UCL (Johnson-1978)	1.215	99% Chebyshev (MVUE) UCL	1.711

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.088	Data do not follow a Discernible Distribution (0.05)	
Theta Star	0.793		
MLE of Mean	0.863		
MLE of Standard Deviation	0.827		
nu star	108.8		
Approximate Chi Square Value (.05)	85.71	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0452	95% CLT UCL	1.191
Adjusted Chi Square Value	85.1	95% Jackknife UCL	1.197
		95% Standard Bootstrap UCL	1.192
Anderson-Darling Test Statistic	4.283	95% Bootstrap-t UCL	1.604
Anderson-Darling 5% Critical Value	0.776	95% Hall's Bootstrap UCL	1.335
Kolmogorov-Smirnov Test Statistic	0.213	95% Percentile Bootstrap UCL	1.208
Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	1.34
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.731
		97.5% Chebyshev(Mean, Sd) UCL	2.107
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.846
95% Approximate Gamma UCL	1.095		
95% Adjusted Gamma UCL	1.103		

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.731

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). For additional insight, the user may want to consult a statistician.

Silver 388

General Statistics

Number of Valid Observations	39	Number of Distinct Observations	37

Raw Statistics		Log-transformed Statistics	
Minimum	0.157	Minimum of Log Data	-1.852
Maximum	5.65	Maximum of Log Data	1.732
Mean	0.631	Mean of log Data	-0.802
Median	0.413	SD of log Data	0.71
SD	0.886		
Std. Error of Mean	0.142		
Coefficient of Variation	1.405		
Skewness	5.067		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.445	Shapiro Wilk Test Statistic	0.923
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.87	95% H-UCL	0.734
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.882
95% Adjusted-CLT UCL (Chen-1995)	0.987	97.5% Chebyshev (MVUE) UCL	1.016
95% Modified-t UCL (Johnson-1978)	0.889	99% Chebyshev (MVUE) UCL	1.279
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.507	Data do not follow a Discernible Distribution (0.05)	
Theta Star	0.419		
MLE of Mean	0.631		
MLE of Standard Deviation	0.514		
nu star	117.5		
Approximate Chi Square Value (.05)	93.51	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0437	95% CLT UCL	0.864
Adjusted Chi Square Value	92.67	95% Jackknife UCL	0.87
		95% Standard Bootstrap UCL	0.865
Anderson-Darling Test Statistic	2.074	95% Bootstrap-t UCL	1.27
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	1.771
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL	0.898
Kolmogorov-Smirnov 5% Critical Value	0.144	95% BCA Bootstrap UCL	1.055
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.249
		97.5% Chebyshev(Mean, Sd) UCL	1.517
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.042
95% Approximate Gamma UCL	0.793		
95% Adjusted Gamma UCL	0.8		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.249

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). For additional insight, the user may want to consult a statistician.

Dioxins/Furans all

General Statistics

Number of Valid Observations	55	Number of Distinct Observations	55

Raw Statistics		Log-transformed Statistics	
Minimum	1.34E-08	Minimum of Log Data	-18.13
Maximum	0.000298	Maximum of Log Data	-8.118
Mean	1.777E-05	Mean of log Data	-14.11
Median	6.59E-07	SD of log Data	2.454
SD	5.811E-05		
Std. Error of Mean	7.836E-06		
Coefficient of Variation	N/A		
Skewness	4.062		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.438	Lilliefors Test Statistic	0.108
Lilliefors Critical Value	0.119	Lilliefors Critical Value	0.119
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.088E-05	95% H-UCL	6.692E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.082E-05
95% Adjusted-CLT UCL (Chen-1995)	3.524E-05	97.5% Chebyshev (MVUE) UCL	5.308E-05
95% Modified-t UCL (Johnson-1978)	3.16E-05	99% Chebyshev (MVUE) UCL	7.716E-05

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.227	Data appear Lognormal at 5% Significance Level	
Theta Star	7.819E-05		
MLE of Mean	1.777E-05		
MLE of Standard Deviation	3.727E-05		
nu star	24.99		
Approximate Chi Square Value (.05)	14.61	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0456	95% CLT UCL	3.066E-05
Adjusted Chi Square Value	14.39	95% Jackknife UCL	3.088E-05
		95% Standard Bootstrap UCL	3.056E-05
Anderson-Darling Test Statistic	5.84	95% Bootstrap-t UCL	4.745E-05
Anderson-Darling 5% Critical Value	0.896	95% Hall's Bootstrap UCL	3.411E-05
Kolmogorov-Smirnov Test Statistic	0.282	95% Percentile Bootstrap UCL	3.204E-05
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	3.485E-05
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.192E-05
		97.5% Chebyshev(Mean, Sd) UCL	6.67E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.573E-05
95% Approximate Gamma UCL	0.0000304		
95% Adjusted Gamma UCL	3.085E-05		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	5.192E-05

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). For additional insight, the user may want to consult a statistician.

Dioxins/Furans 388

General Statistics

Number of Valid Observations	42	Number of Distinct Observations	42

Raw Statistics		Log-transformed Statistics	
Minimum	1.34E-08	Minimum of Log Data	-18.13
Maximum	0.000298	Maximum of Log Data	-8.118
Mean	2.029E-05	Mean of log Data	-14.44
Median	3.225E-07	SD of log Data	2.55
SD	0.0000657		
Std. Error of Mean	1.014E-05		
Coefficient of Variation	N/A		
Skewness	3.62		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.351	Shapiro Wilk Test Statistic	0.875
Shapiro Wilk Critical Value	0.942	Shapiro Wilk Critical Value	0.942
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.735E-05	95% H-UCL	8.119E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.725E-05
95% Adjusted-CLT UCL (Chen-1995)	4.302E-05	97.5% Chebyshev (MVUE) UCL	4.885E-05
95% Modified-t UCL (Johnson-1978)	3.829E-05	99% Chebyshev (MVUE) UCL	7.163E-05

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.203	Data do not follow a Discernible Distribution (0.05)	
Theta Star	9.977E-05		
MLE of Mean	2.029E-05		
MLE of Standard Deviation	4.499E-05		
nu star	17.08		
Approximate Chi Square Value (.05)	8.731	Nonparametric Statistics	
Adjusted Level of Significance	0.0443	95% CLT UCL	3.697E-05
Adjusted Chi Square Value	8.518	95% Jackknife UCL	3.735E-05
		95% Standard Bootstrap UCL	3.686E-05
Anderson-Darling Test Statistic	5.59	95% Bootstrap-t UCL	5.625E-05
Anderson-Darling 5% Critical Value	0.903	95% Hall's Bootstrap UCL	3.725E-05
Kolmogorov-Smirnov Test Statistic	0.303	95% Percentile Bootstrap UCL	3.833E-05
Kolmogorov-Smirnov 5% Critical Value	0.151	95% BCA Bootstrap UCL	4.503E-05
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.448E-05
		97.5% Chebyshev(Mean, Sd) UCL	0.0000836
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0001212
95% Approximate Gamma UCL	3.97E-05		
95% Adjusted Gamma UCL	4.069E-05		

Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0000836 Not Used

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). For additional insight, the user may want to consult a statistician.

Avian Dioxins/Furans all

General Statistics

Number of Valid Observations	55	Number of Distinct Observations	55

Raw Statistics		Log-transformed Statistics	
Minimum	1.88E-09	Minimum of Log Data	-20.09
Maximum	0.000308	Maximum of Log Data	-8.085
Mean	1.867E-05	Mean of log Data	-13.8
Median	1.18E-06	SD of log Data	2.642
SD	5.985E-05		
Std. Error of Mean	8.071E-06		
Coefficient of Variation	N/A		
Skewness	4.021		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.425	Lilliefors Test Statistic	0.107
Lilliefors Critical Value	0.119	Lilliefors Critical Value	0.119
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.217E-05	95% H-UCL	0.0001834
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9.032E-05
95% Adjusted-CLT UCL (Chen-1995)	3.662E-05	97.5% Chebyshev (MVUE) UCL	0.0001182
95% Modified-t UCL (Johnson-1978)	3.29E-05	99% Chebyshev (MVUE) UCL	0.0001729
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.243	Data appear Lognormal at 5% Significance Level	
Theta Star	7.672E-05		
MLE of Mean	1.867E-05		
MLE of Standard Deviation	3.785E-05		
nu star	26.76		
Approximate Chi Square Value (.05)	15.97	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0456	95% CLT UCL	3.194E-05
Adjusted Chi Square Value	15.74	95% Jackknife UCL	3.217E-05
		95% Standard Bootstrap UCL	3.175E-05
Anderson-Darling Test Statistic	4.242	95% Bootstrap-t UCL	6.664E-05
Anderson-Darling 5% Critical Value	0.888	95% Hall's Bootstrap UCL	3.322E-05
Kolmogorov-Smirnov Test Statistic	0.27	95% Percentile Bootstrap UCL	3.296E-05
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	3.695E-05
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.385E-05
		97.5% Chebyshev(Mean, Sd) UCL	6.907E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.897E-05
95% Approximate Gamma UCL	3.129E-05		
95% Adjusted Gamma UCL	3.173E-05		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	6.907E-05 Not Used

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). For additional insight, the user may want to consult a statistician.

Avian Dioxins/Furans 388

General Statistics

Number of Valid Observations	42	Number of Distinct Observations	42

Raw Statistics		Log-transformed Statistics	
Minimum	1.88E-09	Minimum of Log Data	-20.09
Maximum	0.000308	Maximum of Log Data	-8.085
Mean	2.119E-05	Mean of log Data	-14.19
Median	6.205E-07	SD of log Data	2.739
SD	6.788E-05		
Std. Error of Mean	1.047E-05		
Coefficient of Variation	N/A		
Skewness	3.556		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.352	Shapiro Wilk Test Statistic	0.921
Shapiro Wilk Critical Value	0.942	Shapiro Wilk Critical Value	0.942
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.881E-05	95% H-UCL	0.0002231
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.825E-05
95% Adjusted-CLT UCL (Chen-1995)	4.455E-05	97.5% Chebyshev (MVUE) UCL	0.0001032
95% Modified-t UCL (Johnson-1978)	3.977E-05	99% Chebyshev (MVUE) UCL	0.0001521
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.213	Data do not follow a Discernible Distribution (0.05)	
Theta Star	9.929E-05		
MLE of Mean	2.119E-05		
MLE of Standard Deviation	4.587E-05		
nu star	17.92		
Approximate Chi Square Value (.05)	9.337	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0443	95% CLT UCL	3.841E-05
Adjusted Chi Square Value	9.115	95% Jackknife UCL	3.881E-05
		95% Standard Bootstrap UCL	3.856E-05
Anderson-Darling Test Statistic	4.524	95% Bootstrap-t UCL	0.0000531
Anderson-Darling 5% Critical Value	0.898	95% Hall's Bootstrap UCL	3.625E-05
Kolmogorov-Smirnov Test Statistic	0.3	95% Percentile Bootstrap UCL	4.054E-05
Kolmogorov-Smirnov 5% Critical Value	0.151	95% BCA Bootstrap UCL	4.445E-05
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.684E-05
		97.5% Chebyshev(Mean, Sd) UCL	8.659E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0001254
95% Approximate Gamma UCL	4.068E-05		
95% Adjusted Gamma UCL	4.166E-05		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	8.659E-05 Not Used

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). For additional insight, the user may want to consult a statistician.

ProUCL Input Data for Unit TA-16-388 Without Elevated Area

Barium 388	Silver 388	Dioxins/Furans 388	Avian Dioxins/Furans 388
242	0.398	1.34E-08	1.88E-09
196	0.452	1.75E-08	2.33E-09
105	0.373	2.17E-08	1.30E-08
434	0.446	3.02E-08	1.94E-08
1260	0.876	3.64E-08	2.07E-08
199	0.439	3.68E-08	2.28E-08
243	0.375	5.06E-08	2.43E-08
356	0.622	6.47E-08	2.66E-08
98.8	0.352	6.50E-08	1.47E-07
314	0.413	6.55E-08	2.23E-07
230	0.331	7.81E-08	2.66E-07
267	0.297	8.00E-08	2.99E-07
345	0.471	9.21E-08	3.27E-07
275	0.44	9.22E-08	3.42E-07
141	0.164	2.21E-07	3.84E-07
612	1.12	2.24E-07	4.47E-07
488	0.923	2.31E-07	4.76E-07
948	1.17	2.45E-07	4.88E-07
270	0.509	2.59E-07	5.62E-07
417	0.771	3.09E-07	5.93E-07
414	0.821	3.22E-07	6.06E-07
486	0.64	3.23E-07	6.35E-07
401	0.552	4.11E-07	6.38E-07
915	1.7	4.23E-07	7.36E-07
463	0.815	5.06E-07	1.05E-06
297	0.4	5.76E-07	1.13E-06
127	0.275	6.59E-07	1.18E-06
156	0.282	7.45E-07	1.54E-06
269	0.257	1.10E-06	1.65E-06
146	0.228	1.23E-06	1.87E-06
1850	5.65	1.29E-06	2.69E-06
263	0.164	2.92E-06	3.18E-06
123	0.205	2.94E-06	3.25E-06
262	0.439	3.38E-06	7.12E-06
		3.98E-06	3.51E-06
		5.53E-06	5.20E-06
		1.40E-06	1.19E-06

ProUCL Output for Unit TA-16-388 Without Elevated Area

General UCL Statistics for Full Data Sets

User Selected Options	
From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Barium 388

General Statistics

Number of Valid Observations	34	Number of Distinct Observations	34

Raw Statistics		Log-transformed Statistics	
Minimum	98.8	Minimum of Log Data	4.593
Maximum	1850	Maximum of Log Data	7.523
Mean	400.4	Mean of log Data	5.734
Median	272.5	SD of log Data	0.686
SD	360.2		
Std. Error of Mean	61.78		
Coefficient of Variation	0.9		
Skewness	2.62		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.701	Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical Value	0.933	Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	504.9	95% H-UCL	503.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	603.5
95% Adjusted-CLT UCL (Chen-1995)	531.7	97.5% Chebyshev (MVUE) UCL	696.7
95% Modified-t UCL (Johnson-1978)	509.6	99% Chebyshev (MVUE) UCL	879.8

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.924	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	208.1		
MLE of Mean	400.4		
MLE of Standard Deviation	288.6		
nu star	130.9		
Approximate Chi Square Value (.05)	105.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0422	95% CLT UCL	502
Adjusted Chi Square Value	104.3	95% Jackknife UCL	504.9
		95% Standard Bootstrap UCL	500.8
Anderson-Darling Test Statistic	1.073	95% Bootstrap-t UCL	575
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	604.7
Kolmogorov-Smirnov Test Statistic	0.153	95% Percentile Bootstrap UCL	510.7
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	539.2
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	669.7
		97.5% Chebyshev(Mean, Sd) UCL	786.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1015
95% Approximate Gamma UCL	496.9		
95% Adjusted Gamma UCL	502.3		

Potential UCL to Use		Use 95% Approximate Gamma UCL	496.9

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). For additional insight, the user may want to consult a statistician.

Silver 388

General Statistics

Number of Valid Observations	34	Number of Distinct Observations	32

Raw Statistics		Log-transformed Statistics	
Minimum	0.164	Minimum of Log Data	-1.808
Maximum	5.65	Maximum of Log Data	1.732
Mean	0.687	Mean of log Data	-0.706
Median	0.44	SD of log Data	0.701
SD	0.937		
Std. Error of Mean	0.161		
Coefficient of Variation	1.363		
Skewness	4.797		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.454	Shapiro Wilk Test Statistic	0.922
Shapiro Wilk Critical Value	0.933	Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.959	95% H-UCL	0.817
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.981
95% Adjusted-CLT UCL (Chen-1995)	1.093	97.5% Chebyshev (MVUE) UCL	1.135
95% Modified-t UCL (Johnson-1978)	0.981	99% Chebyshev (MVUE) UCL	1.437

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.531	Data do not follow a Discernible Distribution (0.05)	
Theta Star	0.449		
MLE of Mean	0.687		
MLE of Standard Deviation	0.556		
nu star	104.1		
Approximate Chi Square Value (.05)	81.56	Nonparametric Statistics	
Adjusted Level of Significance	0.0422	95% CLT UCL	0.952
Adjusted Chi Square Value	80.57	95% Jackknife UCL	0.959
		95% Standard Bootstrap UCL	0.948
Anderson-Darling Test Statistic	1.919	95% Bootstrap-t UCL	1.445
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	1.993
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	0.995
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	1.166
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.388
		97.5% Chebyshev(Mean, Sd) UCL	1.69
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.286
95% Approximate Gamma UCL	0.877		
95% Adjusted Gamma UCL	0.888		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.388

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). For additional insight, the user may want to consult a statistician.

Dioxins/Furans 388

General Statistics

Number of Valid Observations	37	Number of Distinct Observations	37

Raw Statistics		Log-transformed Statistics	
Minimum	1.34E-08	Minimum of Log Data	-18.13
Maximum	5.53E-06	Maximum of Log Data	-12.11
Mean	8.1E-07	Mean of log Data	-15.18
Median	2.59E-07	SD of log Data	1.639
SD	1.287E-06		
Std. Error of Mean	2.116E-07		
Coefficient of Variation	N/A		
Skewness	2.284		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.649	Shapiro Wilk Test Statistic	0.964
Shapiro Wilk Critical Value	0.936	Shapiro Wilk Critical Value	0.936
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.167E-06	95% H-UCL	2.36E-06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.322E-06
95% Adjusted-CLT UCL (Chen-1995)	1.243E-06	97.5% Chebyshev (MVUE) UCL	2.933E-06
95% Modified-t UCL (Johnson-1978)	1.181E-06	99% Chebyshev (MVUE) UCL	4.134E-06

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.519	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	1.561E-06		
MLE of Mean	8.1E-07		
MLE of Standard Deviation	1.124E-06		
nu star	38.41		
Approximate Chi Square Value (.05)	25.21	Nonparametric Statistics	
Adjusted Level of Significance	0.0431	95% CLT UCL	1.158E-06
Adjusted Chi Square Value	24.75	95% Jackknife UCL	1.167E-06
		95% Standard Bootstrap UCL	1.154E-06
Anderson-Darling Test Statistic	1.046	95% Bootstrap-t UCL	1.326E-06
Anderson-Darling 5% Critical Value	0.808	95% Hall's Bootstrap UCL	1.217E-06
Kolmogorov-Smirnov Test Statistic	0.14	95% Percentile Bootstrap UCL	1.162E-06
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	1.256E-06
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.732E-06
		97.5% Chebyshev(Mean, Sd) UCL	2.132E-06
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.916E-06
95% Approximate Gamma UCL	1.234E-06		
95% Adjusted Gamma UCL	1.257E-06		

Potential UCL to Use	Use 95% Approximate Gamma UCL	1.234E-06

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). For additional insight, the user may want to consult a statistician.

Avian Dioxins/Furans 388

General Statistics

Number of Valid Observations	37	Number of Distinct Observations	37

Raw Statistics		Log-transformed Statistics	
Minimum	1.88E-09	Minimum of Log Data	-20.09
Maximum	7.12E-06	Maximum of Log Data	-11.85
Mean	1.131E-06	Mean of log Data	-14.88
Median	5.62E-07	SD of log Data	2.061
SD	1.564E-06		
Std. Error of Mean	2.571E-07		
Coefficient of Variation	N/A		
Skewness	2.311		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.71	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.936	Shapiro Wilk Critical Value	0.936
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.565E-06	95% H-UCL	1.066E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.546E-06
95% Adjusted-CLT UCL (Chen-1995)	1.659E-06	97.5% Chebyshev (MVUE) UCL	9.749E-06
95% Modified-t UCL (Johnson-1978)	1.582E-06	99% Chebyshev (MVUE) UCL	1.408E-05

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.504	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.247E-06		
MLE of Mean	1.131E-06		
MLE of Standard Deviation	1.594E-06		
nu star	37.26		
Approximate Chi Square Value (.05)	24.29	Nonparametric Statistics	
Adjusted Level of Significance	0.0431	95% CLT UCL	1.554E-06
Adjusted Chi Square Value	23.83	95% Jackknife UCL	1.565E-06
		95% Standard Bootstrap UCL	1.55E-06
Anderson-Darling Test Statistic	0.394	95% Bootstrap-t UCL	1.736E-06
Anderson-Darling 5% Critical Value	0.81	95% Hall's Bootstrap UCL	1.761E-06
Kolmogorov-Smirnov Test Statistic	0.106	95% Percentile Bootstrap UCL	1.593E-06
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	1.702E-06
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.252E-06
		97.5% Chebyshev(Mean, Sd) UCL	2.737E-06
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.689E-06
95% Approximate Gamma UCL	1.736E-06		
95% Adjusted Gamma UCL	1.769E-06		

Potential UCL to Use		Use 95% Approximate Gamma UCL	1.736E-06

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). For additional insight, the user may want to consult a statistician.

Attachment 3

Small Mammal Investigation Report

LA-UR-13-20040

Approved for public release; distribution is unlimited.

Title: **CHEMICAL CONCENTRATIONS IN FIELD MICE/VOLES COLLECTED FROM AN OPEN-BURN SITE AT TECHNICAL AREA 16 AT LOS ALAMOS NATIONAL LABORATORY: REVISION 1**

Author(s): P.R. Fresquez, L. Hansen, and C. Hathcock

Intended for: Report

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the Los Alamos National Security, LLC for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

PREFACE

The purpose of this revision was to increase the data base for small mammal collections at the TA-16 burning grounds. In addition to inorganic elements and dioxin/furan concentrations in field mice/voles collected in 2011, the population parameters of field mice around the TA-16 burn ground site were estimated and samples were analyzed for polychlorinated biphenyls, high explosives, and perchlorate.

CHEMICAL CONCENTRATIONS IN FIELD MICE/VOLES COLLECTED FROM AN OPEN-BURN SITE AT TECHNICAL AREA 16 AT LOS ALAMOS NATIONAL LABORATORY: REVISION 1

P.R. Fresquez, L. Hansen, and C. Hathcock

ABSTRACT

Field mice and voles were collected around an open-burn (high-explosive waste) site, TA-16-388 (flash pad), at Technical Area 16 at Los Alamos National Laboratory in March of 2011 for the analysis of 23 target analyte list (TAL) elements (mostly metals) and 17 dioxin/furan chemicals. In July of 2012, small mammal community and population parameters were estimated across the site, and samples were analyzed for polychlorinated biphenyl's (PCBs), high explosives (HEs), and perchlorate. All TAL elements in whole-body field mouse samples (n=3) were either similar to regional statistical reference levels (RSRLs) or below ecological screening levels. Dioxins and furans (n=6) and HEs (n=2) were not detected in any of the whole-body field mouse/vole samples. Perchlorate concentrations (n=2) were below the RSRL. One out of the two small mammal samples contained PCB Arochlor-1260 above non-urban RSRLs; the amount, however, was similar to the urban RSRL. There was no adverse effect of burning ground operations on local small mammal populations.

INTRODUCTION

Two open-burn treatment units (burn units), the TA-16-388 Flash Pad and the TA-16-399 Burn Tray, located at Technical Area 16 (TA-16) at Los Alamos National Laboratory (LANL or the Laboratory), are used for the destruction of high explosives (HE), HE machining wastes, and wastes contaminated with HE (LANL 2003) **(Figures 1 and 2)**. The burn units have been in operation since the late 1950s and have been authorized to operate under an interim basis by the State of New Mexico since 1980. Currently, the Laboratory is in the process of applying for a hazardous waste permit for the open-burning treatment of HE wastes at TA-16. The public has voiced concern about potential effects from releases of chemicals, particularly dioxins and furans on the surrounding environment (New Mexico Environment Department [NMED] 2010).

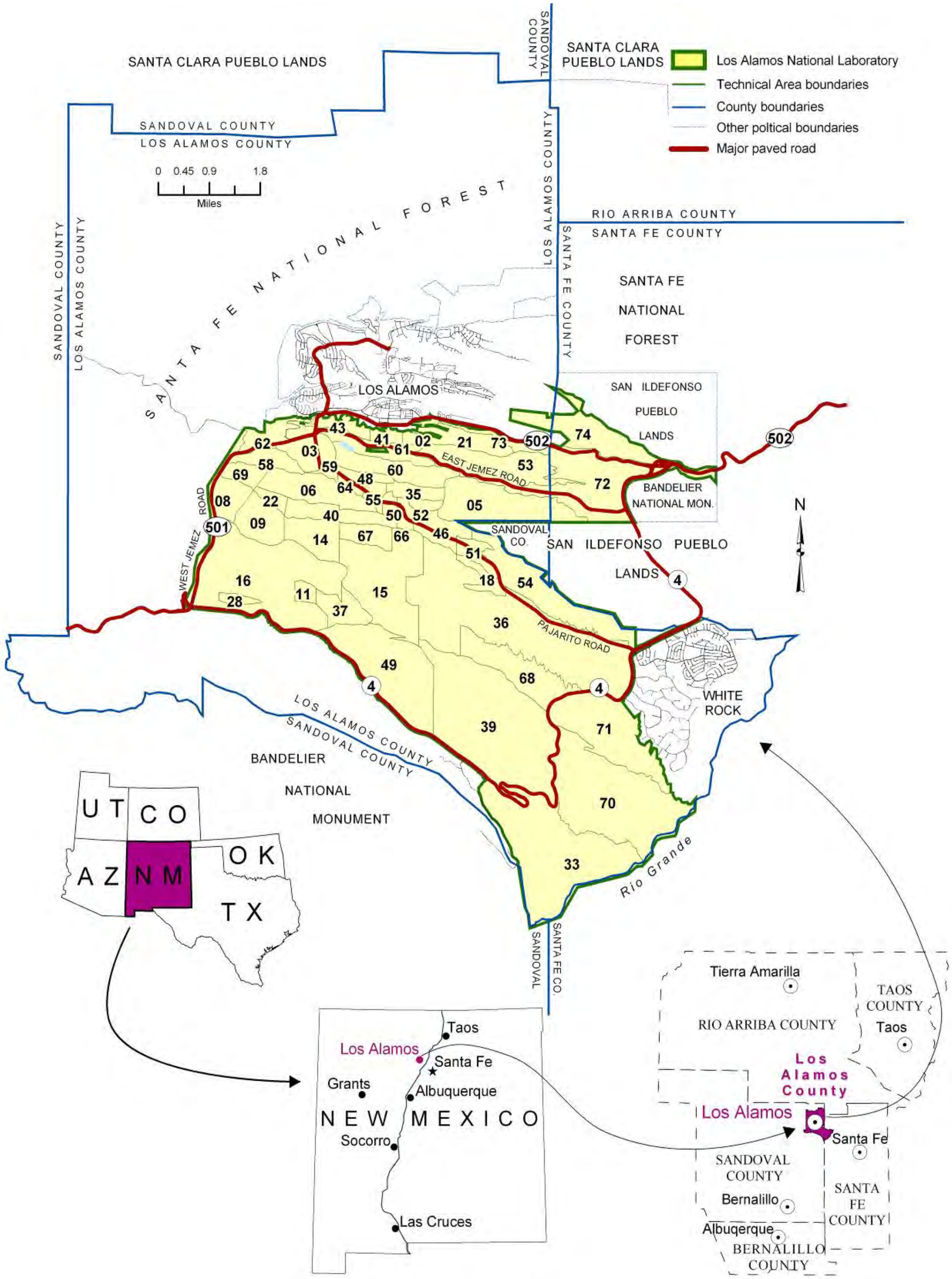


Figure 1. Location of Los Alamos National Laboratory**.**

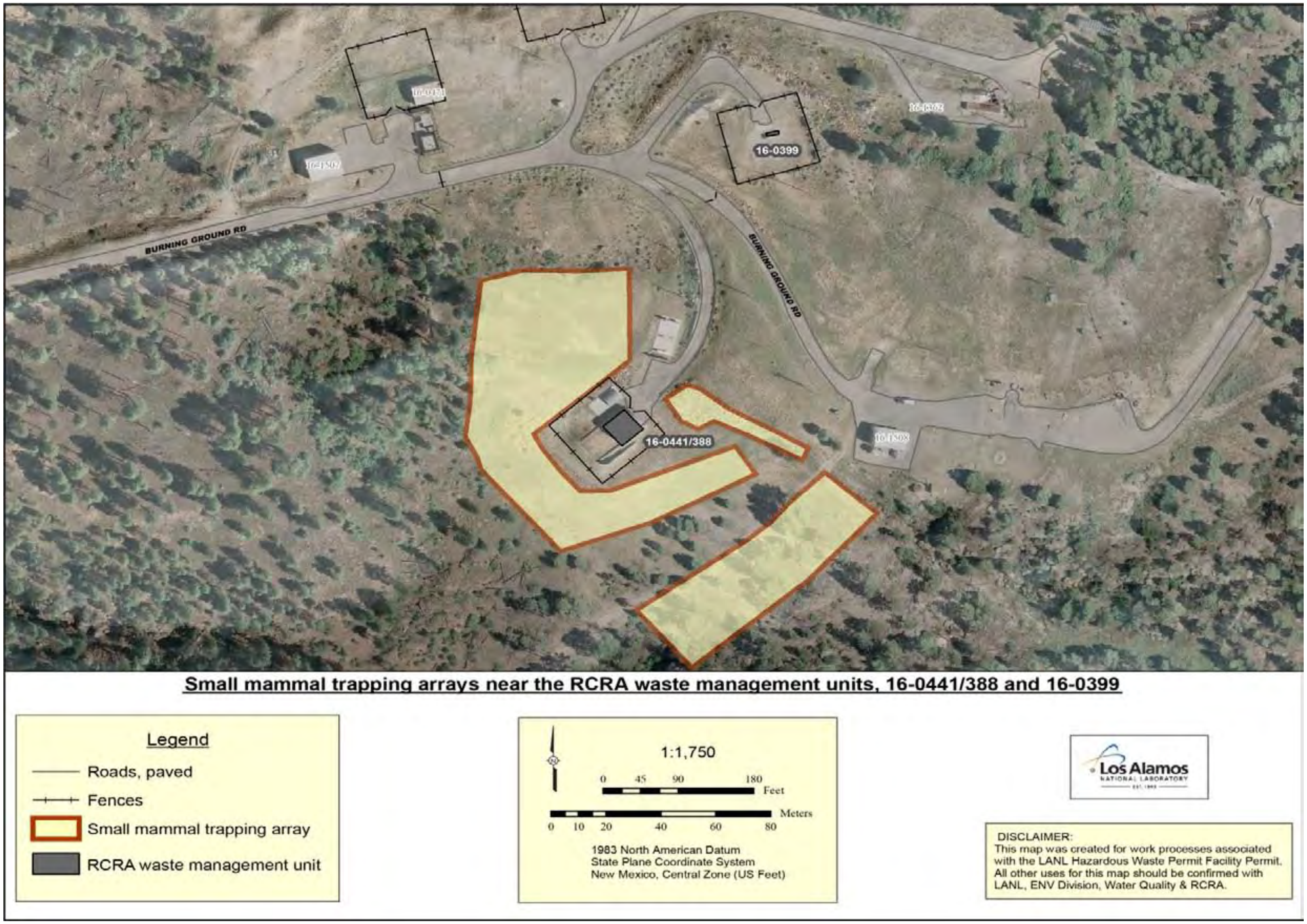


Figure 2. Location of burn units (referred to as the RCRA waste management units) and sampling arrays at TA-16 in 2011.

An analysis of Resource Conservation and Recovery Act (RCRA) metals and dioxin/furan chemicals in soil samples (n=37) collected in proximity to the two burn units at TA-16 showed that some elements like barium, cadmium, and silver were detected above background and each sample contained from 3 to 17 dioxin/furan chemicals. The human health and ecological risk analyses concluded that no risks to human or ecological receptors above acceptance thresholds are present at the site (LANL 2010a).

The purpose of the present study was to gain more information on any food-chain transfer of the chemicals of potential ecological concern at the burn units to a low-trophic-level animal receptor (e.g., field mice) to verify the results of the ecological risk analysis. In general, field mice are effective biomonitors because of their ease of collection, feeding habits (e.g., omnivore), limited home range, and association with the soil (e.g., burrowing) (Arthur et al. 1987, Talmage and Walton 1991, Smith et al., 2002). At LANL, field mice are used as the biota (radionuclide) dose (McNaughton 2006) and chemical (Fresquez et al. 2010) uptake models for terrestrial mammals because they have the smallest home range (0.089 to 1.5 acres) (Wood et al. 2010).

METHODOLOGY

Site Description

The Laboratory is situated in northern New Mexico on the Pajarito Plateau, a series of fingerlike mesas separated by east-to-west-oriented canyons. The mesa tops slope eastward from approximately 2377 m (7800 ft) to 1890 m (6200 ft). The surrounding land is largely undeveloped, including large tracts held by the Santa Fe National Forest, Bureau of Land Management, Bandelier National Monument, and San Ildefonso Pueblo. The open-burn sites are located in a remote location at TA-16 and vegetation consist of mostly ponderosa pine (*Pinus ponderosa* C. Lawson), gambel oak (*Quercus gambelii* Nutt) and open field grasses.

Small Mammal Trapping

2011 Study. Large snap traps were set in three arrays (north/west/south, east, and southeast) around the most often used burn unit, TA-16-388 (Flash Pad), in March-April 2011 **(Figure 2)**. Traps were baited in the late afternoon with molasses-coated oat bait and checked early each morning. A total of nine field mice/voles were collected over the sampling period; three samples were used for target analyte list (TAL) analysis, and six samples were used for dioxin/furan analysis. The samples for TAL analysis were each placed in double ziplock bags, whereas the dioxin/furan samples were each placed into 250-mL amber glass jars. All samples were secured with chain-of-custody tape, transported in an ice cooler, and stored in a freezer until they were submitted to the Laboratory's Sample Management Office. Samples consisted of deer mice (*Peromyscus maniculatus*) (PEMA), brush mice (*Peromyscus boylii*) (PEBO), and long-tailed voles (*Microtus longicaudus*) (MILO) (Appendix A).

ALS Group (formerly Paragon Analytics) analyzed the whole-body (carcass plus pelt) field mouse samples for TAL elements (aluminum, barium, beryllium, calcium, chromium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, sodium, vanadium, zinc, antimony, arsenic, cadmium, lead, selenium, silver, thallium, and mercury). Seventeen dioxin/furan congeners in whole-body field mice/voles were analyzed by Cape Fear Analytical, LLC.

2012 Study. Small mammal trapping was conducted near TA-16-399 (Flash Pad) on July 2-3, using Sherman live traps. The objective of the sampling was to evaluate the status of the small mammal community and to collect samples for the analysis of polychlorinated biphenyls (PCBs), high explosives (HEs), and perchlorate. A trap web was set up with 12 spokes and 10 traps per spoke (Parmenter et al. 2003) **(Figure 3)**. Traps were baited on July 2nd, and checked on July 3rd. Six samples were collected, processed, and submitted similar to the 2011 study, but for organic chemical analyses.

Measures of abundance (captures per 100 trap nights), species richness, and species diversity for all captured animals; and average weight, male:female sex ratios; and indicators of reproductive activity (presence of pregnant females or juveniles) for the two most commonly trapped species, PEBO and PEMA, were determined. A comparison of these metrics to results from 21 other locations sampled between 2001 and 2010 on or near LANL using Sherman live traps during summer time periods (July through September) was conducted. Comparison trapping locations ranged from mesa tops to canyon bottoms and from pinyon-juniper to riparian, ponderosa pine, and mixed conifer habitats. Box and whisker plots were plotted for the number of captures per 100 trap nights, the species' sex ratios, the species' average nonpregnant adult weights, and community diversity, as indexed by Shannon' H metric (Shannon 1948). Sex ratios were not

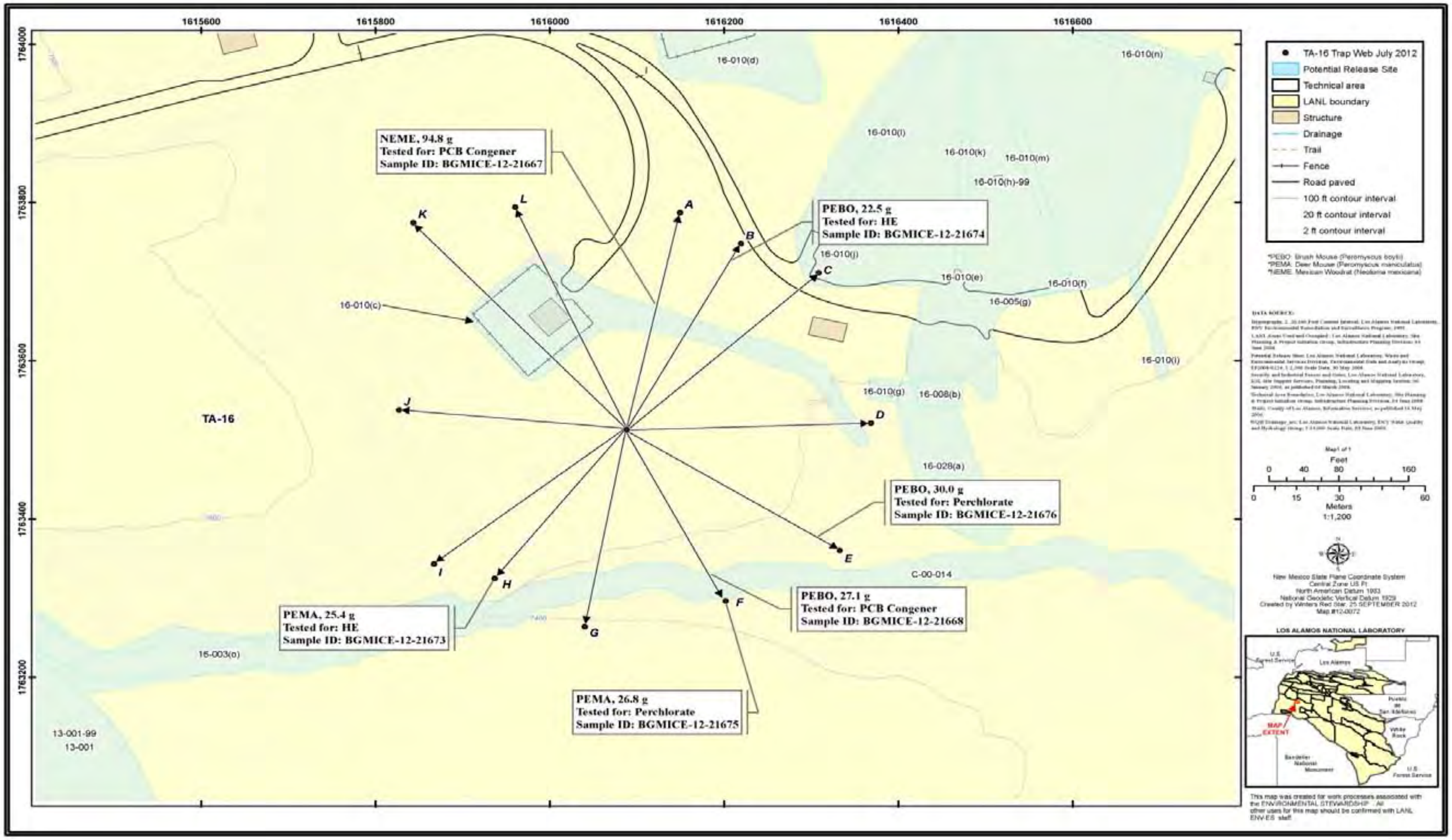


Figure 3. Map of the trapping web used to sample small mammals at the TA-16 burning grounds during July 2012. NEME = *Neotoma Mexicana*; PEBO = *Peromyscus boylii*; PEMA = *Peromyscus maniculatus*; PCB = polychlorinated biphenyl; HE = high explosives.

calculated if only one gender was captured in the trapping effort. The box and whisker plots represent the minimum value, the 25th percentile, the median, the 75th percentile, and the maximum value.

Biota Comparison Levels

Chemical concentrations in field mice/voles from Laboratory areas are first compared with regional statistical reference levels (RSRLs). RSRLs, which represent natural and fallout levels of chemicals, are the upper-level bounds of background concentrations (mean plus three standard deviations = 99% confidence level) calculated from field mice that were collected from regional locations away from the influence of the Laboratory (over 9 miles away) (U. S. Department of Energy [DOE] 1991). For TAL elements, dioxins/furans, PCBs, and perchlorate in whole-body field mice, RSRLs can be found in Fresquez (2009, 2011a). HEs are not naturally produced or commonly released, so the small mammals collected from regional locations should not contain these chemicals.

There are no regulatory screening levels for chemicals in tissues of field mice, so if chemicals in field mice are higher than the RSRLs, then the average chemical concentration in the soil at the place of collection is compared with ecological screening levels (ESLs) (LANL 2010b). ESLs are derived by the Laboratory from the literature and are designed to reflect the concentration of a chemical in the soil that is not expected to produce any adverse effects on selected biota receptors that commonly come into contact with soil or ingest biota that live in or on soil (i.e., they are the concentrations that are protective of ecological receptors under chronic exposure conditions).

RESULTS

2011 Study: Of the 23 TAL elements, barium, nickel, and cadmium were the only chemicals in whole-body field mice collected from around a burn unit at TA-16 (TA-16-388) that were detected in higher concentrations than the RSRLs in two or more samples **(Table 1)**. (Note that barium and cadmium were also detected above background concentrations in soil samples.) Nickel and cadmium in whole-body field mice were just above the RSRLs, whereas barium was substantially higher (15 to 27 mg/kg) than the field mouse RSRL (5.1 mg/kg). Nevertheless, the average concentration of barium in soil (519 mg/kg) from across the site (n=32) (LANL 2010a) was still below the ESL of 1800 mg/kg for the field mouse (LANL 2010b). Dioxins and furans

Table 1. TAL Elements (mg/kg wet) in Whole-Body Field Mice Collected from Burn Site at TA-16 in 2011.

Element[a]	9125[b] (brush mouse)	9131 (deer mouse)	9132 (deer mouse)	RSRL[c]
Aluminum	11	21	14	73
Barium	**15**	**27**	**22**	5.1
Beryllium[d]	0.0022	0.0019	0.0023	0.016
Calcium	11000	10000	11000	12624
Chromium	0.22	0.23	0.23	0.40
Cobalt	0.035	0.049	0.048	0.072
Copper	2.8	3.4	3.8	6.2
Iron	61	84	79	140
Magnesium	280	300	360	544
Manganese	3.1	2.6	2.4	7.6
Nickel	**0.14**	**0.12**	**0.18**	0.11
Potassium	2800	2700	2700	3677
Sodium	1300	1200	1200	1920
Vanadium	0.029	0.052	0.036	0.14
Zinc	23	23	25	119
Antimony	0.032	0.041	0.057	0.17
Arsenic	0.026	0.028	0.022	0.089
Cadmium	**0.048**	**0.040**	0.035	0.039
Lead	**0.59**	0.49	0.19	0.49
Selenium	0.29	0.39	0.39	0.40
Silver	0.0085	0.0068	0.0076	0.020
Thallium	0.0018	0.0017	0.0018	0.0055
Mercury	0.012	0.0081	0.0023	0.013

Note: Bold values are higher than the RSRL.
[a]Al to Zn by method SW6010B and analyzed by the inductively coupled plasma (ICP) technique; Sb to Tl by method SW6020B and analyzed by ICP/mass spectrometry; Hg by method SW7471 and analyzed by cold vapor atomic absorption.
[b]Sample number.
[c]The RSRL is the upper-limit regional background concentration (mean + 3 std dev) based on Fresquez 2009.
[d]All U flagged undetected (<method detection limit [MDL]) TAL elements were reported as one-half the MDL; all B flagged estimated values (>MDL but <reporting limit) were reported.

Table 2. Dioxin and Furan Concentrations (pg/g wet) in Whole-Body Field Mouse/Vole Samples Collected from Open-Burn Site TA-16 in 2011.

Dioxins/Furans[a]	9126[b] (MILO)	RQ[c]	9127 (MILO)	RQ	9128 (MILO)	RQ	9129 (MILO)	RQ	9130 (PEMA)	RQ	9133 (PEMA)	RQ
Dioxins												
Tetrachlorodibenzodioxin[2,3,7,8-]	0.0847	U	0.0843	U	0.084	U	0.0831	U	0.134	J	0.0837	U
Tetrachlorodibenzodioxins (Total)	0.0847	U	0.0843	U	0.084	U	0.0831	U	0.134	J	0.0837	U
Pentachlorodibenzodioxin[1,2,3,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.791	J	0.418	U
Pentachlorodibenzodioxins (Total)	0.423	U	0.422	U	0.42	U	0.416	U	0.791	J	0.418	U
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.46	J	0.418	U
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.734	J	0.418	U
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Hexachlorodibenzodioxins (Total)	0.423	U	0.422	U	0.42	U	0.416	U	1.19	J	0.418	U
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	1.97	J	0.418	U
Heptachlorodibenzodioxins (Total)	0.423	U	0.422	U	0.42	U	0.416	U	2.87	J	0.418	U
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.847	U	0.843	U	1.7	J	0.831	U	7.73	J	0.837	U

Table 2. Continued.

Dioxins/Furans[a]	9126[b]	RQ[c]	9127	RQ	9128	RQ	9129	RQ	9130	RQ	9133	RQ
Furans												
Tetrachlorodibenzofuran[2,3,7,8-]	0.246	U	0.268	U	0.282	U	0.299	U	0.197	U	0.244	U
Tetrachlorodibenzofurans (Total)	0.442	J	0.449	J	0.282	U	0.519	J	0.197	U	0.395	J
Pentachlorodibenzofuran[1,2,3,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Pentachlorodibenzofuran[2,3,4,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Pentachlorodibenzofurans (Total)	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Hexachlorodibenzofuran[1,2,3,4,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Hexachlorodibenzofuran[1,2,3,6,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Hexachlorodibenzofuran[1,2,3,7,8,9-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Hexachlorodibenzofuran[2,3,4,6,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.776	J	0.418	U
Hexachlorodibenzofurans (Total)	0.423	U	0.422	U	0.42	U	0.416	U	0.776	J	0.418	U
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.423	U	0.422	U	0.42	U	0.416	U	0.753	J	0.418	U
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	0.423	U	0.422	U	0.42	U	0.416	U	0.418	U	0.418	U
Heptachlorodibenzofurans (Total)	0.423	U	0.422	U	0.42	U	0.416	U	0.753	J	0.418	U
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.847	U	0.843	U	0.84	U	0.831	U	0.836	U	0.837	U

[a]Method was by 8290; blank corrected data.
[b]Sample number.
[c]Results as related to the reporting qualifier (RQ). Result followed by a blank space is a detected value = result was above the standard quantification limit (SQL); result followed by a U is an undetected value = result was below the method detection limit (MDL) (shown); result followed by a J is an estimated value = result was above the MDL but below the SQL.

were not detected above the analytical limit of quantification (detection limit) in any of the whole-body field mice/voles collected around the burn site, TA-16-388, at TA-16 **(Table 2)**. These data are similar to other dioxin/furan field-mouse uptake studies at the local (Fresquez 2011b) and national (Krouskop et al., 1991) levels and suggest that dioxins and furans, at least in the parts per trillion range (pg/g) in soil under natural field conditions, are not significantly assimilated, either by ingestion and/or by surface contact modes, to field mice/voles; possibly because of the adsorption of the chemical to soil surfaces or because of oxidation/reduction changes.

2012 Study: Trapped animals included one Mexican woodrat (*Neotoma mexicana*) (NEMA), three brush mice (PEBO) and two deer mice (PEMA). This resulted in a species richness of three, a capture rate of 4.2 animals per 100 trap nights, and a species diversity of 1.01. Species richness was within the range of normally observed results for LANL trapping efforts **(Figure 4)**. Captures per 100 trap nights and species diversity values were in the middle 50 percent of the data values for all trapping locations **(Figures 5 and 6)**.

Only two adult male PEMA were captured, so no pregnant females or juveniles were recorded for that species. There was evidence of reproduction in the captured PEBO **(Figure 7)**. Male:female sex ratios for PEBO at TA-16 were in the middle 50 percent of the data values for all trapping locations **(Figure 4)**. Average nonpregnant adult weights at the TA-16 burning grounds were above the 75th percentile for all species/gender combinations captured, and for PEBO and PEMA males, they were the highest values recorded at any of the LANL trapping locations **(Figure 8)**.

There were no HEs detected in any of the field mice collected around the burn unit and the perchlorate concentrations were similar to the RSRL **(Table 3).** One out of the two small mammals (brush mouse>wood rat) collected was higher in PCBs than the RSRL for undisturbed (non-urban) sites **(Table 4)**. PCB concentrations differ between small mammal species and may be attributed to differences in habitat use and foraging strategies (Johnson et al., 1996, Smith et al., 2006). Nevertheless, the highest PCB amount recorded (26,500 pg/g) was still similar to PCBs in field mice collected from around the perimeter of a public waste (garbage) transfer station (28,000 pg/g) (Fresquez 2011) and was far below the average (whole-body) amount (2.3E06 pg/g) that resulted in population alterations by decreasing reproductive capability and changes in liver, spleen, and adrenal function in field mice (Battey et al., 1990).

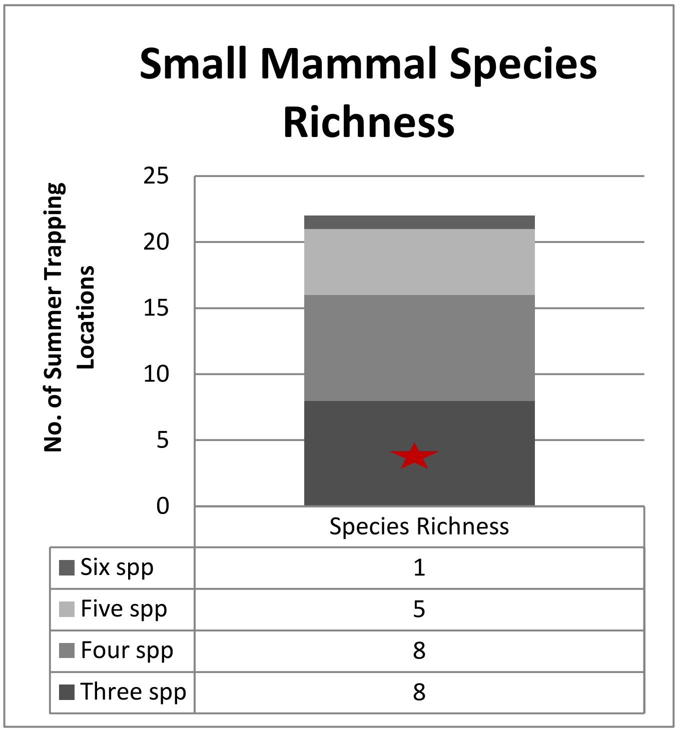


Figure 4. Species richness of small mammal communities sampled at LANL during summer between 2001 and 2012. The red star indicates the sampled species richness of three at the TA-16 burning grounds.

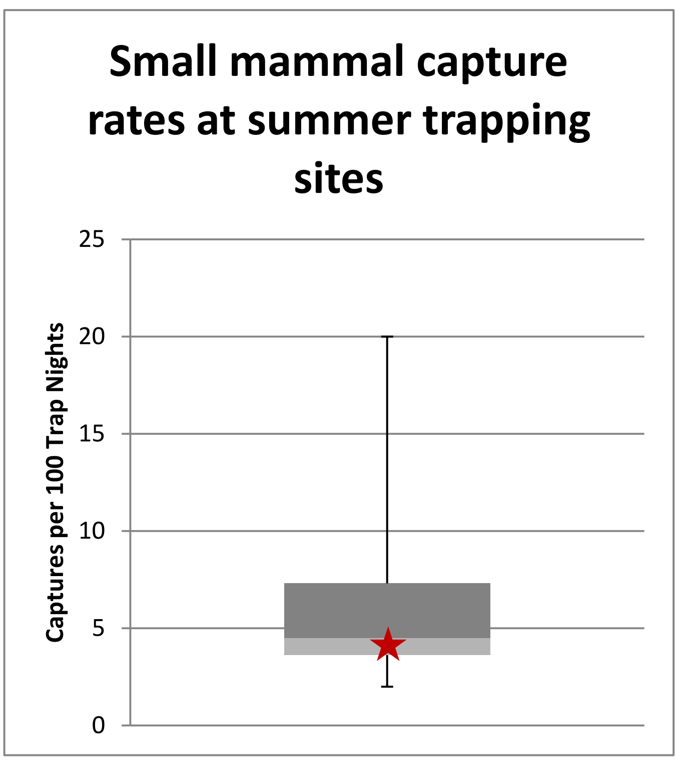


Figure 5. Capture rates of small mammal communities sampled at LANL during summer between 2001 and 2012. The red star indicates the sampled capture rate of 4.2 captures per 100 trap nights at the TA-16 burning grounds.

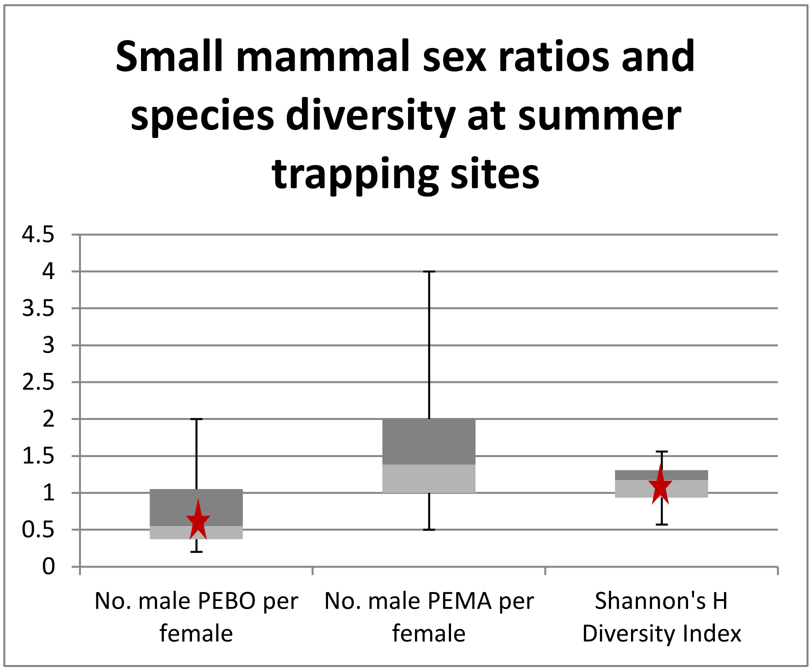


Figure 6. Sex ratios (males per female) and species diversity (Shannon's H index) for small mammals sampled at LANL during summer between 2001 and 2012. The red star indicates the sampled values at the TA-16 burning grounds of 0.5 male PEBO (*P. boylii*) per female, and a Shannon's H value of 1.01. No female PEMA (*P. maniculatus*) were captured, so no sex ratio was calculated for that species during this trapping effort.

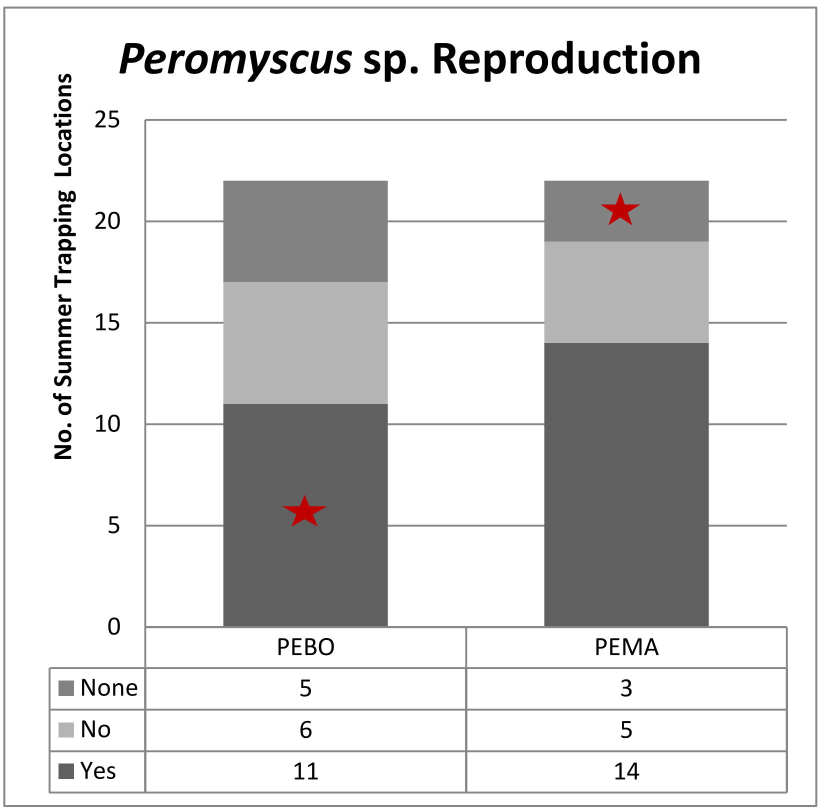


Figure 7. Evidence of reproduction (pregnant females or juveniles) in PEBO (*P. boylii*) and PEMA (*P. maniculatus*) populations sampled at LANL during summer between 2001 and 2012. Yes indicates the presence of either pregnant females or juveniles; No indicates only nonpregnant adult females present; and, None means that no adult females or juveniles of that species were captured. The red star indicates the sampling results at the TA-16 burning grounds of "Yes" for PEBO and "None" for PEMA.

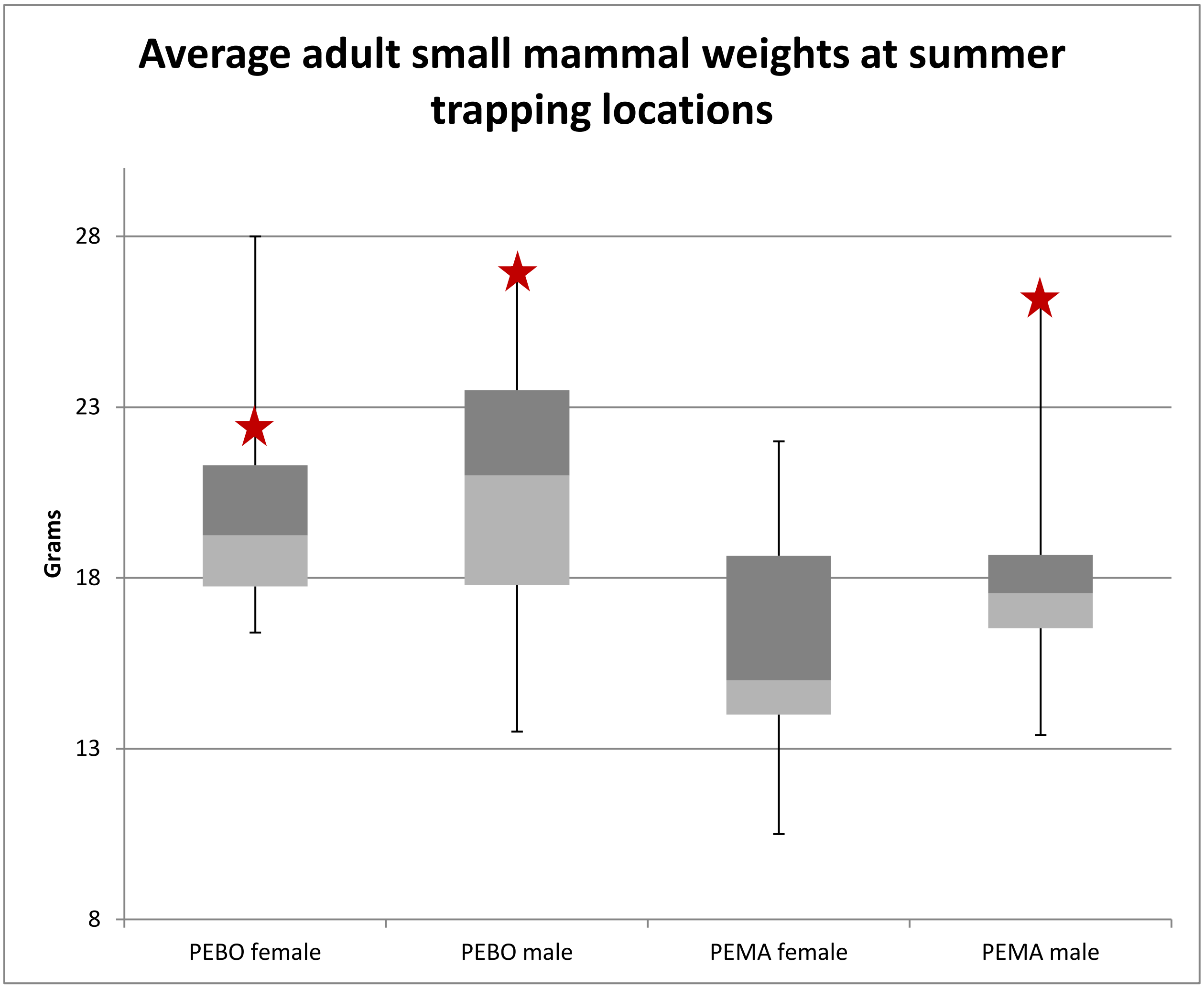


Figure 8. Average weight of adult nonpregnant female and of male PEBO (*P. boylii)* and PEMA (*P. maniculatus)* sampled at LANL during summer between 2001 and 2012. The red star indicates the sampling results at the TA-16 burning grounds of 22.5 g for female PEBO, 27.1 g for male PEBO, and 26.1 g for male PEMA. No female PEMA were captured during this trapping effort.

Table 3. High explosive concentrations (μg/kg wet) and perchlorate (mg/kg wet) in whole body field mice samples collected from TA-16 in 2012.

High Explosive/Perchlorate	12-21673[a] (deer mouse)	12-21674[a] (brush mouse)	
Trinitrotoluene[2,4,6-]	U	U	
Dinitrotoluene[2,4-]	U	U	
RDX	U	U	
Amino-2,6-dinitrotoluene[4-]	U	U	
HMX	U	U	
TATB	U	U	
Amino-4,6-dinitrotoluene[2-]	U	U	
Tetryl	U	U	
2,6-Diamino-4-nitrotoluene	U	U	
Dinitrotoluene[2,6-]	U	U	
3,5-Dinitroaniline	U	U	
2,4-Diamino-6-nitrotoluene	U	U	
PETN	U	U	
Tris (o-cresyl) phosphate	U	U	
Nitrotoluene[2-]	U	U	
Nitrobenzene	U	U	
Nitrotoluene[3-]	U	U	
Trinitrobenzene[1,3,5-]	U	U	
Dinitrobenzene[1,3-]	U	U	
Nitrotoluene[4-]	U	U	
	12-21675[a] (deer mouse)	**12-21676[a] (brush mouse)**	**RSRL[b]**
Perchlorate	0.0216	0.0032	0.19

[a]Sample number.
[b]Regional Statistical Reference Level; this is the upper-level background concentration (mean + 3 SD) based on data from Fresquez 2011a.

U (Undetected)=result was below the minimum detectable level.

Table 4. Polychlorinated biphenyl (PCB) homologs and totals (pg/g wet) in whole body field rat/mice collected from TA-16 in 2012.

			RSRL[c]	
PCB Homolog/Total[a]	12-21667[b] (wood rat)	12-21668[b] (brush mouse)	Non-Urban	Urban
Mono PCBs	0	0		
Di PCBs	0	0		
Tri PCBs	0	0		
Tetra PCBs	0	0		
Penta PCBs	23	1600		
Hexa PCBs	263	11100		
Hepta PCBs	146	10400		
Octa PCBs	91	2760		
Nona PCBs	7.5	511		
Deca PCB	0	49		
Total PCBs	531	26500	885	28000

[a]Method was by 1668A; blank corrected data.

[b]Sample number

[c]Regional Statistical Reference Level is the mean plus three standard deviations (99% confidence level) from Fresquez 2011a.

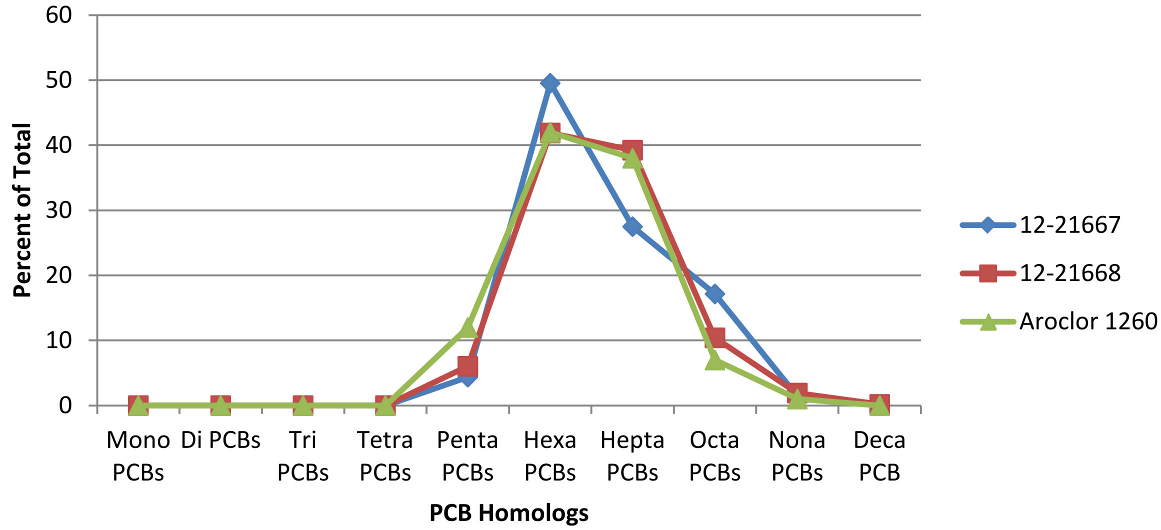


Figure 9. PCB homolog distribution of whole-body field wood rat (#21667)/brush mouse (#21668) samples collected from the TA-16 burning grounds in 2012 compared with Arochlor-1260.

The PCB homolog distribution of the field (brush) mouse collected near the TA-16 burn unit overlaps the distribution pattern of Archlor-1260 almost perfectly **(Figure 9)**.

Overall, both inorganic and organic data from whole-body field mice/voles collected at the burn unit site at TA-16 support the results of the ecological risk assessment conducted for this site. These data support the conclusion that there is no adverse effect of burn unit operations on local small mammal populations.

ACKNOWLEDGMENTS

Thanks to Rhonda Robinson, Sherri Sherwood, Dave Keller, and Beth Norris for sampling support; Kathy Bennett for preparing Figure 2; and Anne Garnett and Pamela Maestas for assistance in the editing and formatting of the manuscript, respectively.

REFERENCES

Arthur, W.J., O.D. Markham, C.R. Groves, and B.L. Keller. 1987. "Radionuclide Export by Deer Mice at a Solid Radioactive Waste Disposal Area in Southeastern Idaho," Health Physics 52(1).

Batty, J., Leavitt, R.A., Biondao, N. 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.

Clark Jr., Foerster, K.S., Marn, C.M., and R.L. Hothem. 1992. Uptake of Environmental Contaminants by Small Mammals in Pickleweed Habitats at San Francisco Bay, California. Archives of Environmental Contamination and Toxicology, 22:389-396.

DOE. 1991. "Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance," US Department of Energy report DOE/EH-0173T (January 1991).

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 report LA-UR-09-07580.

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 report LA-UR-11-11687.

Fresquez, P.R. 2011b. "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 report LA-UR-11-10614.

Fresquez, P.R., C. Hathcock, D. Keller, and G. Gonzales. 2010. "Foodstuffs and Biota Monitoring," pp. 279–304. In "Environmental Surveillance at Los Alamos during 2009," Los Alamos National Laboratory report LA-14427-ENV.

Johnson, M.S., R.T. Leah, L. Connor, C. Rae and S. Saunders. 1996. Polychlorinated Biphenyls in Small Mammals from Contaminated Landfill Sites. Environmental Pollution, 92(2):185-191.

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.

LANL. 2003. "Los Alamos National Laboratory Technical Area 16, Part B Permit Renewal Application, Revision 4.0." Los Alamos National Laboratory report LA-UR-03-3903.

LANL. 2010a. "Human Health and Ecological Screening Assessment for the TA-16 Burn Ground: Revision 2," Los Alamos National Laboratory report LA-UR-10-02042.

LANL. 2010b. "ECORSK Database: Version 2.5," Los Alamos National Laboratory report LA-UR-10-6898.

Linzey, A.V. 1987. Effects of Chronic Polychlorinated Biphenyls exposure on Reproductive Success of White-Footed Mice (*Peromyscus leucopus*). Archives of Environmental Contamination and Toxicology, 16:455-460.

Linzey, A. and D.M. Grant. 1994. Characteristics of a White-Footed Mouse Population Inhabiting a Polychlorinated Biphenyls Contaminated Site. Archives of Environmental Contamination and Toxicology, 27:521-526.

McNaughton, M. 2006. "Calculating Dose to Non-Human Biota," Los Alamos National Laboratory, Meteorology and Air Quality Group procedure ENV-MAQ-514, R1.

NMED. 2010. Order Granting Applicants' Motion for Partial Reconsideration: In the Matter of Application of the United States Department of Energy and Los Alamos National Security, LLC, for a Hazardous Waste Facility Permit for Los Alamos National Laboratory and the Notice of Intent to Deny a Permit for Open Burn Units TA-16-399 and TA-16-388 for the Los Alamos National Laboratory. Hazardous Waste Bureau—New Mexico Environment Department. December 21, 2010.

Parmenter, R.R., T.L. Yates, D.R. Anderson, K.P. Burnham, J.L. Dunnum, A.B. Franklin, M.T. Friggens, B.C. Lubow, M. Miller, G.S. Olson, C.A. Parmenter, J. Pollard, E. Rexstad, T.M. Shenk, T.R. Stanley, and G.C. White. 2003. "Small-mammal density estimation: a field comparison of grid-based vs. web-based density estimators," Ecological Monographs 73(1): 1-26.

Shannon, C.E. 1948. "A mathematical theory of communication," Bell System Tech. J. 27:379-423.

Talmage, S.S. and B.T. Walton. 1991. “Small Mammals as Monitors of Environmental Contaminants,” Reviews of Environmental Contamination and Toxicology 119:47–145.

Wood, B.A., L. Cao, and M.D. Dearing. 2010. “Deer Mouse (*Peromyscus maniculatus*) Home-Range Size and Fidelity in Sage-Steppe Habitat,” Western North American Naturalist 70(3):345–354.

APPENDIX A: Sample Information

Species	Array Location	Sample Number	Date Collected	Weight (grams)	TAL	Dioxins/ Furans	PCBs	HE	Perchlorate
PEMA[a]	N/W/S	MICEBURN-11-9133	3/17/11	21		X[b]			
PEMA	N/W/S	9132	3/17/11	13.5	X				
PEMA	SE	9131	3/18/11	16.5	X				
PEMA	N/W/S	9130	3/22/11	19.5		X			
MILO	N/W/S	9129	3/22/11	24		X			
MILO	N/W/S	9128	3/23/11	21.5		X			
MILO	N/W/S	9127	3/24/11	20.5		X			
MILO	N/W/S	9126	3/24/11	21		X			
PEBO	SE	9125	4/1/11	15	X				
NEME	A	BG-MICE-12-21667	7/3/12	94.8			X		
PEBO	B	21674	7/3/12	23.5				X	
PEBO	E	21676	7/3/12	30					X
PEBO	F	21668	7/3/12	27.1			X		
PEMA	F	21675	7/3/12	26.8					X
PEMA	H	21673	7/3/12	25.4				X	

Note: Coordinates are as follows: X = 1615893.65 and Y = 1763660.03.
[a]PEMA = Deer mouse (*Peromyscus maniculatus*), MILO = Long-tailed vole (*Microtus longicaudus*), PEBO = Brush mouse (*Peromyscus boylii*), NEME=Mexican wood rat.
[b]X = Analyzed.

Attachment I

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

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		

Attachment J

Thermal Analysis of Treatment Operations at the TA-16-388 Flash Pad

LA-UR-13-24633

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.

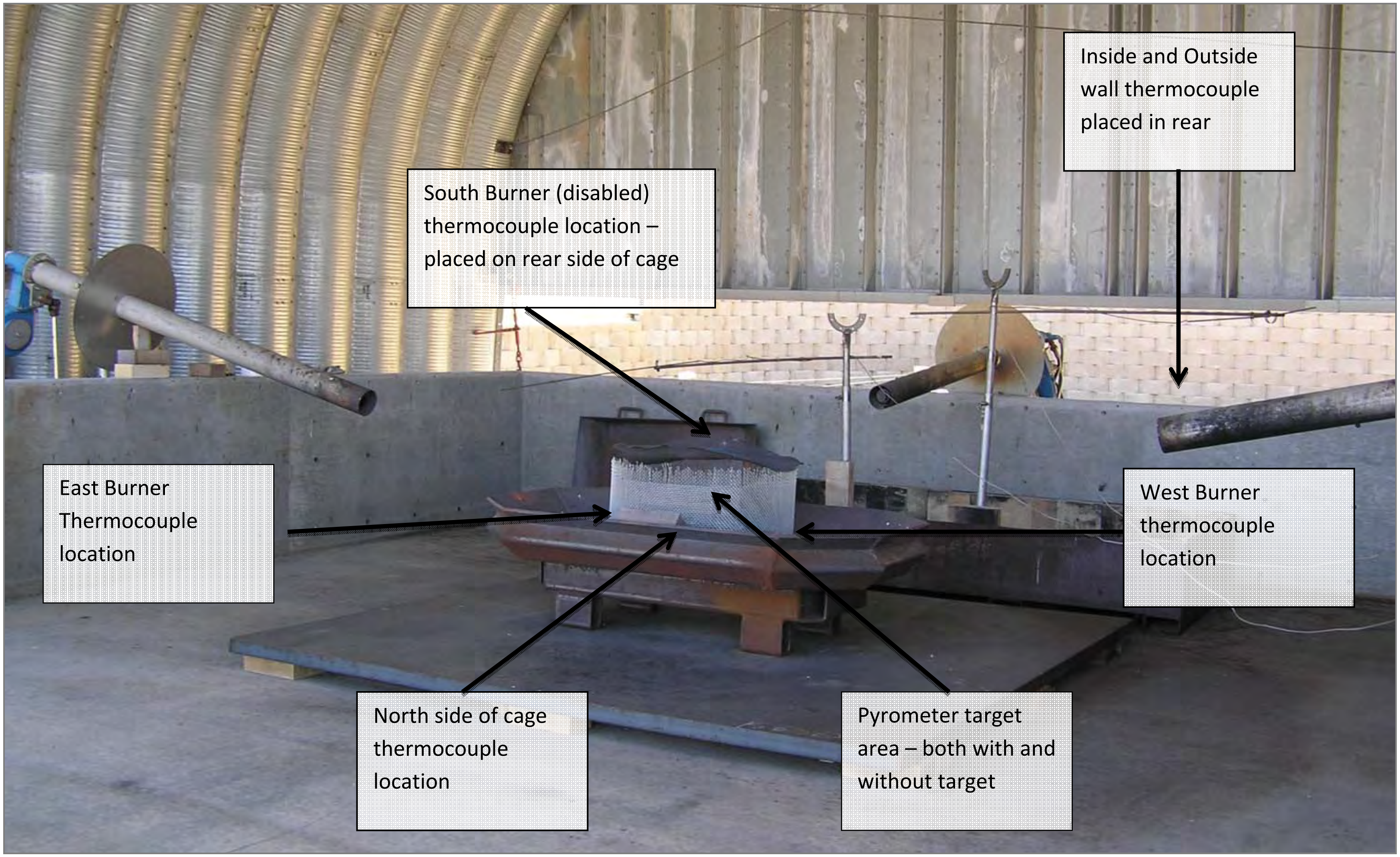


FIGURE 1 – MEASUREMENT LOCATIONS

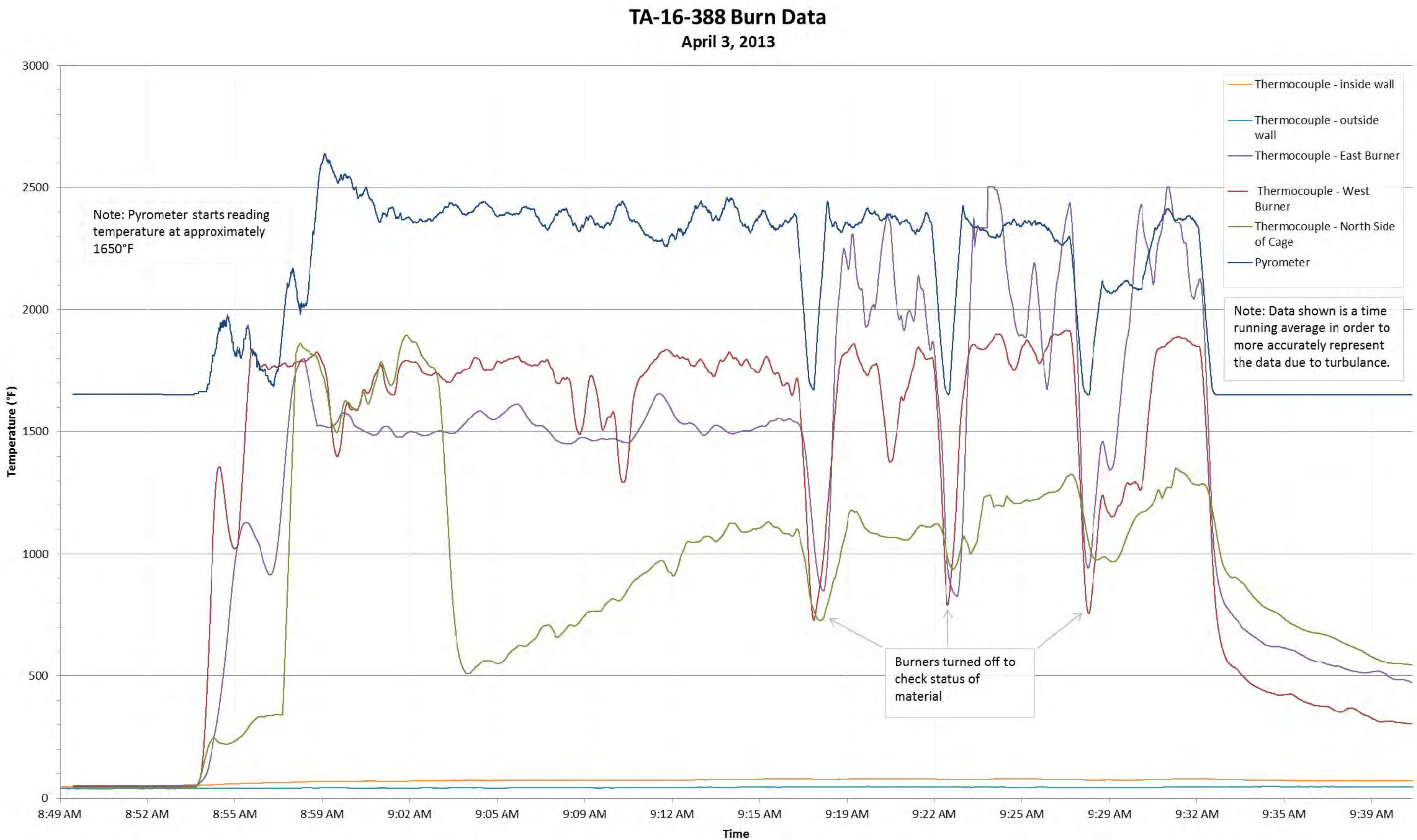


FIGURE 2 - APRIL 3, 2013

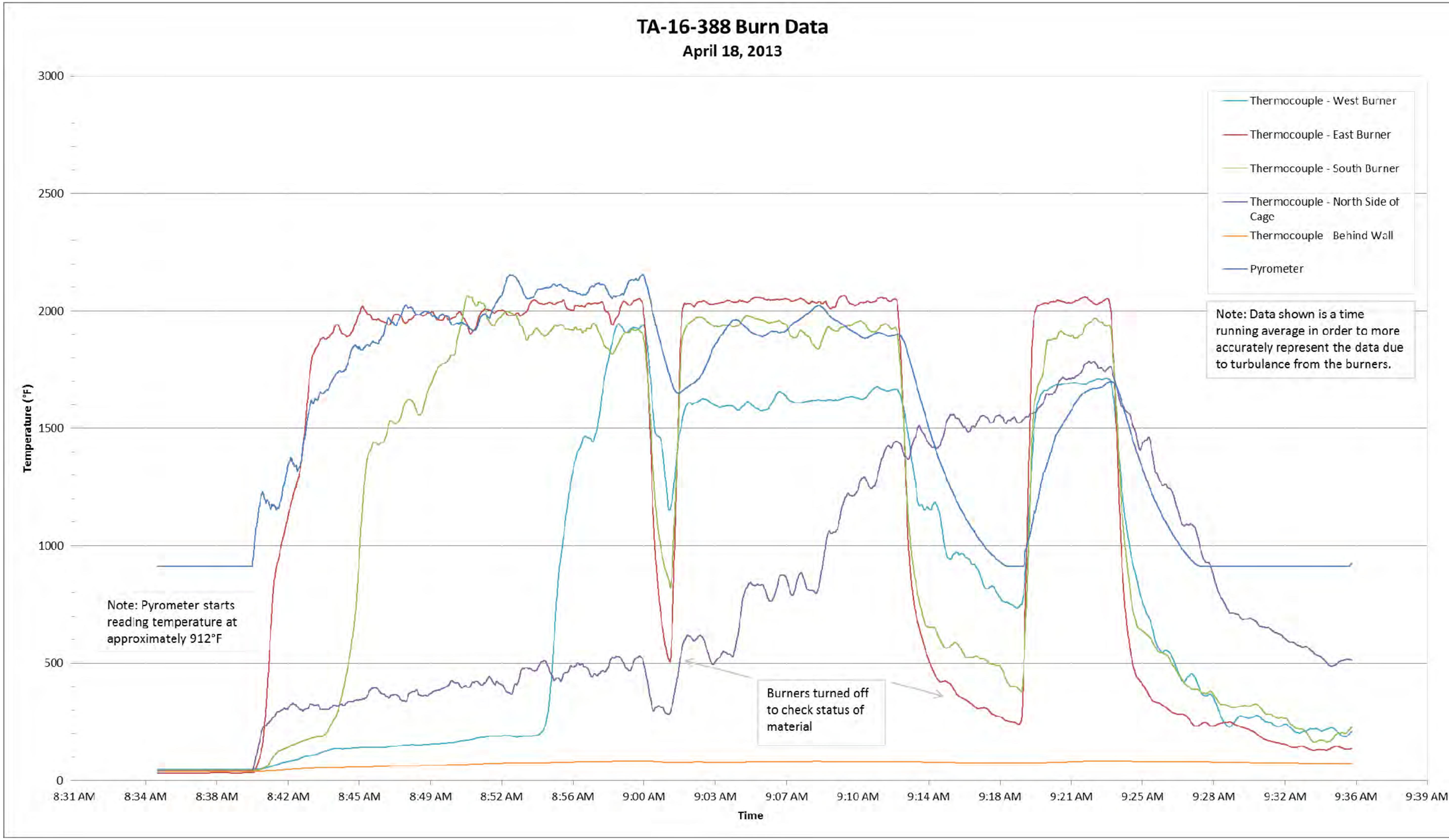
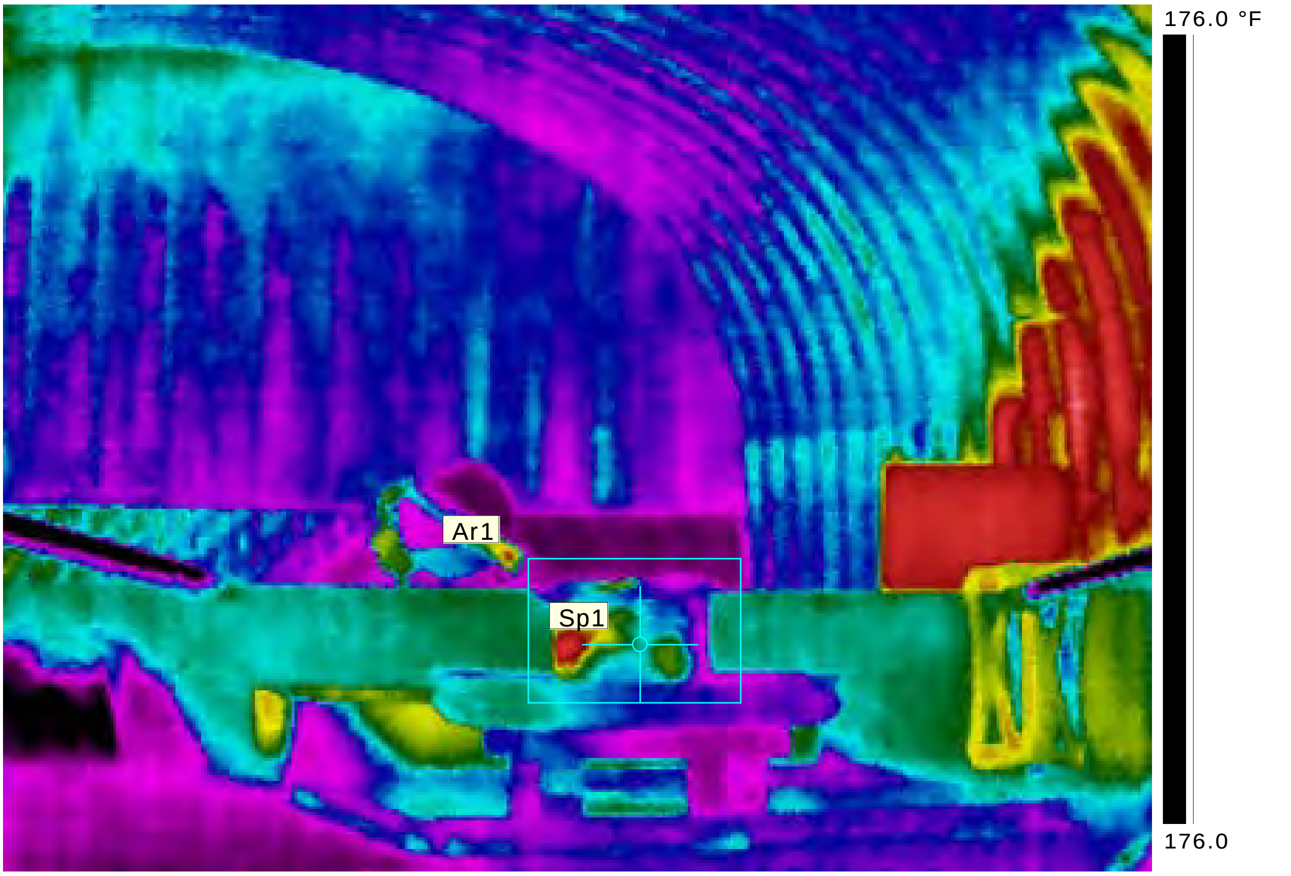


FIGURE 3 - APRIL 18, 2013

Attachment A – Excerpt of April 3, 2013 Thermal Images

	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

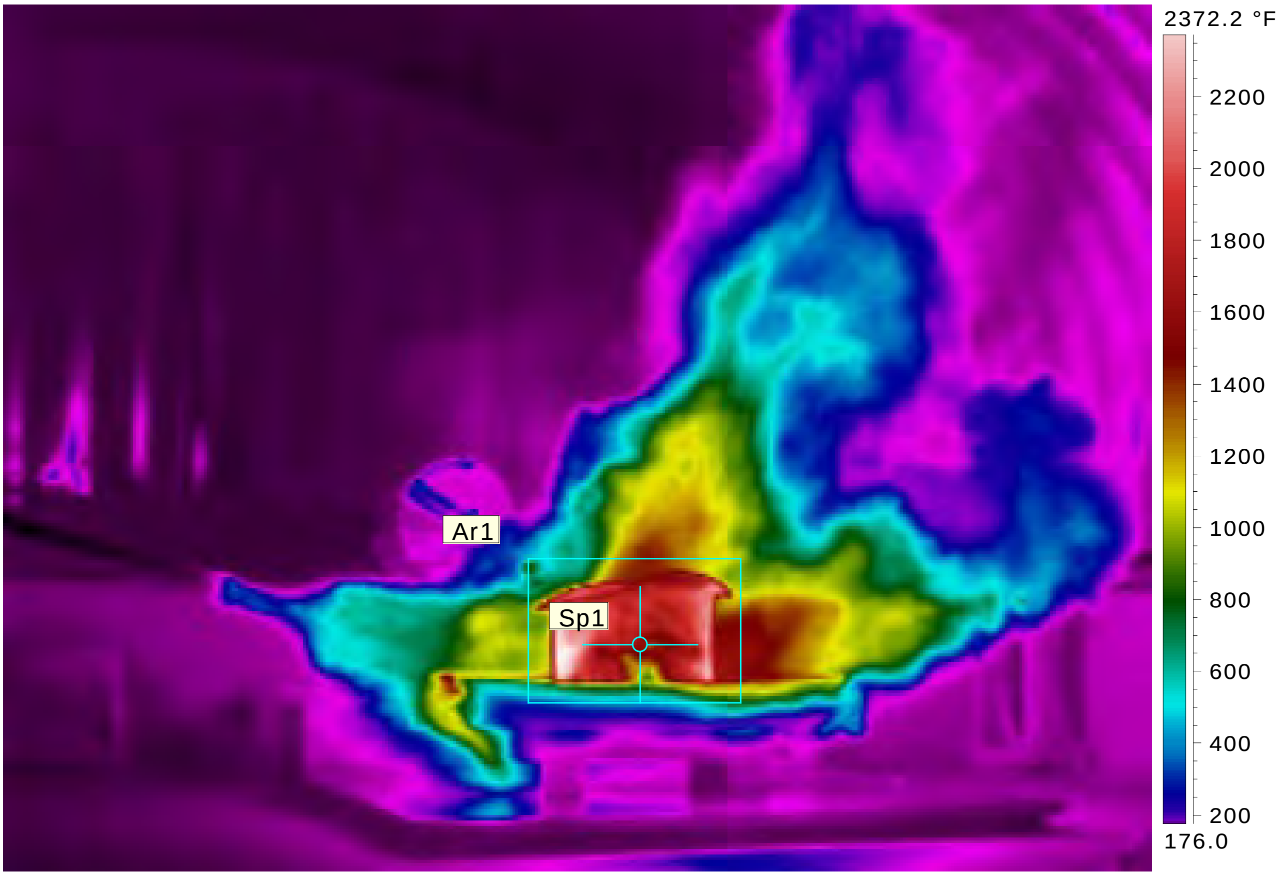
Thermogram Image.Date 4/3/2013



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

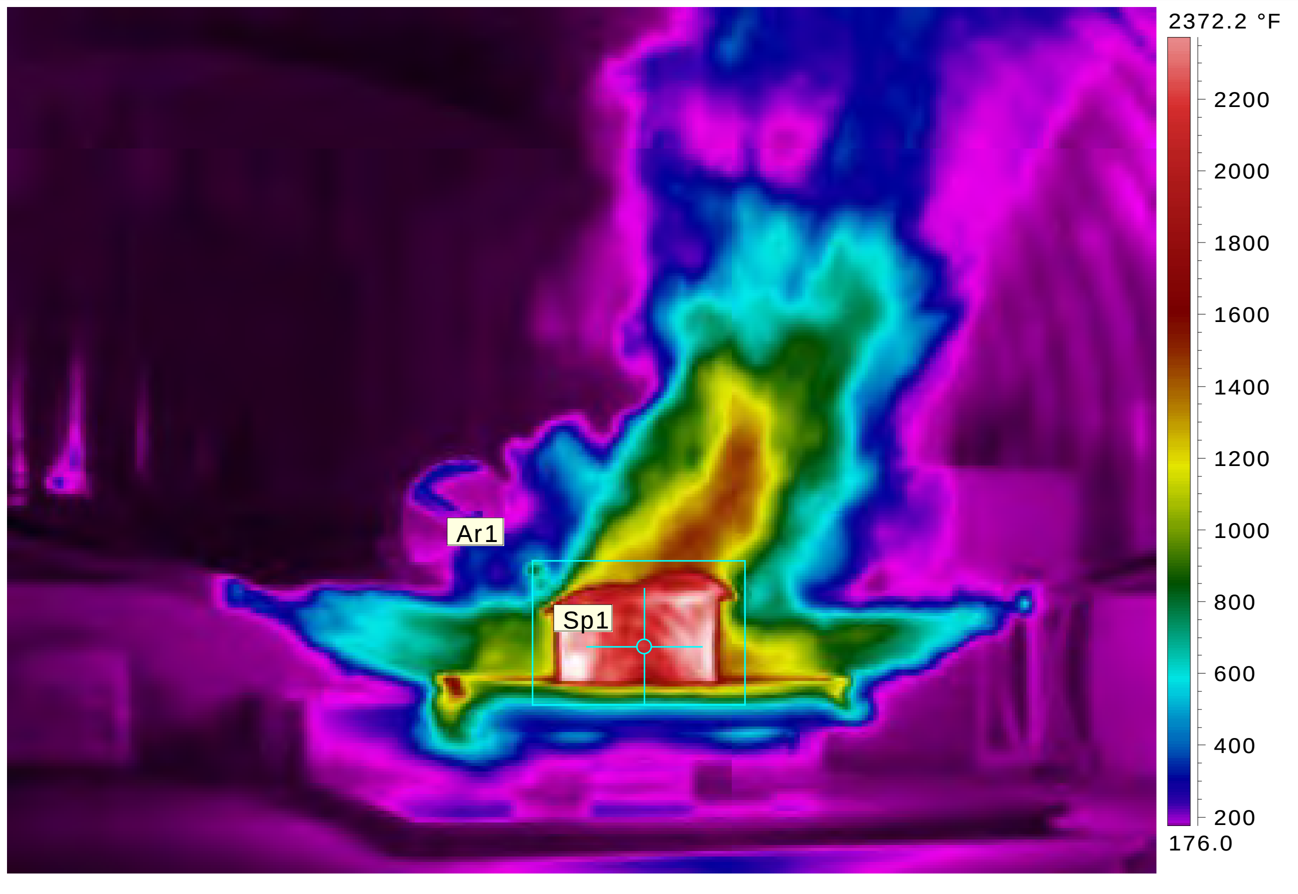
Thermogram Image.Date 4/3/2013



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

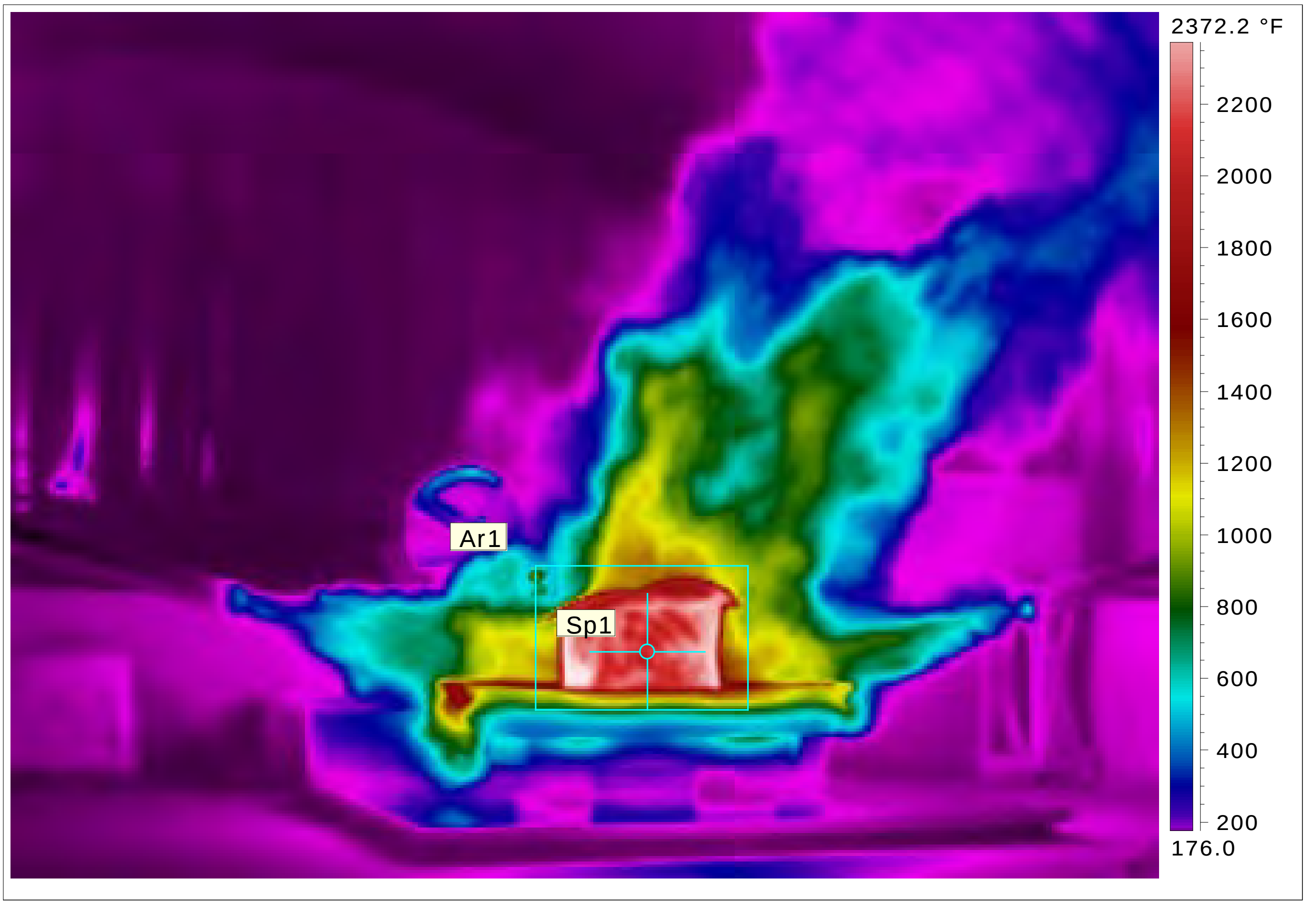
Thermogram Image.Date 4/3/2013



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

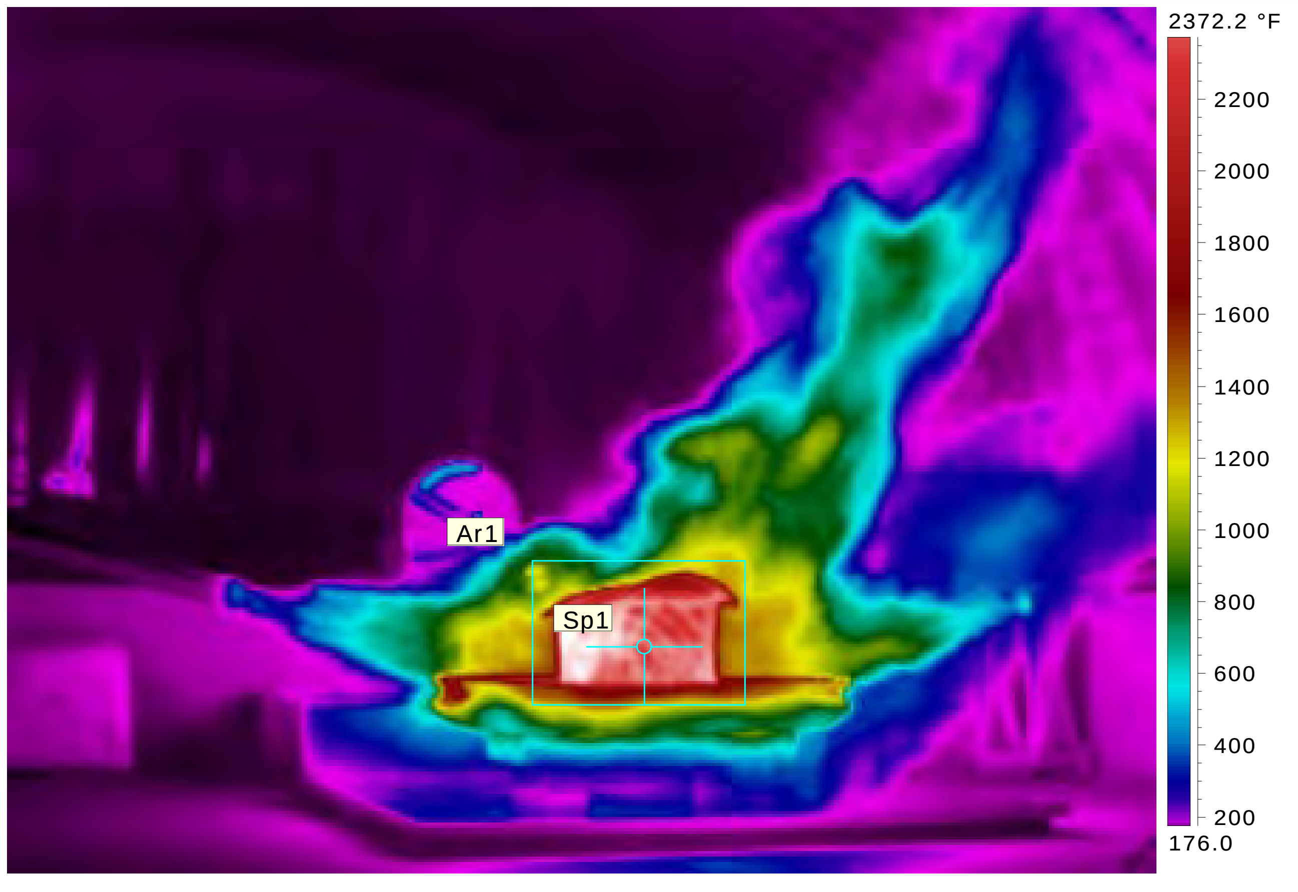
Thermogram Image.Date 4/3/2013



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

Thermogram Image.Date 4/3/2013

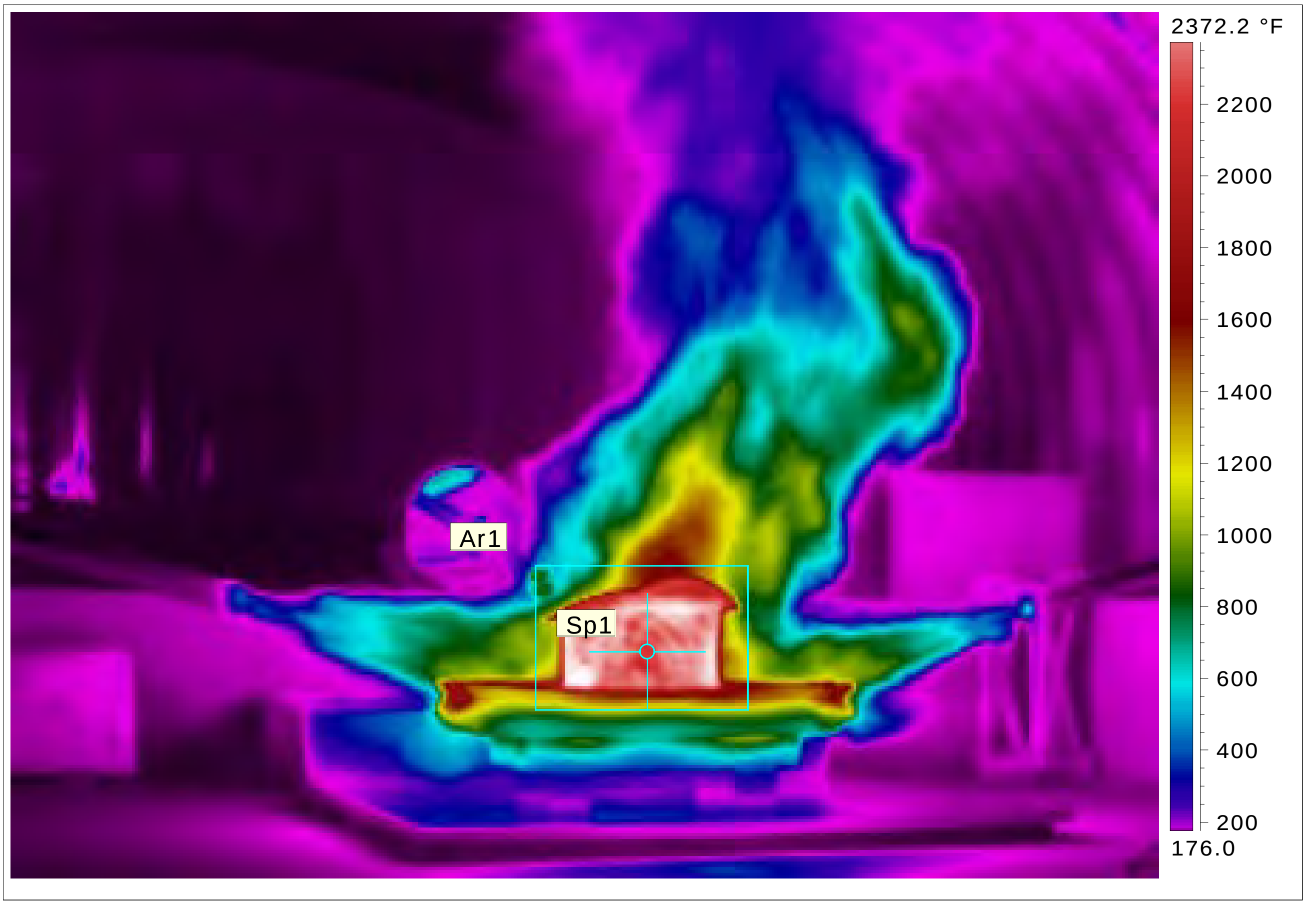


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	*2329.3 °F
Date	4/3/2013
Image Time	8:09:02 AM
Emissivity	0.69

Approximately 14 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST.1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

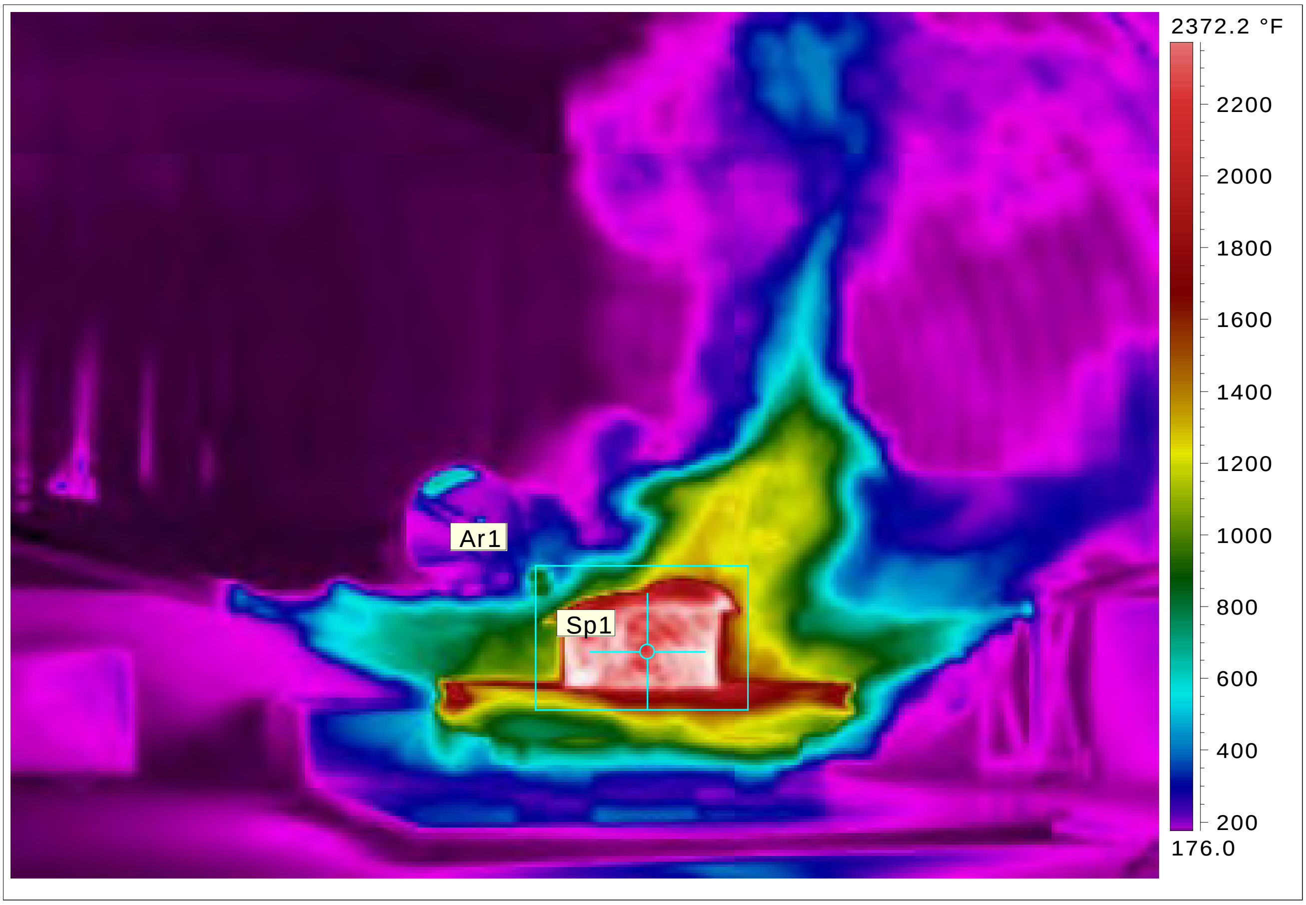
Thermogram Image.Date 4/3/2013



Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	*2225.3 °F
Date	4/3/2013
Image Time	8:12:03 AM
Emissivity	0.69

Approximately 17 minutes after burn start time

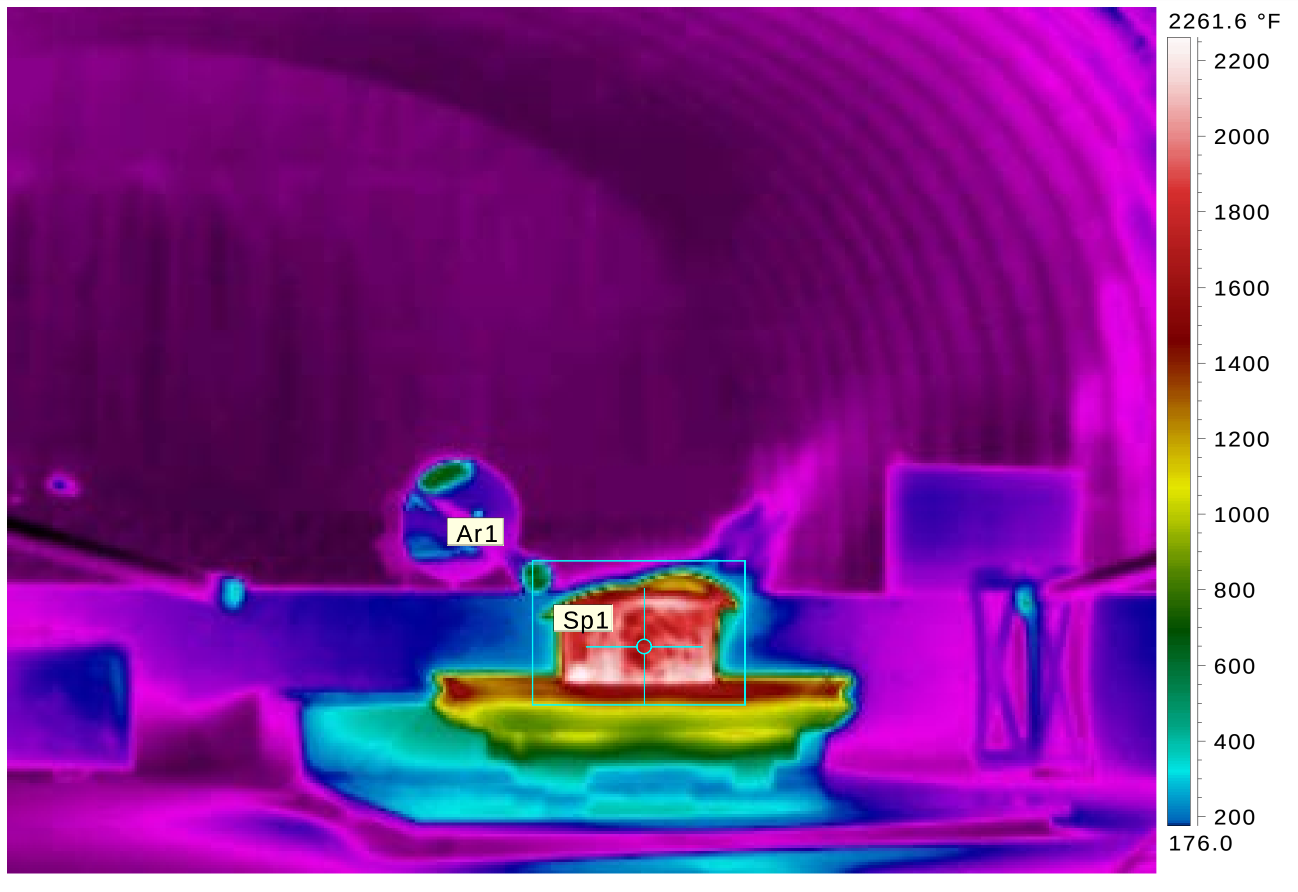
Thermogram Image.Date 4/3/2013



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

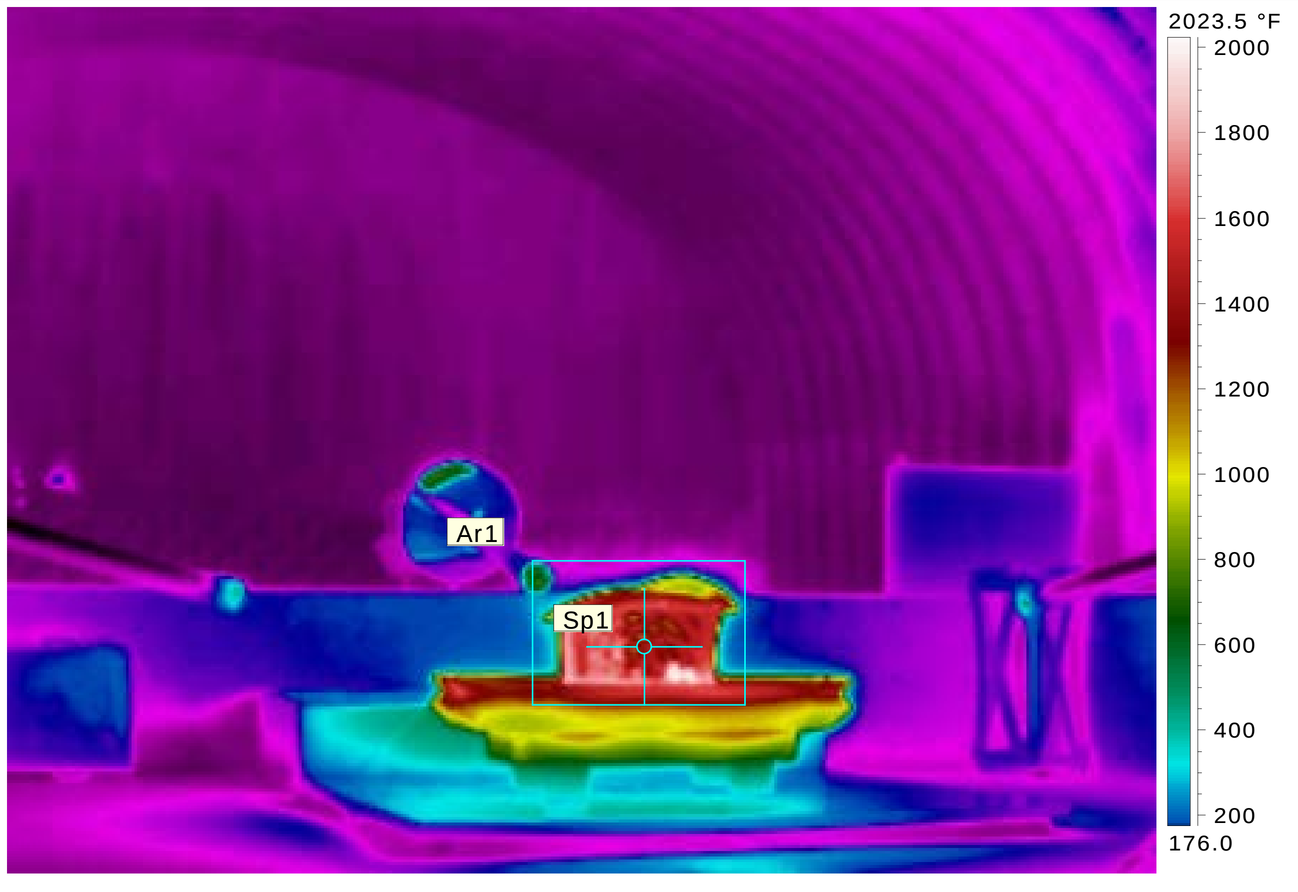
Thermogram Image.Date 4/3/2013



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

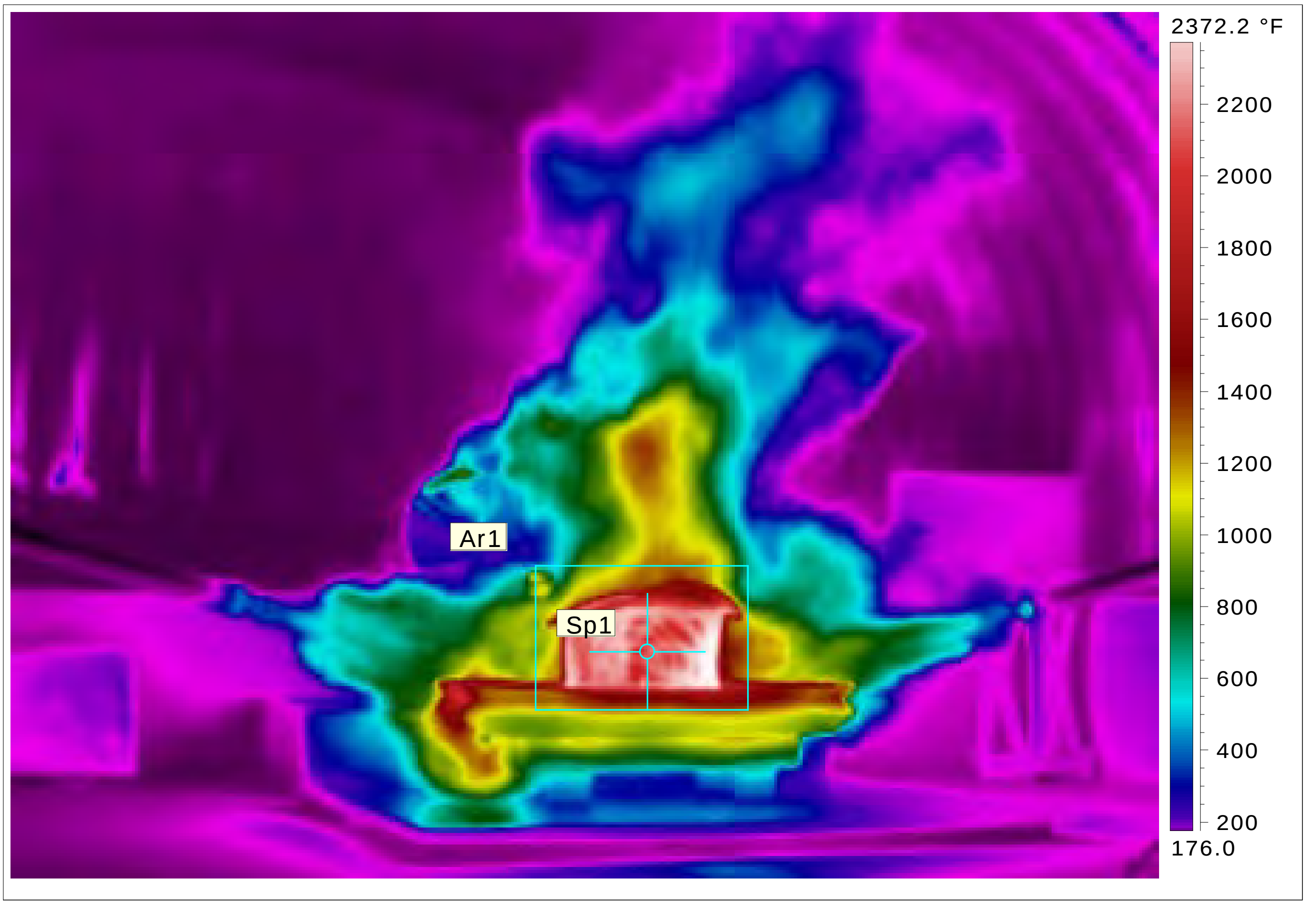
Thermogram Image.Date 4/3/2013



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

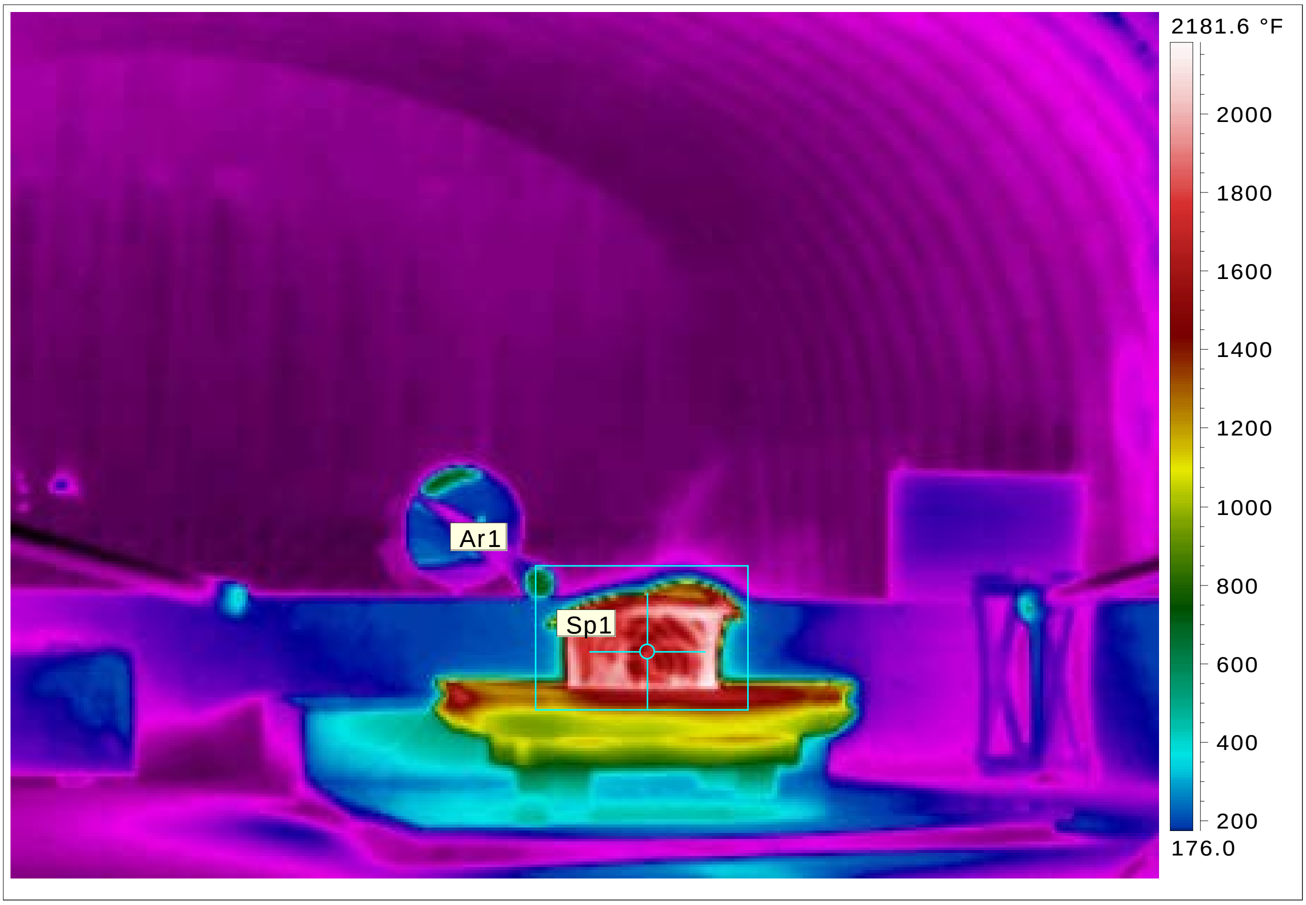
Thermogram Image.Date 4/3/2013



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

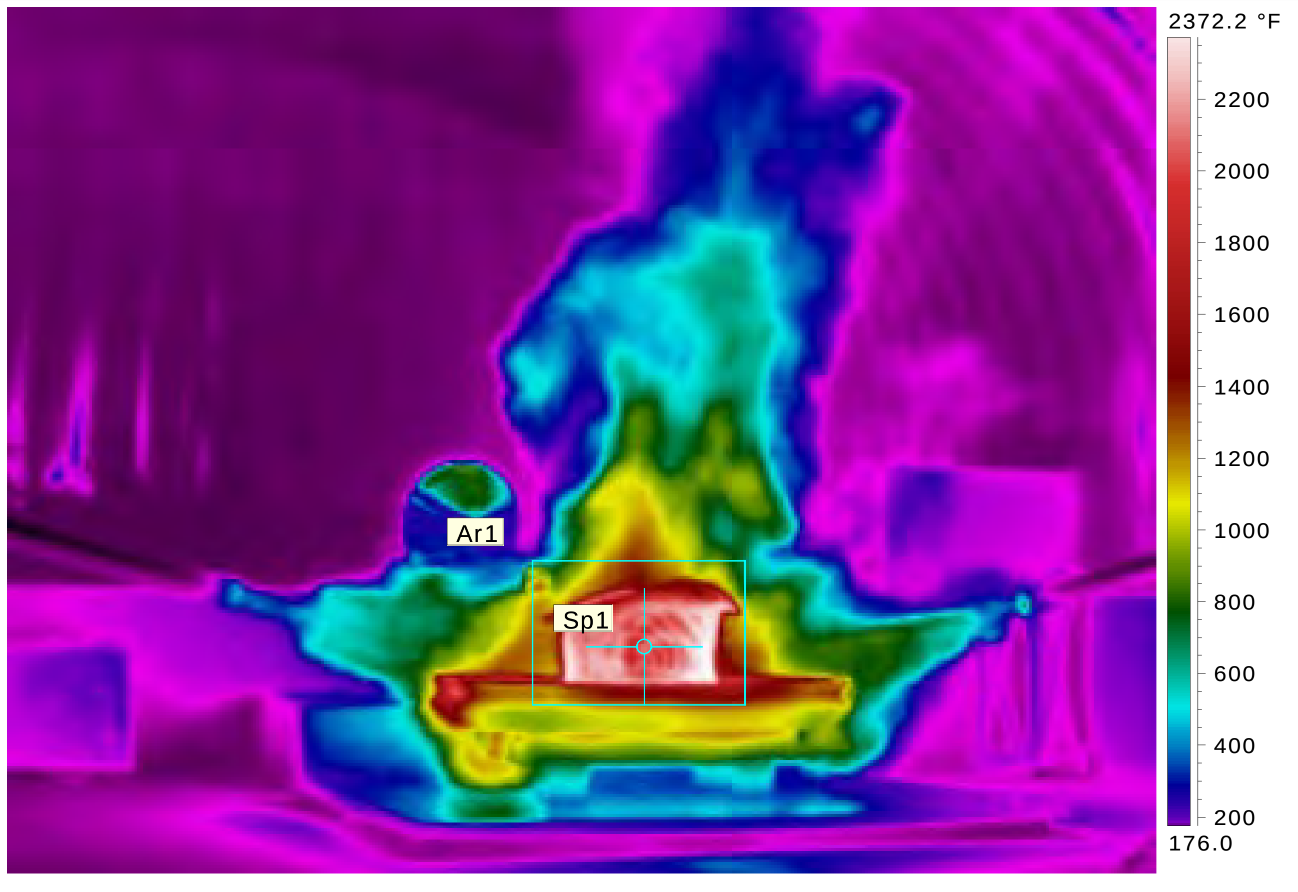
Thermogram Image.Date 4/3/2013



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

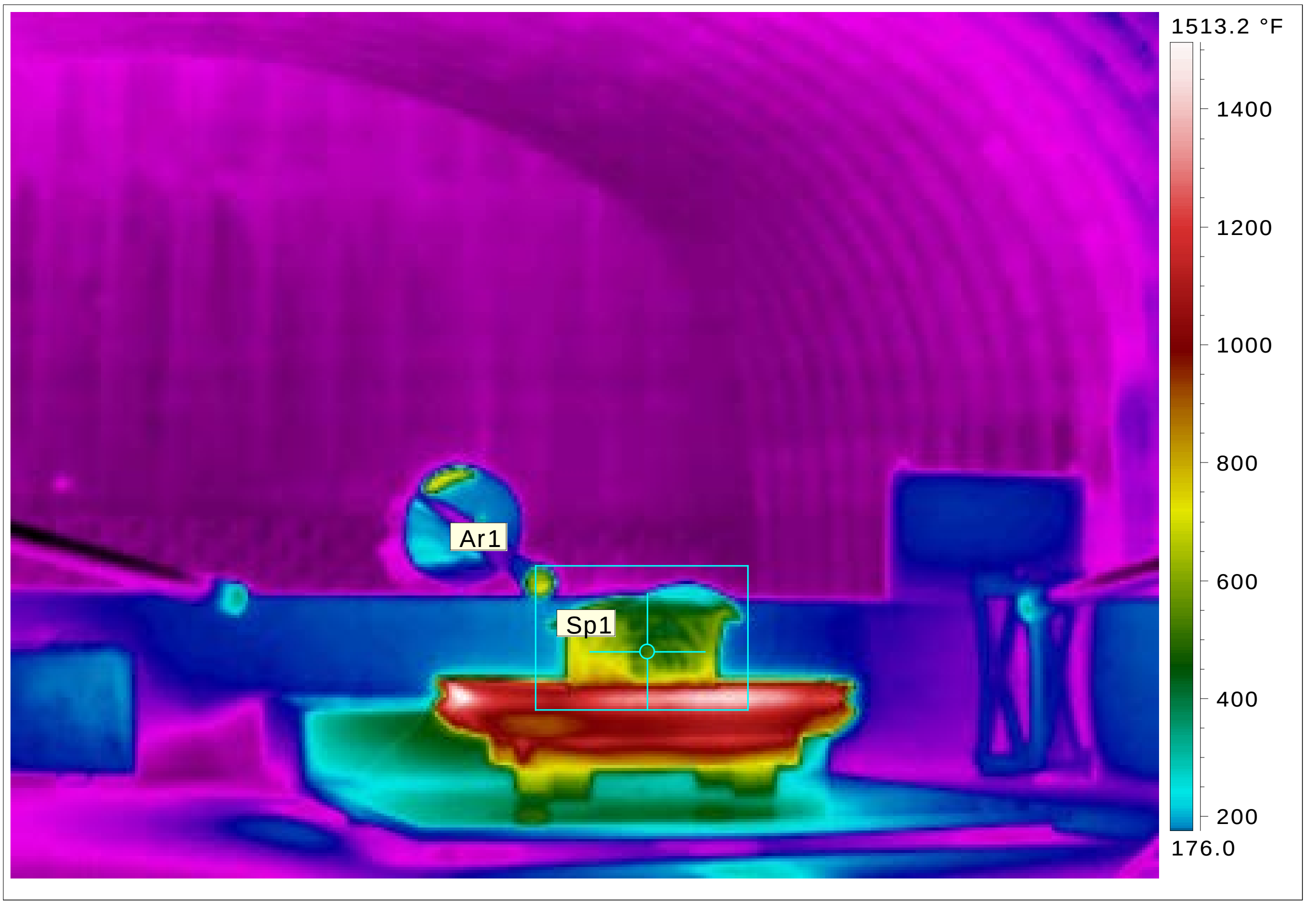
Thermogram Image.Date 4/3/2013



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

Thermogram Image.Date 4/3/2013



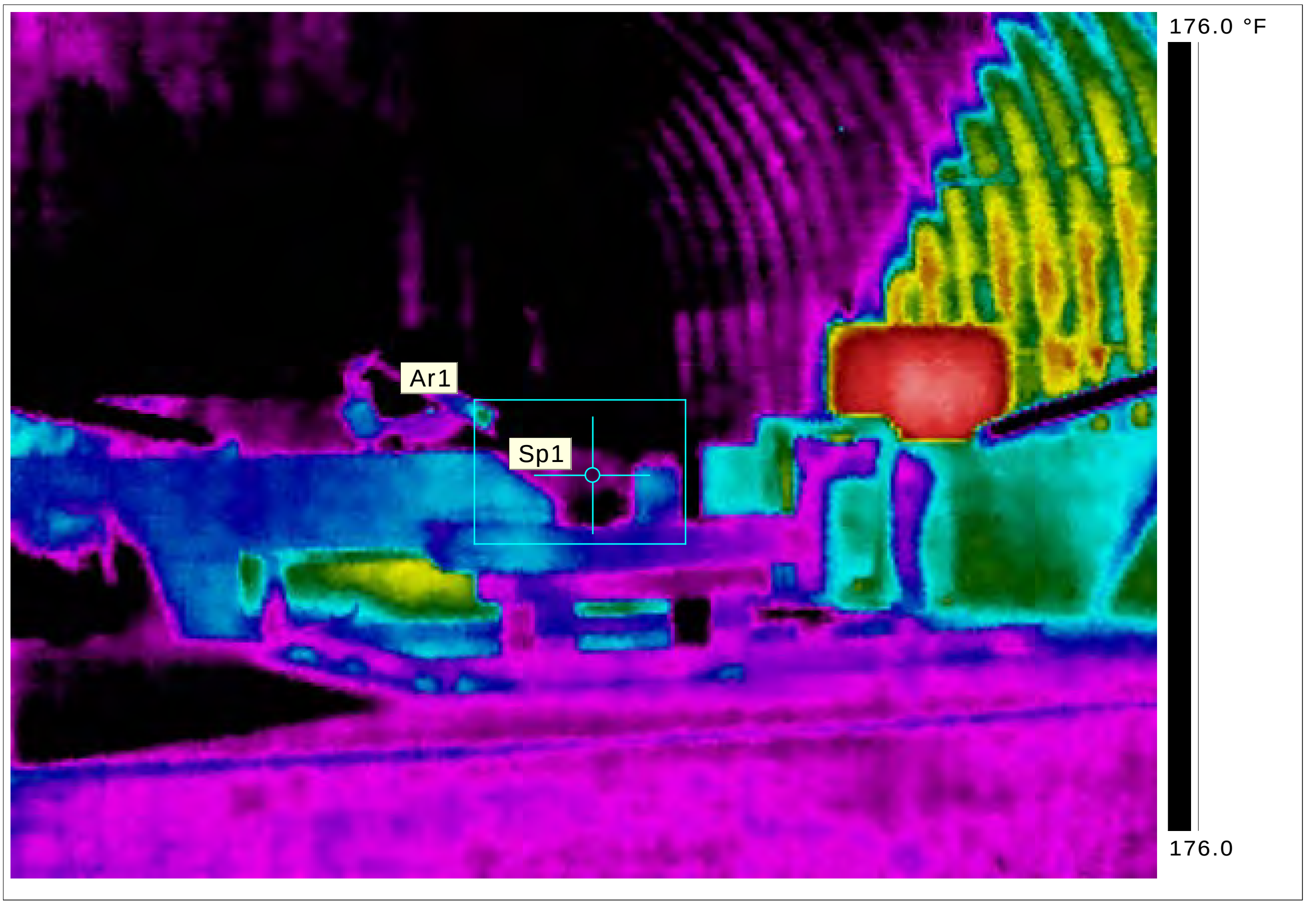
Ar1 Max. Temperature	1439.3 °F
Sp1 Temperature	530.5 °F
Date	4/3/2013
Image Time	8:35:10 AM
Emissivity	0.69

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**

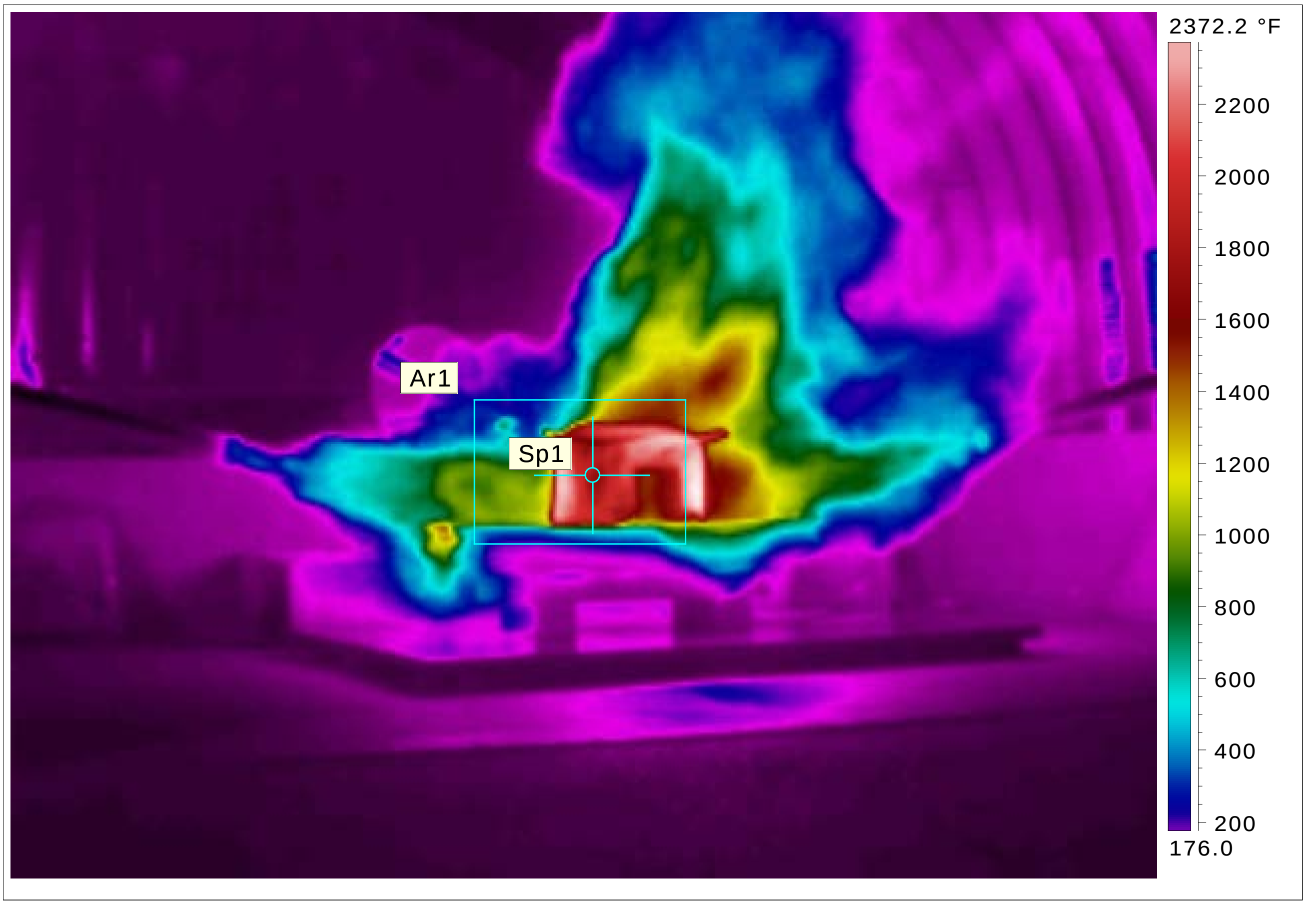
Thermogram Image.Date 4/18/2013



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

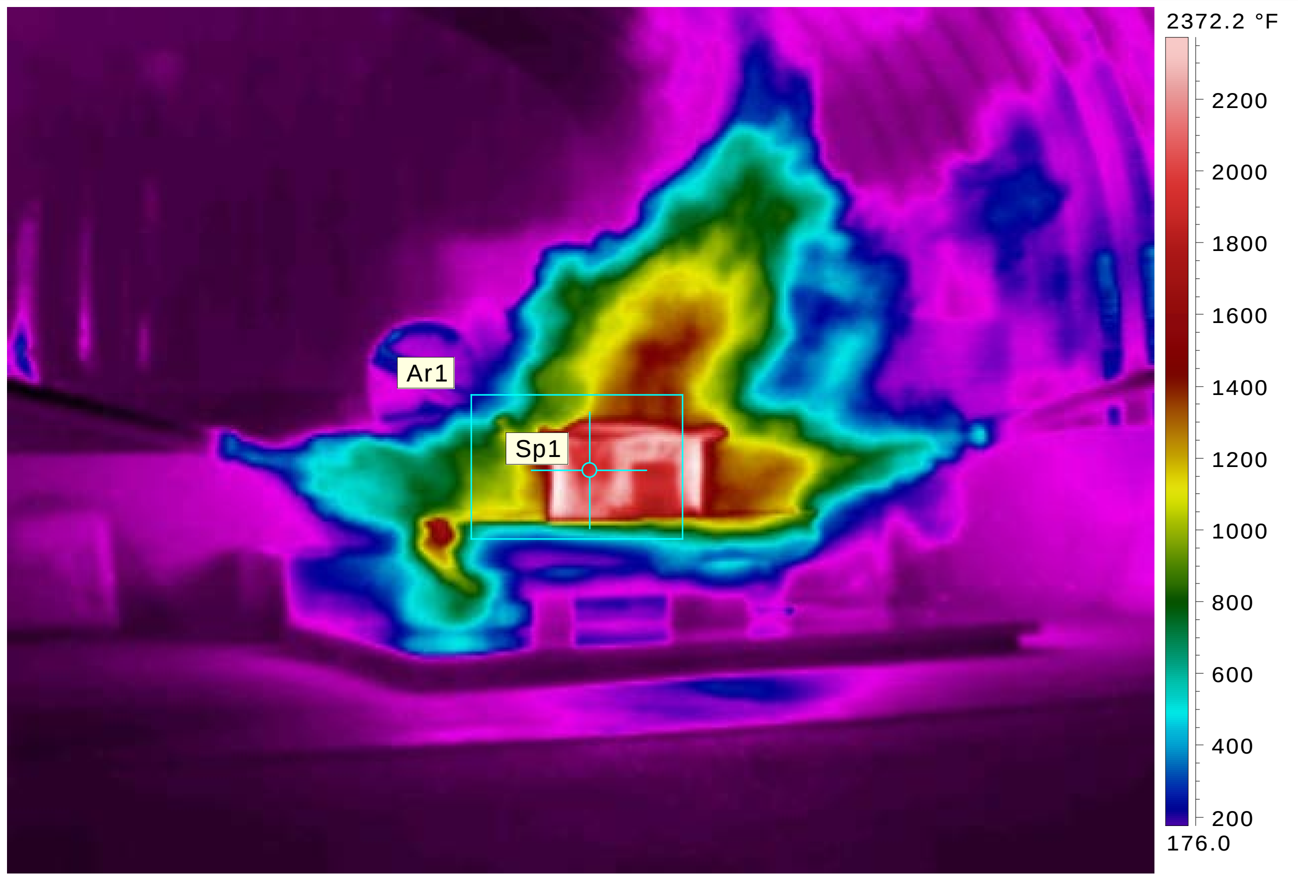
Thermogram Image.Date 4/18/2013



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

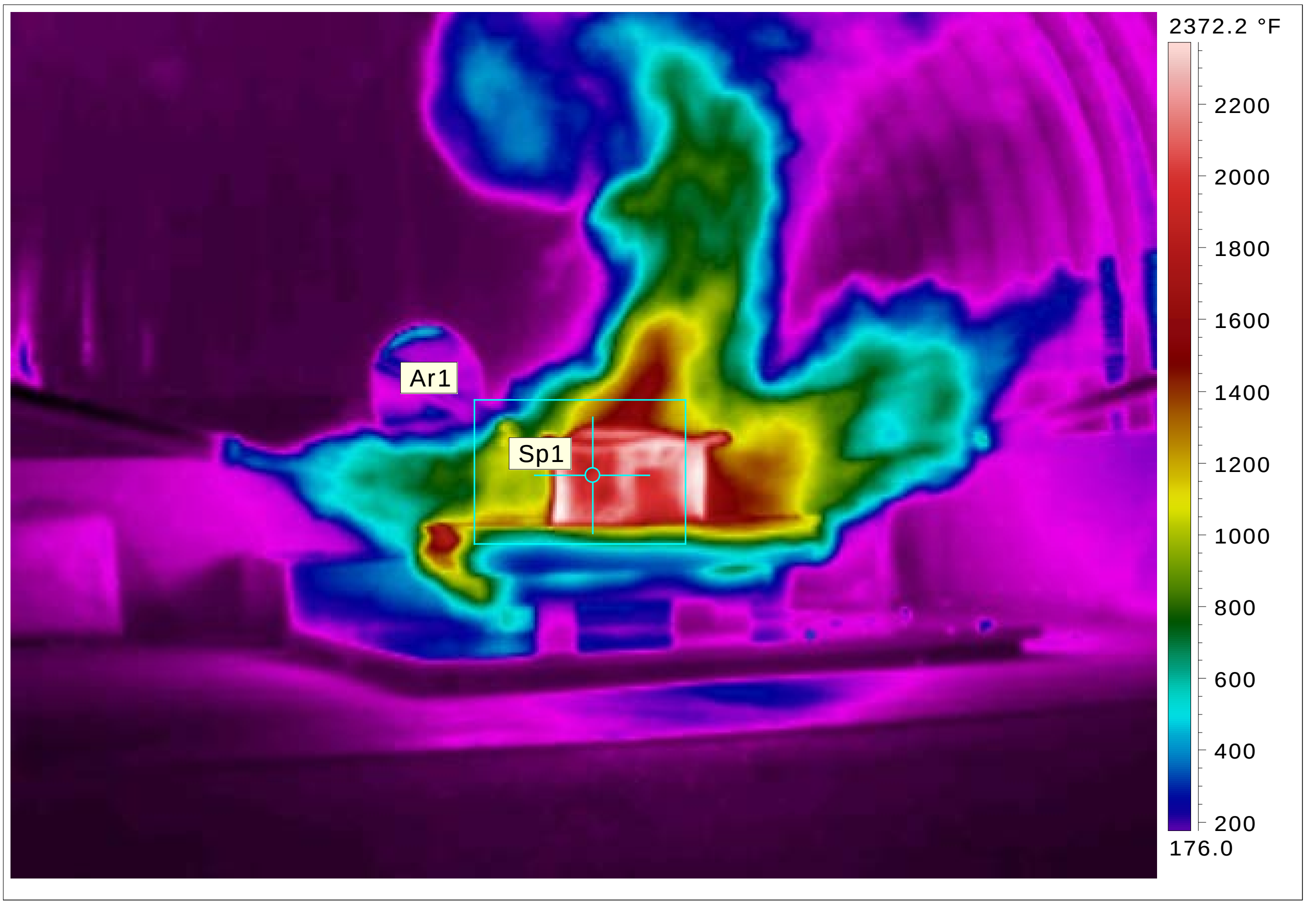
Thermogram Image.Date 4/18/2013



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

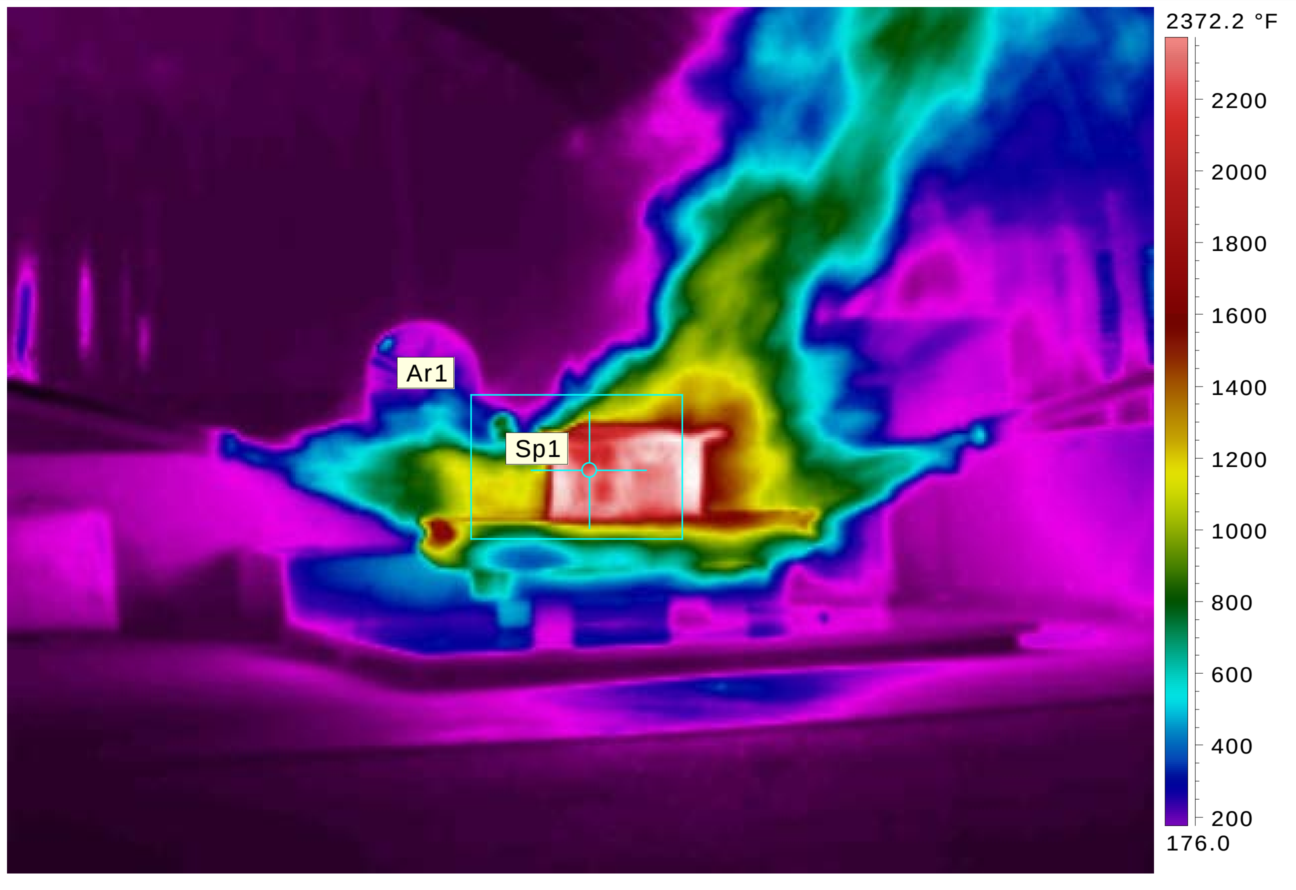
Thermogram Image.Date 4/18/2013



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

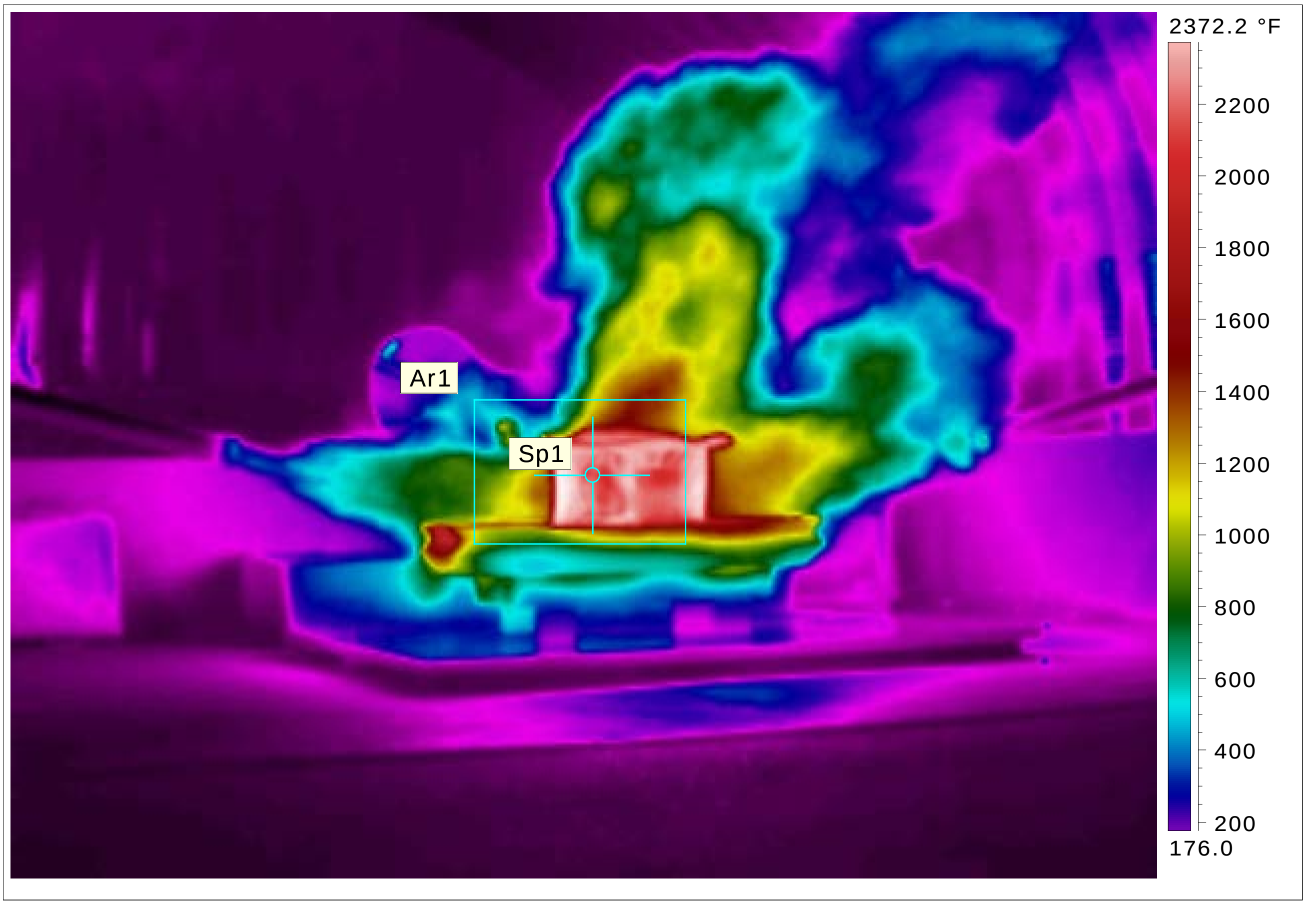
Thermogram Image.Date 4/18/2013



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

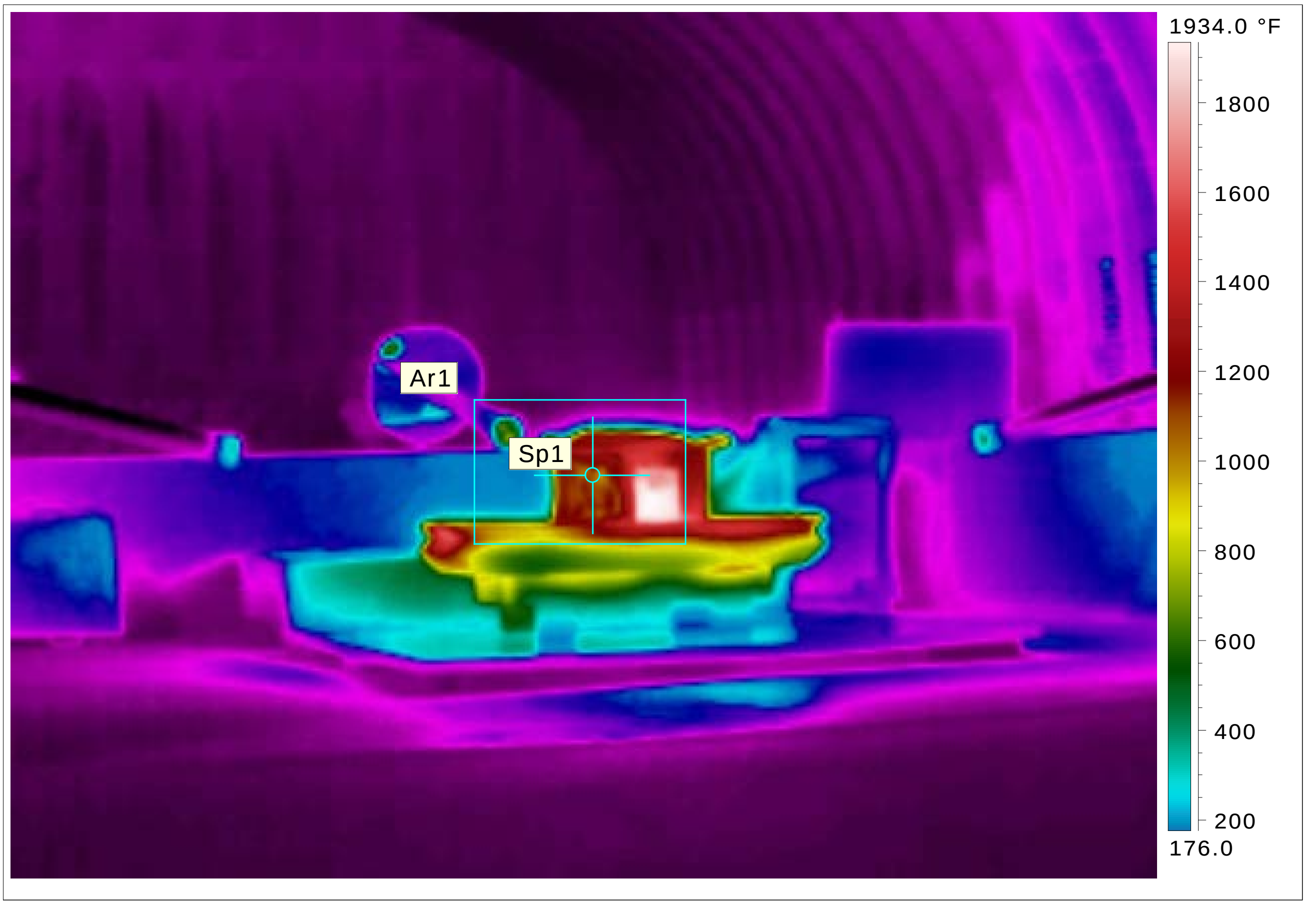
Thermogram Image.Date 4/18/2013



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

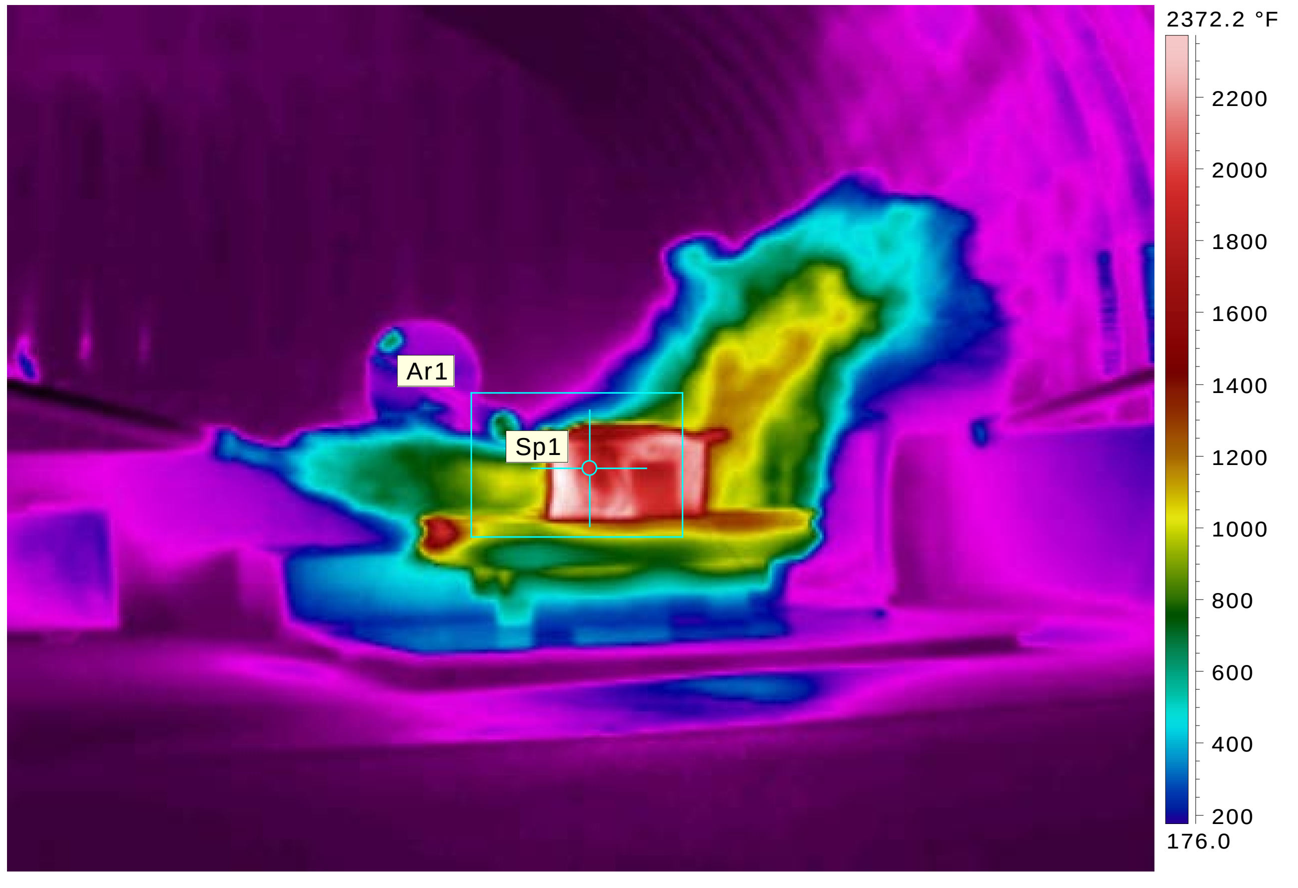
Thermogram Image.Date 4/18/2013



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

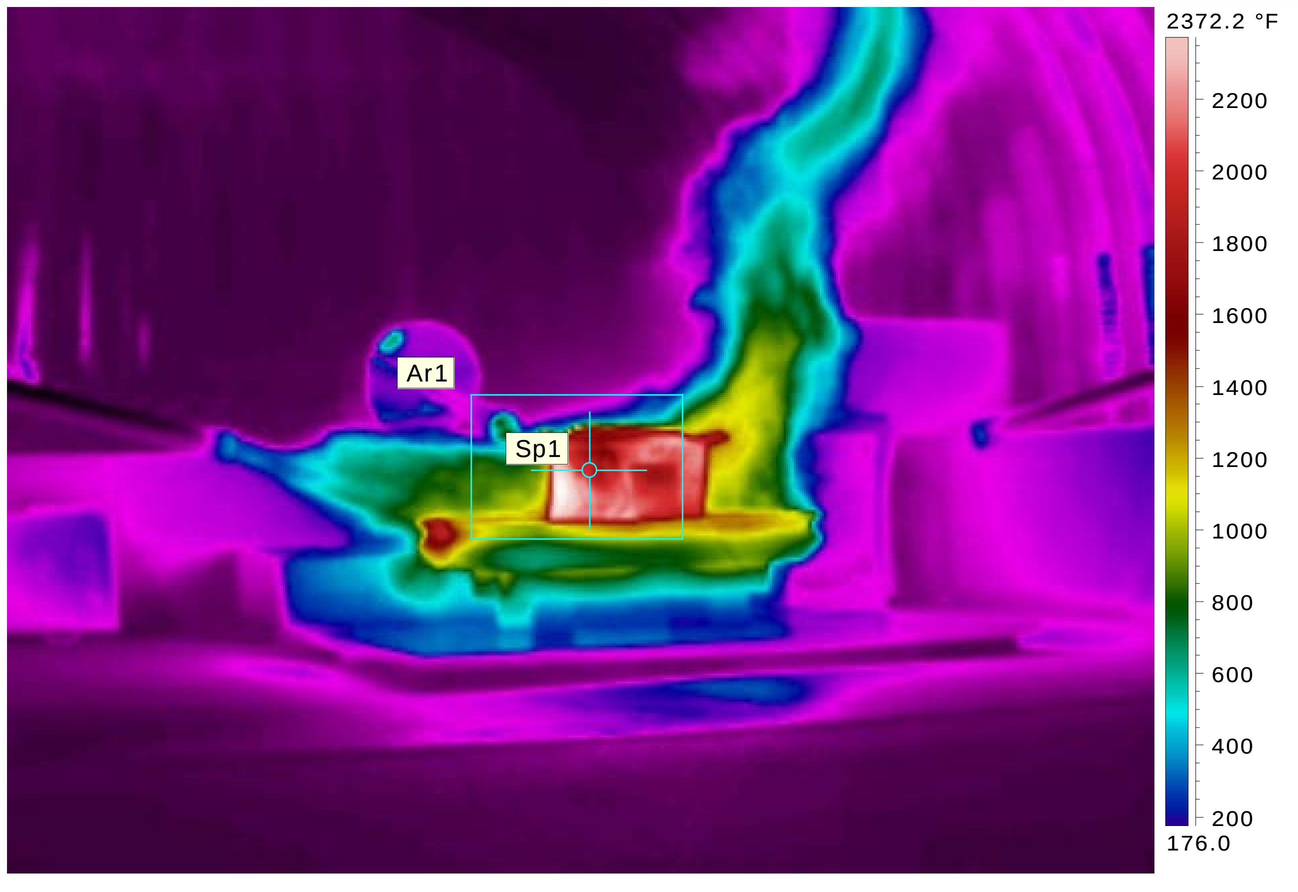
Thermogram Image.Date 4/18/2013



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

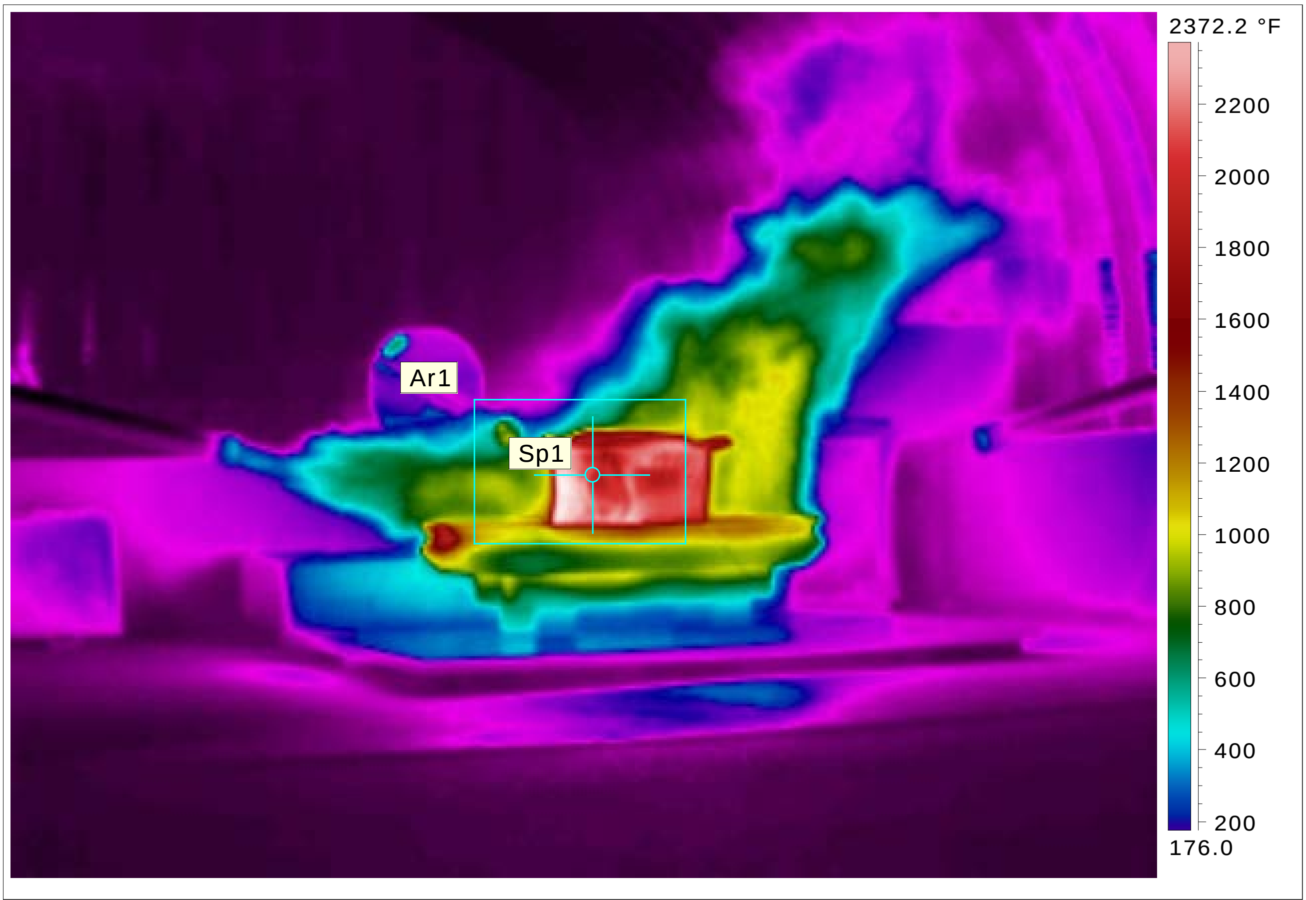
Thermogram Image.Date 4/18/2013



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

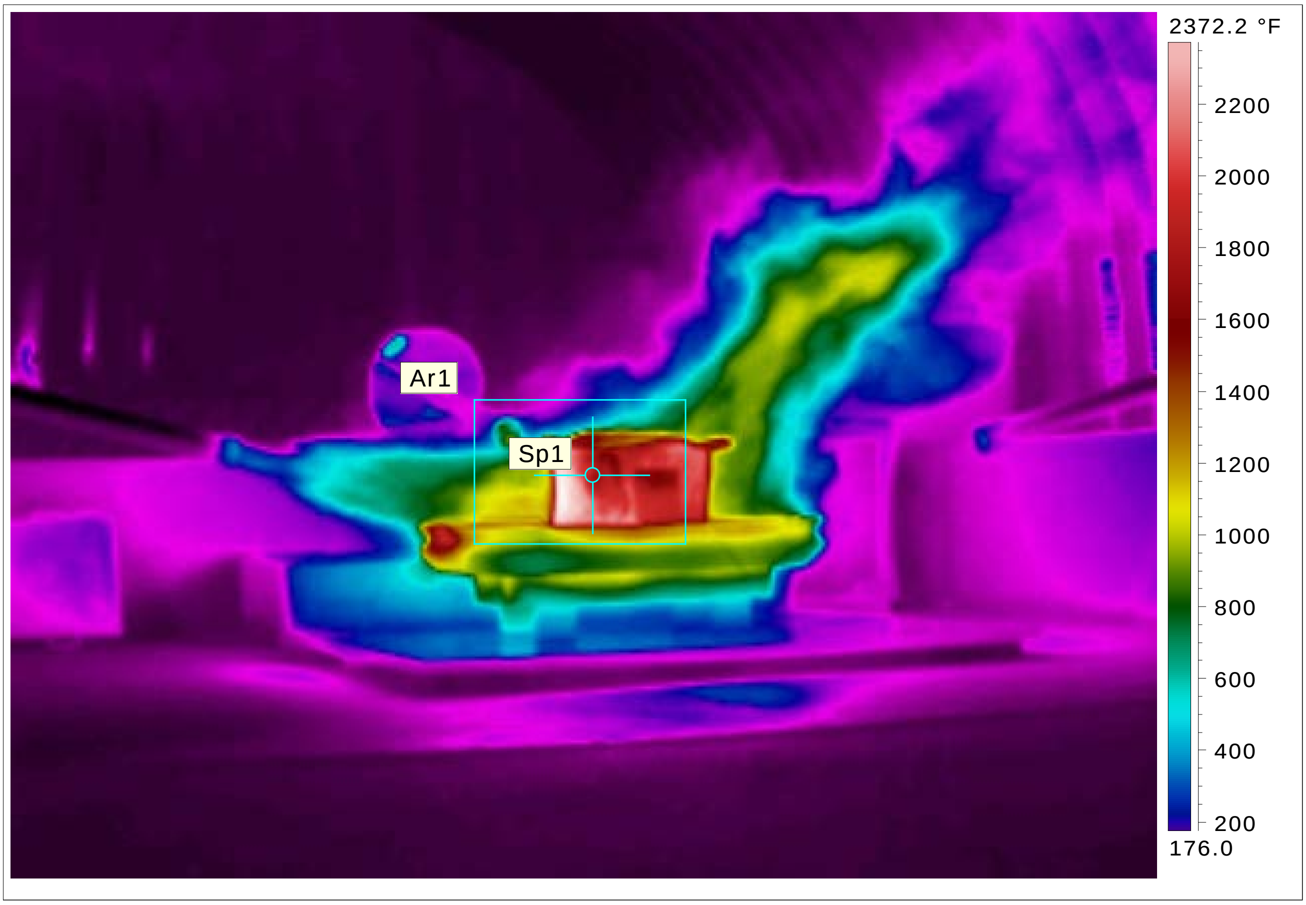
Thermogram Image.Date 4/18/2013



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

Thermogram Image.Date 4/18/2013

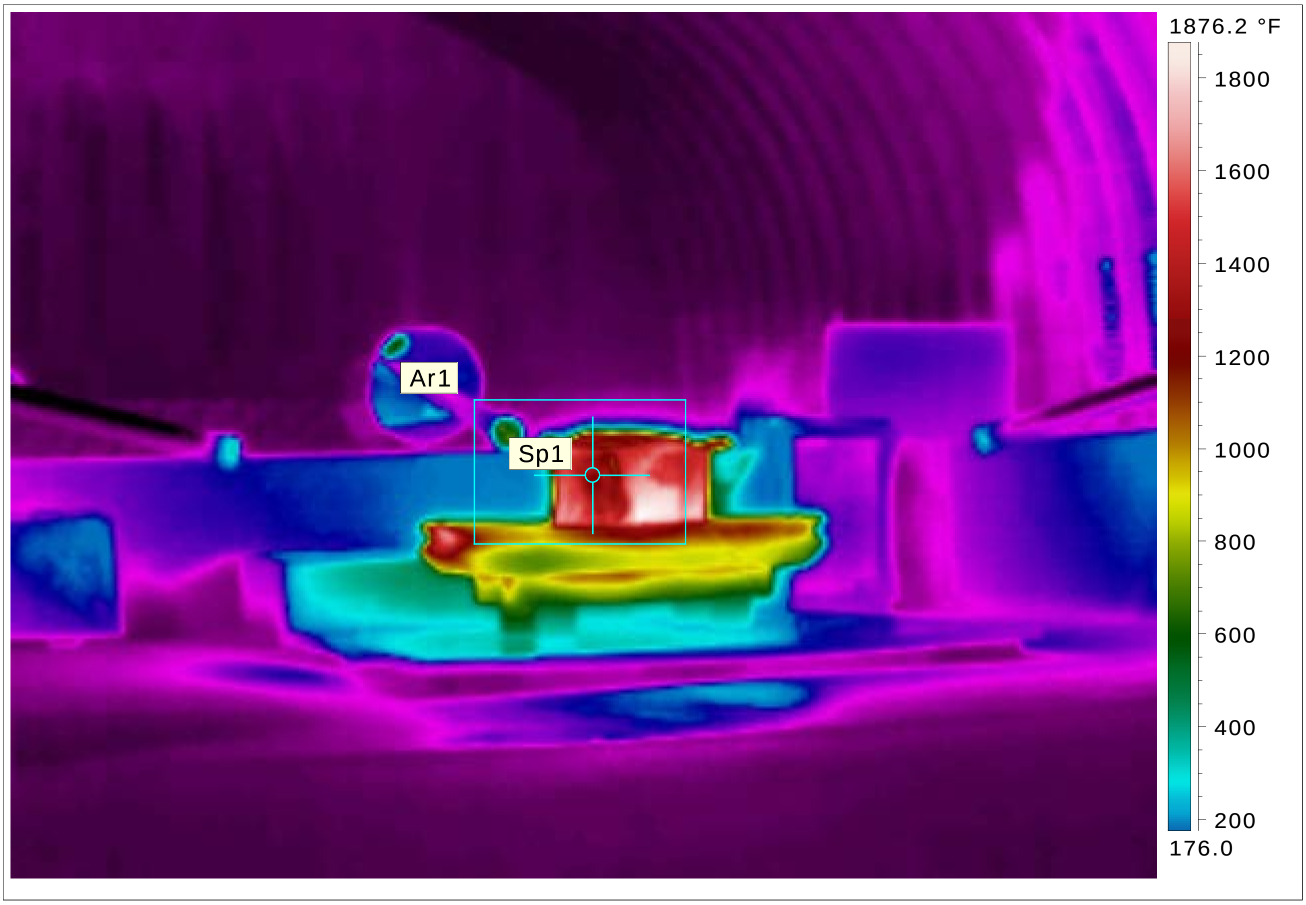


Ar1 Max. Temperature	>2372.2 °F
Sp1 Temperature	1756.0 °F
Date	4/18/2013
Image Time	8:10:01 AM
Emissivity	0.69

Approximately 31 minutes after burn start time

Los Alamos NATIONAL LABORATORY EST. 1943	Thermography Inspection at **TA-16 388 Open Burn Site**	Report Date: **June 5, 2013**

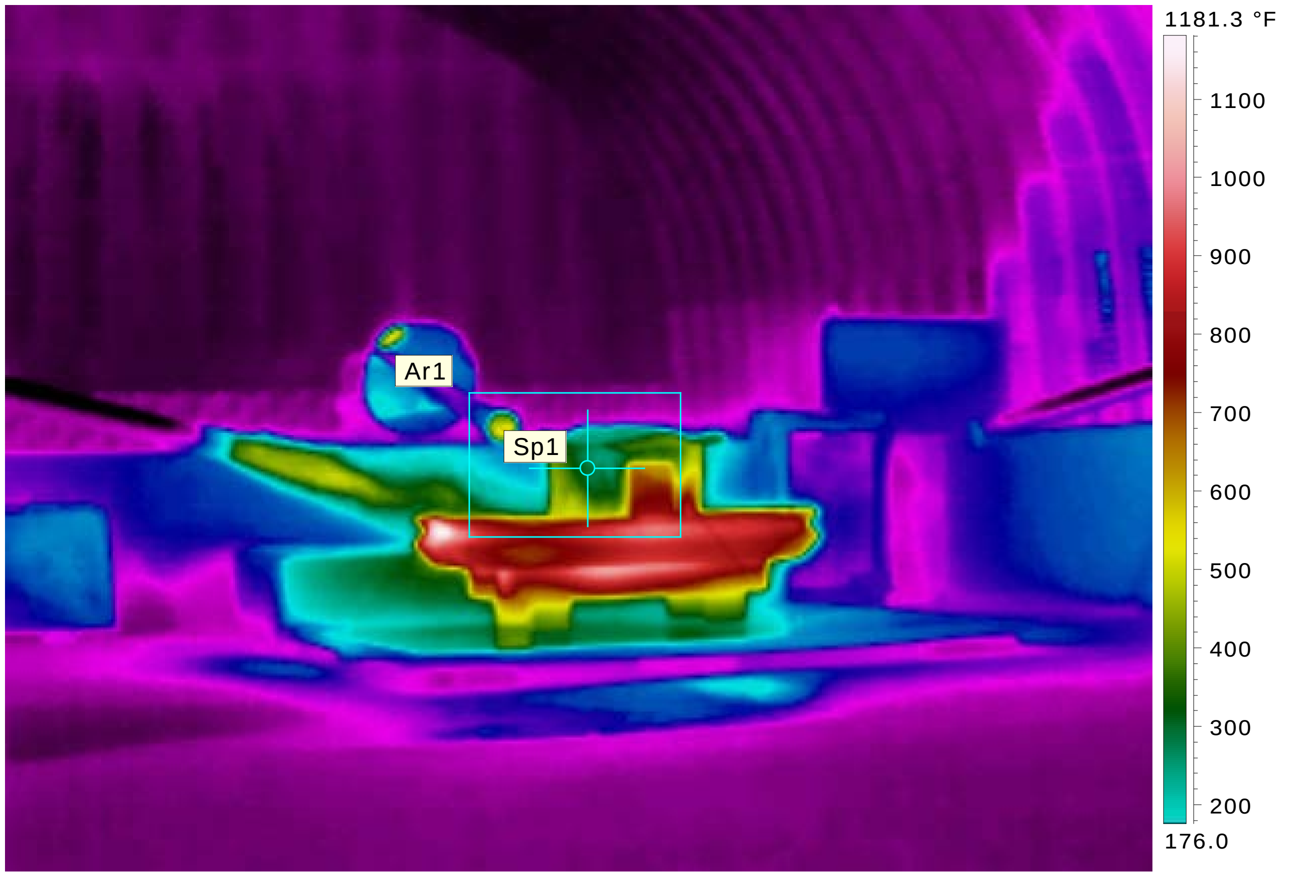
Thermogram Image.Date 4/18/2013



Ar1 Max. Temperature	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

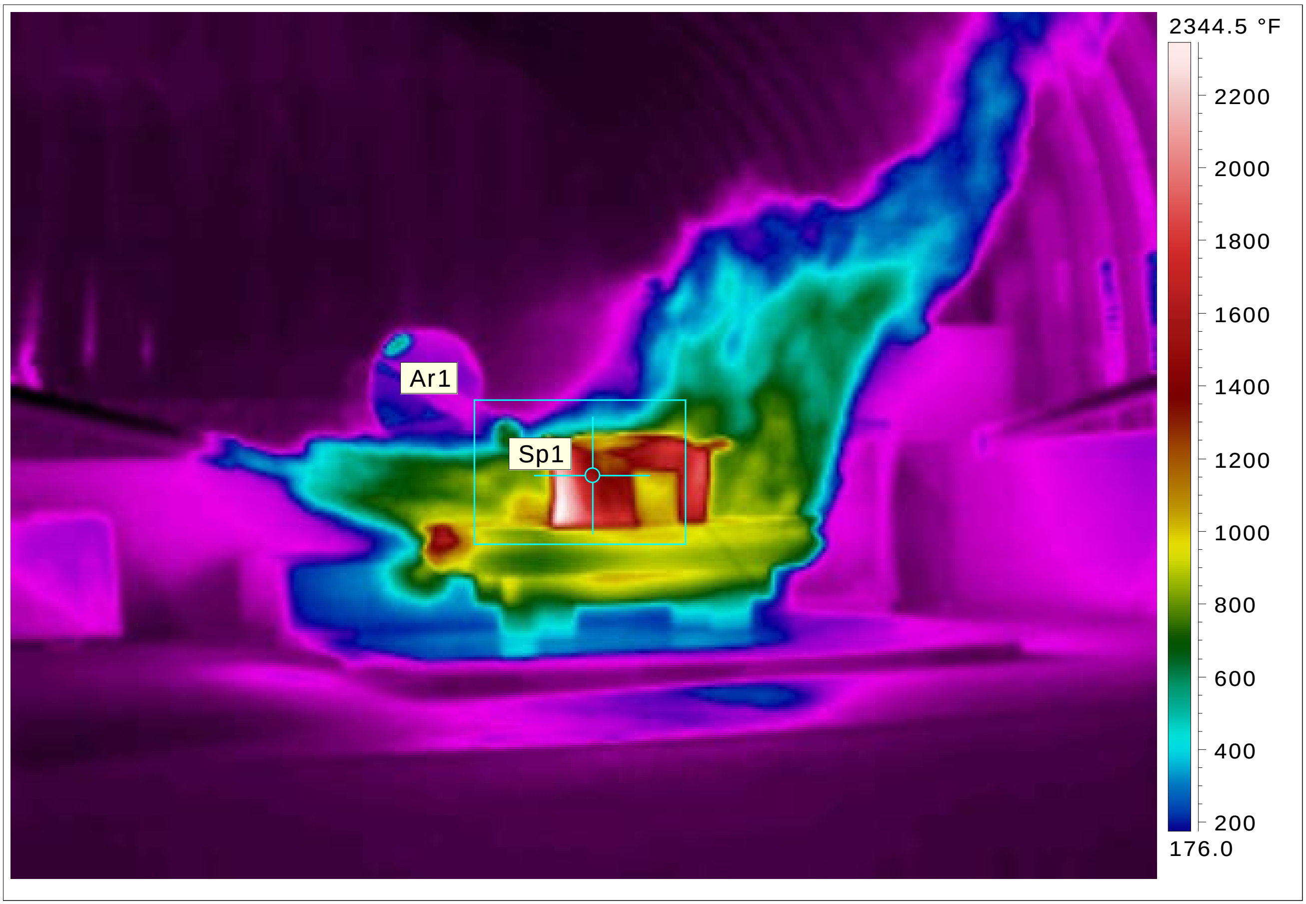
Thermogram Image.Date 4/18/2013



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

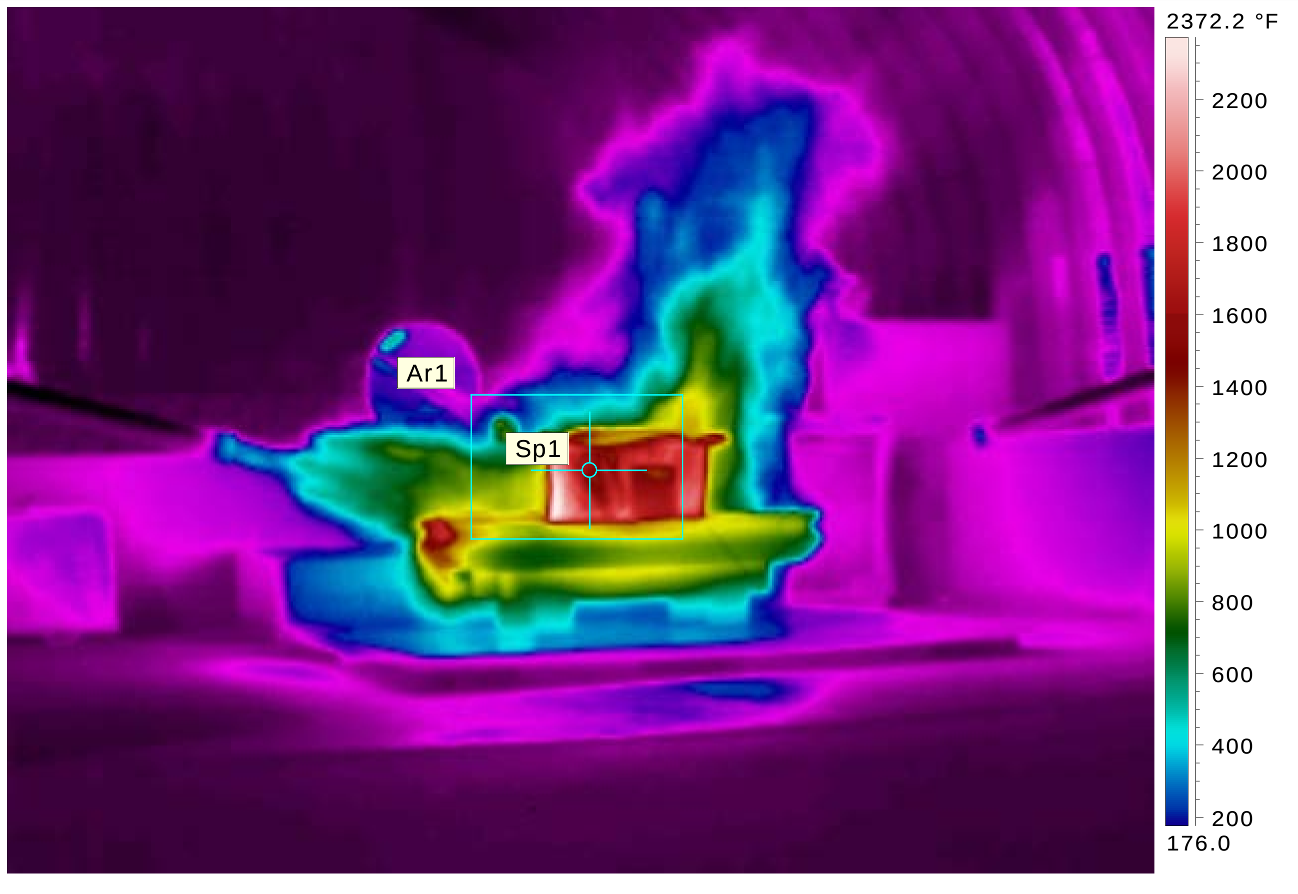
Thermogram Image.Date 4/18/2013



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

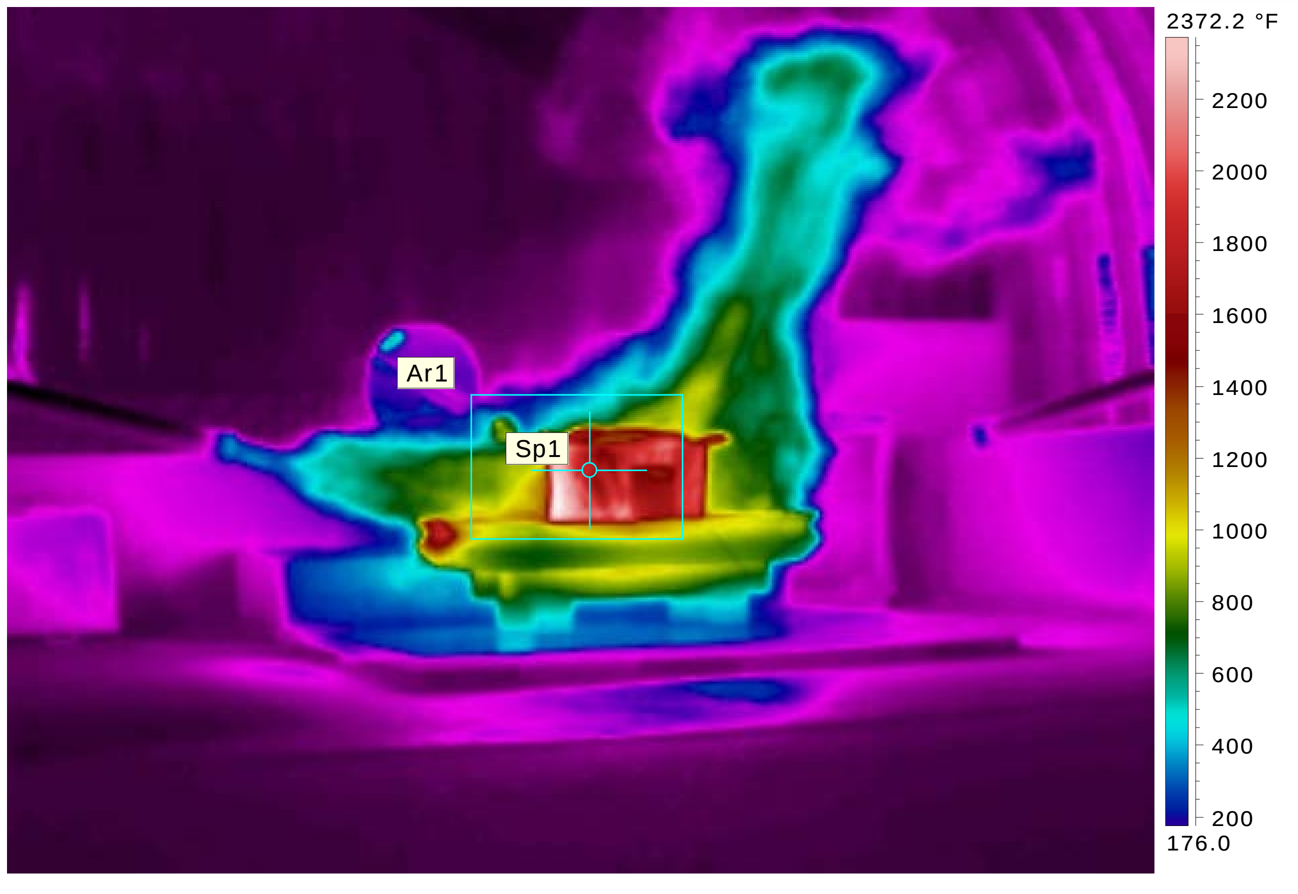
Thermogram Image.Date 4/18/2013



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

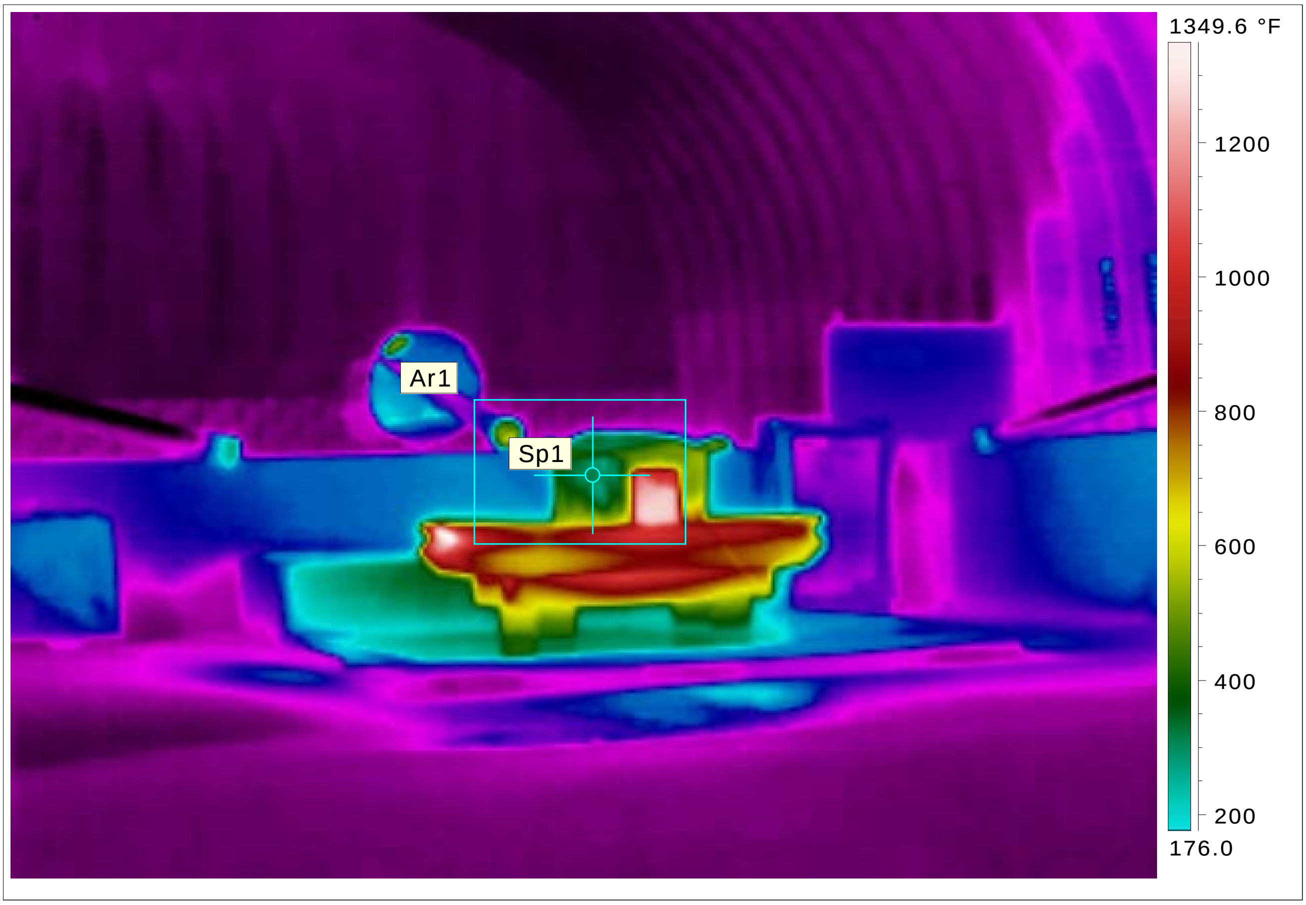
Thermogram Image.Date 4/18/2013



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

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

Attachment K

Draft Public Notice

(Included in LA-UR-13- 27579)

September 2013

Public Notice of a Class 3 Permit Modification Request and Public Meeting for an Open Burning Unit at Technical Area 16

Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID No. NM0890010515

Activity: The U.S. Department of Energy (DOE) and the Los Alamos National Security, LLC (LANS), have requested to modify the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit via a Class 3 permit modification request. The modification requests the inclusion of an open burning hazardous waste treatment unit within the Permit.

Facility: LANL is owned by DOE, and is operated jointly by DOE and LANS. Under authority of the New Mexico Hazardous Waste Act (Section 74-4-1 et seq., NMSA 1978, as amended, 1992) and the New Mexico Hazardous Waste Management Regulations (20.4.1 NMAC), the New Mexico Environment Department (NMED) can approve or deny hazardous waste permits and closure plans, permit modifications, and amendments.

Availability: The proposed permit modification is available for public review weekdays between 8:00 am and 5:00 pm at

NMED - Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

Copies are also available at the LANL Hardcopy Public Reading Room weekdays from 9:00 am to 4:00 pm at

Northern New Mexico Citizens' Advisory Board Office
94 Cities of Gold Road in Pojoaque, New Mexico
http://www.lanl.gov/community-environment/environmental-stewardship/public-reading-room.php

Electronic copies of the permit modification request can also be found in the
LANL Electronic Public Reading Room (EPRR) at http://eprr.lanl.gov.

The LANL Hazardous Waste Facility Permit can be found on the NMED LANL Permit web page at:
http://www.nmenv.state.nm.us/HWB/Permit.htm

Meeting: A public meeting about the permit modification request will be held from **5:30 pm to 7:30 pm** on

October 30, 2013 at Fuller Lodge, 2132 Central Ave, Los Alamos, NM.

Comments:

Any person who would like to comment on the proposed Class 3 permit modification may do so by contacting:

Dave Cobrain
NMED-Hazardous Waste Bureau,
2905 Rodeo Park Drive East, Building 1, Santa Fe, New Mexico 87505-6313
Telephone (505) 476-6000 or e-mail: dave.cobrain@state.nm.us.

The Permittee's compliance history during the life of the permit being modified is available from the NMED contact person. The 60-day public comment period for this permit modification will run from October 3, 2013 through December 2, 2013. Any person who wishes to comment on this action should submit written or e-mail comments with the commenter's name and address to the address above. Only written comments received on or before December 2, 2013, will be considered.

Facility Contact: If you have questions, please contact Los Alamos National Laboratory.

Lorrie Bonds Lopez
Environmental Communication & Public Involvement
P.O. Box 1663, MS M996
Los Alamos, NM 87545
Phone/email: 505-667-0216 / envoutreach@lanl.gov

Los Alamos NATIONAL LABORATORY
Waste Management Programs
P.O. Box 1663, Mail Stop K404
Los Alamos, NM 87545