

**Summary of Available Data for LOU 55  
Area Affected by July 1990 Fire  
Tronox Facility – Henderson, Nevada**

- Name of Facility:** LOU 55 – Area Affected by July 1990 Fire
- Goal of Closure:**
- Closure for future commercial/industrial use.
- Site Investigation Area:**
- Size: Approximately 130 feet by 175 feet (0.5 acre) [Ref. 4].
  - Location: North-central portion of the Site, approximately 70 feet south of the groundwater barrier wall.
  - Current Status/Features: The Area Affected by the July 1990 Fire consisted of a concrete pad for storage of ammonium perchlorate (AP) product. LOU 55 is no longer in operation but the pad remains.
- Description:**
- The former AP pad drum storage area at LOU 55 consisted of a concrete pad, constructed in early 1950s, used for storage of 55-gallon drums containing AP product [Ref. 4].
  - The fire occurred on July 18, 1990 when a drum ignited. Four hundred drums (100 tons) of AP burned and approximately 50,000 pounds of hydrogen chloride fumes were released over the 45-minute duration of fire [Ref. 4].
  - Soil surrounding the pad was impacted with AP and decomposition products from the fire-fighting wash water draining off the pad. Impacted soil was excavated, drummed, and transported off-site for disposal as non-hazardous waste at a hazardous waste landfill in Beatty, Nevada [Refs. 1 and 4].

Process Waste Stream Associated with LOU 55	Known or Potential Constituents Associated with LOU 55
Fire-fighting water	<ul style="list-style-type: none"> <li>• Ammonium perchlorate residue</li> <li>• Hydrogen chloride residue</li> <li>• Chlorate residue</li> <li>• Dioxins/Furans (incomplete combustion)</li> <li>• Metal residue</li> <li>• SVOCs (from burned asphalt)</li> </ul>

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**Overlapping or Adjacent LOUs:** The following LOUs overlap or are adjacent to LOU 55:

Overlapping LOUs

- No overlapping LOUs were identified for LOU 55.

Adjacent LOUs

- LOU 31 (Drum Recycling Area) – Located approximately 125 feet to the southwest (upgradient) of LOU 55.
- LOU 32 (Chromium and Perchlorate Groundwater Remediation Unit) – Located north (downgradient) of LOU 55.

LOU 32 is downgradient of LOU 55; therefore this LOU is not considered to affect LOU 55. LOU 31 is upgradient of LOU 55; however, LOU 55 is not considered to be affected by LOU 31 because LOU 31 was used for crushing cleaned AP drums and the potential for releases from LOU 31 is considered to be minimal. In addition, no releases have been documented from LOU 31 and the chemicals used at both LOUs would have been the same. Therefore, the addition of other chemical classes to the Phase B Analytical Plan for LOU 55 is not required.

For detailed information on the LOUs listed above, please refer to the specific LOU data package.

**LOUs Potentially Affecting Soils in LOU 55:**

- None identified.

**Known or Potential Chemical Classes:**

- Metals
- Perchlorate
- Wet chemistry analytes
- Dioxins/Furans
- SVOCs

**Known or Potential Release Mechanisms:**

- Fire and subsequent surface runoff of fire-fighting water to surrounding soils [Ref. 4].

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- Results of Historical Sampling:**
- No historical soil sampling was identified in the documents reviewed for this LOU.
  - Cross-gradient (M-64 and M-65), downgradient (M-55 and M-78), and upgradient (M-25 and M-38) groundwater monitoring wells are routinely tested for perchlorate, total chromium, and TDS as part of a periodic or routine groundwater monitoring program. Analytical results are summarized on LOU 55 Table 6 (see attached) [Ref. 3].

- Did Historical Samples Address Potential Release?**
- No historical soil samples were identified for this LOU.

**Summary of Phase A SAI:**

Soil:

- Boring SA20 is located within LOU 55 and was specifically sampled to evaluate this LOU.

Groundwater:

- Well M-55 is located approximately 20 feet to the north (downgradient) of LOU 55 and was specifically sampled to evaluate this LOU.

Chemical classes detected in Phase A soil borings from SA20 include the following:

- Metals
- Hexavalent chromium
- Perchlorate
- Wet chemistry analytes
- VOCs
- Organochlorine pesticides
- Dioxins/furans
- Radionuclides

As a result of the Phase A data, the Phase B Analytical Plan for samples collected from LOU 55 will be expanded to include analyses for hexavalent chromium, organochlorine pesticides, dioxins/furans, and radionuclides.

- Analytical results for soil and groundwater from the Phase A sampling event are summarized in tables LOU 55 Tables 1 through 5 and LOU 55 Tables 7 through 20 [Ref. 3] (see attached).

- Are Phase A Sample Locations in “Worst Case” Areas?**
- Not completely. The Phase A boring may not have been located in the worst case area of the LOU.

- Is Phase B Investigation Recommended?**
- Yes

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**Proposed Phase B Soil Investigation/Rationale:**

The Phase B investigation for LOU 55 consists of collecting soil samples from the following one (1) location:

- One (1) soil boring will be drilled within the southeast portion of LOU 55.
- The one boring along with the analytical program to evaluate soil samples from LOU 55 listed on **Table A – Soil Sampling and Analytical Plan for LOU 55.**
- Soil sample locations consist of only of one randomly-placed location.
- Random sample grid locations:
  - Designed to assess whether unknown constituents associated with the LOUs are present.
  - Boring RSAL6 is a randomly-placed boring.
  - The boring along with the analytical program to evaluate soil samples from LOU 55 listed on **Table A – Soil Sampling and Analytical Plan for LOU 55.**

**Proposed Phase B Constituents List for Soils:**

The random sample grid location will be analyzed for the following full list of Phase A Site-related chemicals for LOU-specific and area-wide coverage purposes:

- Metals (Phase A list)
- Hexavalent chromium
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs
- TPH-DRO/ORO
- Organochlorine pesticides
- Dioxins/furans
- Radionuclides
- Asbestos

**Proposed Phase B Groundwater Investigation/Rationale:**

The Phase B groundwater investigation of LOU 55 consists of collecting groundwater samples from four (4) locations to evaluate local groundwater conditions and as part of Site-wide evaluation of constituent trends in groundwater.

- Wells M-55 and M-78 located north (downgradient) of LOU 55 will be used to evaluate local and area-wide groundwater conditions.
- Well M-64 located west (cross-gradient) of LOU 55 will be used to evaluate local and area-wide groundwater conditions.

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- Well M-25 located south (upgradient) of LOU 55 will be used to evaluate local and area-wide groundwater conditions.
- The sampling wells and the analytical program to evaluate groundwater samples associated with LOU 55 are listed on **Table B – Groundwater Sampling and Analytical Plan for LOU 55.**

**Proposed Phase B Constituents List for Groundwater:**

Groundwater samples will be analyzed for the following analytes:

- Metals (Phase A list)
- Hexavalent chromium
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs
- Organochlorine pesticides
- Radionuclides

**Proposed Phase B Soil Gas Investigation/Rationale:**

A soil gas sample will be collected from one (1) location to evaluate area conditions for the presence of vapor-phase VOCs in the vadose zone.

- SG23 is located in Area I to evaluate VOCs detected in monitoring well M-55 and is located approximately 10 feet north of LOU 55.

Details of the soil gas sampling program are contained in the NDEP-approved (March 26, 2008) Soil Gas Survey Work Plan, Tronox LLC, Henderson, Nevada, dated March 20, 2008.

**Proposed Phase B Constituents List for Soil Gas:**

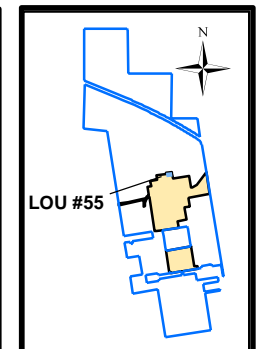
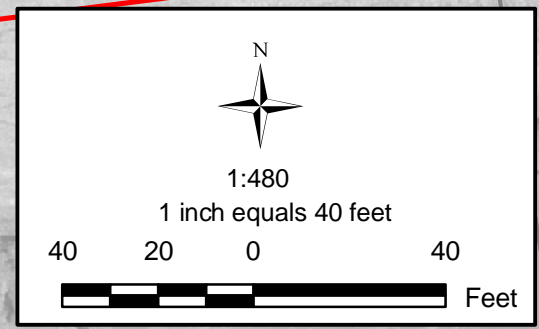
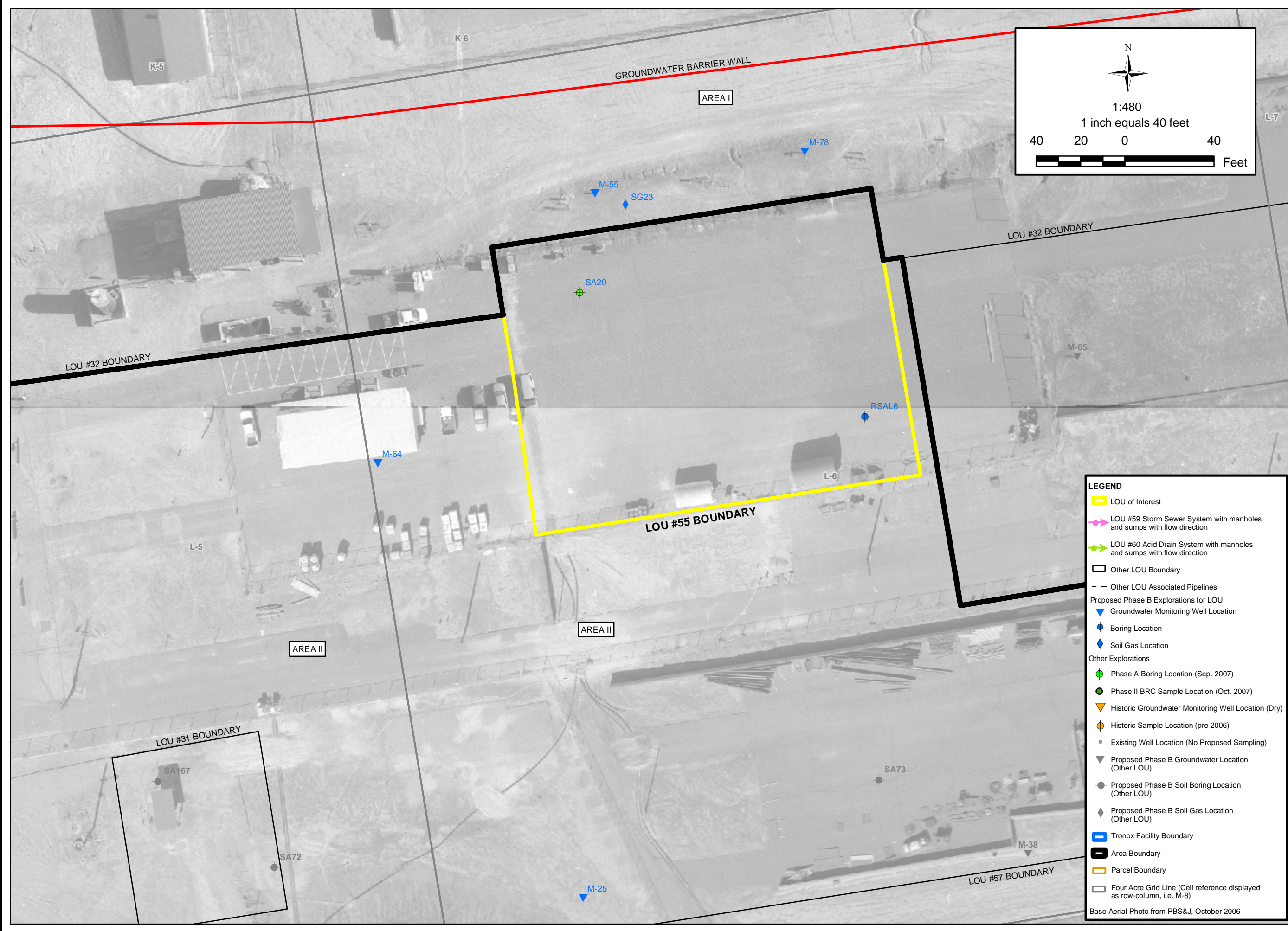
- VOCs (EPA TO-15)

**References:**

1. ENSR, 2005, Conceptual Site Model, Kerr-McGee Facility, Henderson, Nevada, ENSR, Camarillo, California, 04020-023-130, February 2005 and August 2005.
2. ENSR, 2007a, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
3. ENSR, 2007b, Quarterly Performance Report for Remediation Systems, Tronox LLC, Henderson, Nevada, July-September 2007, November 2007.
4. Kleinfelder, 1993, Environmental Conditions Assessment, Kerr-McGee Chemical Corporation, Henderson, Nevada Facility, April 15, 1993 (Final).

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**LOU Figure**



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LEGEND	
	LOU of Interest
	LOU #59 Storm Sewer System with manholes and sumps with flow direction
	LOU #60 Acid Drain System with manholes and sumps with flow direction
	Other LOU Boundary
	Other LOU Associated Pipelines
Proposed Phase B Explorations for LOU	
	Groundwater Monitoring Well Location
	Boring Location
	Soil Gas Location
Other Explorations	
	Phase A Boring Location (Sep. 2007)
	Phase II BRC Sample Location (Oct. 2007)
	Historic Groundwater Monitoring Well Location (Dry)
	Historic Sample Location (pre 2006)
	Existing Well Location (No Proposed Sampling)
	Proposed Phase B Groundwater Location (Other LOU)
	Proposed Phase B Soil Boring Location (Other LOU)
	Proposed Phase B Soil Gas Location (Other LOU)
	Tronox Facility Boundary
	Area Boundary
	Parcel Boundary
	Four Acre Grid Line (Cell reference displayed as row-column, i.e. M-8)
Base Aerial Photo from PBS&J, October 2006	

**SAMPLE LOCATIONS FOR LOU #55 AREA AFFECTED BY JULY 1990 FIRE**  
 Phase B Area II Source Area Investigation  
 Tronox Facility  
 Henderson, Nevada

SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	6/16/2008	04020-023-430

FIGURE NUMBER:  
**1**

SHEET NUMBER:  
**X**

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**Sampling and Analytical Plans for LOU 55**

Table A – Soil Sampling and Analytical Plan for LOU 55  
Table B – Groundwater Sampling and Analytical Plan for LOU 55



Grid Location	LOU Number	Phase B Boring No.	Sample ID Number	Sample Depths <sup>1</sup> (ft. bgs)	Perchlorate (EPA 314.0)	Metals (EPA 6020)	Hex Cr (EPA 7199)	TPH-DRO/ORO (EPA 8015B)	TPH-GRO (EPA 8015B)	VOCs <sup>2</sup> (EPA 8260B)	Wet Chemistry <sup>3</sup>	Total Cyanide (EPA 9012A)	OCPs <sup>4</sup> (EPA 8081A)	SVOCs <sup>5</sup> (EPA 8270C)	Radio-nuclides <sup>6</sup>	Dioxins/Furans <sup>7</sup>	Asbestos <sup>9</sup> EPA/540/R-97/028	Geo-technical Tests <sup>10</sup>	Rationale
<b>Borings are organized by grid location as shown on Plate A - Starting point is on the northwestern most grid in Area 2 (M-2) and ending with the southeastern most grid in Area 2 (S-7).</b>																			
L-6	55	RSAL6	RSAL6-0.0	0.0													X		Boring located to evaluate LOU 55 (Area Affected by July 1990 Fire). Random
L-6	55		RSAL6-0.5	0.5	X	X	X	X		X	X		X	X	X	X			Phase A boring SA20 located in the northwest portion of LOU 55.
L-6	55		RSAL6-10	10	X	X	X	X		X	X		Hold	X	X			X	
L-6	55		RSAL6-20	20	X	X	X	X		X	X		Hold	X	X				
L-6	55		RSAL6-25	25	X	X	X	X		X	X		X	X	X				
<b>Number of Samples:</b>					<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>	
<b>Notes:</b>																			
n/a Not applicable - boring is not associated with a specific LOU but is located to evaluate soil for general area-wide coverage.																			
X Sample will be collected and analyzed.																			
No sample collected under Phase B sampling program.																			
DD* Sample depth to be determined in the field where DD = sample depth (ft).																			
TPH-DRO/ORO Total petroleum hydrocarbons - Diesel-Range Organics/Oil-Range Organics.																			
1. The 0.5 ft bgs sample will be collected from the 0.0 to 0.5 ft bgs interval, unless the area is paved. If area is paved, samples will be collected at 0.5 feet below or from a representative depth beneath the pavement. Alternately, if an unpaved area is within a reasonable distance, the sample will be moved to the unpaved area.																			
2. Samples for VOC analysis will be preserved in the field using sodium bisulfate (or DI water) and methanol preservatives per EPA Method 5035.																			
3. Consists of wet chemistry parameters (including pH) listed on Table 1 of the Phase B Source Area Work Plan.																			
4. Organochlorine Pesticides (includes analysis for hexachlorobenzene).																			
5. Semi-volatile Organic Compounds																			
6. Radionuclides consists of alpha spec reporting for isotopic thorium and isotopic uranium, and Radium-226, plus Radium-228 by beta counting (per NDEP).																			
7. Dioxins/furans will be analyzed by EPA Method 8290 for all samples. Screening reports will be provided for 90% of the samples and full data packages for 10% of the samples.																			
8. Polychlorinated biphenyls																			
9. Soil samples for asbestos analyses will be collected from a depth of 0 to 2-inches bgs.																			
10. Geotechnical Tests consist of: moisture content (ASTM D-2216), grain size analysis (ASTM D-422 and C117-04), Soil Dry Bulk Density (ASTM D-2937), Grain Density (ASTM D-854, Soil-Water Filled Porosity (ASTM D-2216); Vertical Hydraulic Conductivity (ASTM D-5084/USEPA 9100).																			
11. SPLP samples will be analyzed by EPA method 1312 using two preparation methods: 1) with extraction fluid #2 (reagent water at pH 5.00 ±0.05), and 2) with extraction method #3 (reagent water); per NDEP.																			

Grid Location	Location Area	Monitoring Well No.	Screen Interval (ft bgs)	Soil Type Expected Across Screen Interval <sup>1</sup>	Well Sampled for Phase A? (y/n)	Perchlorate (EPA 314.0)	Hex Cr (EPA 7199)	Metals	VOCs <sup>2</sup> (EPA 8260)	Wet Chemistry (a)	OCPs <sup>3</sup> (EPA 8081A)	SVOCs <sup>4</sup> (EPA 8270C)	Radionuclides <sup>5</sup>	Rationale
<b>Wells are organized by grid location as shown on Plate A - Starting point is on the northwestern-most grid in Area II (L-4) and ending with the southeastern-most grid covering Area II (S-7).</b>														
L6	IIN	M-55	14.6 - 44.6	Qal/MCf <sub>g1</sub>	yes	X	X	X	X	X	X	X	X	Located as a downgradient stepout to LOU 55; and for general Site coverage.
L6	IIN	M-78	21.5 - 41.5	Qal/MCf <sub>g1</sub>	no	X	X	X	X	X	X	X	X	Located as a downgradient stepout to LOU 55; and for general Site coverage.
L6	II	M-64	12.7 - 37.3	Qal/MCf <sub>g1</sub>	no	X	X	X	X	X	X	X	X	Located to evaluate LOU 55; as a downgradient stepout for LOUs 30 and 56 and for general Site coverage.
L6	II	M-25	24 - 39	Qal/MCf <sub>g1</sub>	no	X	X	X	X	X	X	X	X	Located to serve as a downgradient stepout for LOUs 16, 19 and 53 as an upgradient stepout for LOU 55; and for general Site coverage.
<b>Number of Field Samples:</b>						<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	
<b>Notes:</b>														
* Well completion information or boring log not available. Soil type inferred from nearby wells and geologic cross-section provided in the Phase A Source Area Investigation Report (ENSR 2007). ENSR is in the process of obtaining information from BMI.														
X Sample will be collected and analyzed.														
1 It is anticipated that the large majority of the flow to the well will be from the coarse-grained sediments. As such, in the cases where there are two lithologies present across the screen interval, the water sampled will represent conditions in the coarse-grained interval.														
2 VOCs = Volatile organic compounds (to include analysis for naphthalene).														
3 OCPs = Organochlorine pesticides (to include analysis for hexachlorobenzene).														
4 SVOCs = Semi volatile organic compounds.														
5 Radionuclides consists of alpha spec reporting for isotopic Thorium and isotopic Uranium, and Radium-226, plus Radium-228 by beta counting (per NDEP).														
IIN/E/W/S Well located outside (north, east, west, or south) of Area II.														
nr Not recorded in the All Wells Database (June 2008).														
TBD To be determined when well is constructed														
(a) Complete list of wet chemistry parameters are shown on Table 1. All groundwater samples will have pH measured in the field.														
Qal Quaternary Alluvium														
MCf <sub>g1</sub> Muddy Creek Formation - first fine-grained facies														
MCc <sub>g1</sub> Muddy Creek Formation - first coarse-grained facies														

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**Soil and Groundwater Characterization Data**

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LOU-specific analytes identified include:

- Metals (Phase A list)
- Perchlorate
- Wet chemistry analytes
- Dioxins/Furans
- SVOCs

The tables in **BOLD** below present historical data associated with these LOU specific analytes.

LOU 55 Table 1 - Soil Characterization Data - Wet Chemistry

LOU 55 Table 2 - Groundwater Characterization Data - Wet Chemistry

**LOU 55 Table 3 - Soil Characterization Data - Dioxins and Dibenzofurans**

**LOU 55 Table 4 - Soil Characterization Data - Metals**

**LOU 55 Table 5 - Groundwater Characterization Data - Metals**

LOU 55 Table 6 - Groundwater Characterization Data - Routine Monitoring

LOU 55 Table 7 - Soil Characterization Data - Organochlorine Pesticides (OCPs)

LOU 55 Table 8 - Groundwater Characterization Data - Organochlorine Pesticides (OCPs)

LOU 55 Table 9 - Soil Characterization Data - Organophosphorus Pesticides (OPPs)

LOU 55 Table 10 - Groundwater Characterization Data - Organophosphorus Pesticides (OPPs)

LOU 55 Table 11 - Soil Characterization Data - PCBs

LOU 55 Table 12 - Groundwater Characterization Data - PCBs

**LOU 55 Table 13 - Soil Characterization Data - Perchlorate**

**LOU 55 Table 14 - Groundwater Characterization Data - Perchlorate**

LOU 55 Table 15 - Soil Characterization Data - Radionuclides

**LOU 55 Table 16 - Soil Characterization Data - SVOCs**

**LOU 55 Table 17 - Groundwater Characterization Data - SVOCs**

LOU 55 Table 18 - Soil Characterization Data - VOCs

LOU 55 Table 19 - Groundwater Characteristic Data - VOCs

LOU 55 Table 20 - Soil Characterization Data - Long Asbestos Fibers in Respirable Soil Fraction

Notes for Phase A Data Tables are presented at the end of the tables.

**LOU 55 Table 1**  
**Soil Characterization Data - Wet Chemistry**

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Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	
Boring No.		SA20	SA20	SA20	SA20	SA20	
Sample ID		SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25	
Sample Depth (ft)		0.5	0.5	10	20	25	
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	
Wet Chemistry Parameter	MSSL <sup>2</sup> mg/kg						Units
Percent moisture	--	<b>10.1</b>	<b>19.5</b>	<b>15.8</b>	<b>5.2</b>	<b>15.5</b>	percent
Alkalinity (as CaCO <sub>3</sub> )	--	<b>133</b>	<b>177</b>	<b>97.6</b>	52.8 U	59.2 U	mg/kg
Bicarbonate	--	<b>714</b>	<b>1120</b>	<b>277</b>	<b>229</b>	<b>265</b>	mg/kg
Total Alkalinity	--	<b>847</b>	<b>1300</b>	<b>374</b>	<b>240</b>	<b>265</b>	mg/kg
Ammonia (as N)	--	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ	mg/kg
Cyanide	1.37E+04	R	R	R	R	R	mg/kg
MBAS	--	4.4 U	4.4 U	4.4 U	<b>3.3 J</b>	<b>3.1 J</b>	mg/kg
pH (solid)	--	<b>9.4</b>	<b>9.3</b>	<b>8.8</b>	<b>8.7</b>	<b>7.9</b>	none
Bromide	--	2.8 UJ	3.1 UJ	3.0 UJ	2.6 UJ	3.0 UJ	mg/kg
Chlorate	--	5.6 UJ	6.2 UJ	5.9 UJ	<b>1.8 J-</b>	<b>4.3 J-</b>	mg/kg
Chloride	--	<b>1.5 J-</b>	<b>4.8 J-</b>	<b>3.4 J-</b>	<b>283 J-</b>	<b>382 J-</b>	mg/kg
Nitrate (as N)	--	<b>0.53 J+</b>	0.25 U	<b>1.1 J+</b>	<b>4.6 J+</b>	<b>6.3 J+</b>	mg/kg
Nitrite	--	<b>0.95 J-</b>	0.25 UJ	<b>0.30 J-</b>	2.1 UJ	2.4 UJ	mg/kg
ortho-Phosphate	--	5.6 UJ	6.2 U	5.9 U	5.3 U	<b>4.1 J</b>	mg/kg
Sulfate	--	<b>19.7 J+</b>	<b>27.3 J+</b>	<b>325</b>	<b>1810</b>	<b>12000</b>	mg/kg
Total Organic Carbon	--	<b>11700 J</b>	<b>2100 J</b>	<b>7500 J</b>	<b>1100 J</b>	<b>1400 J</b>	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).

**LOU 55 Table 2**  
**Groundwater Characterization Data - Wet Chemistry**

Area Affected by July 1990 Fire  
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Sampling Program		Ph A <sup>1</sup>	
Well ID		M-55	
Sample ID		M-55	
Sample Date		12/07/2006	
Wet Chemistry Parameters	MCL <sup>2</sup> mg/L		Units
Total Dissolved Solids	5.00E+02 j	<b>9560</b>	mg/L
Total Suspended Solids	--	<b>6.0 J</b>	mg/L
Alkalinity (as CaCO <sub>3</sub> )	--	5.0 U	mg/L
Bicarbonate	--	<b>156</b>	mg/L
Total Alkalinity	--	<b>156</b>	mg/L
Ammonia (as N)	--	<b>2630</b>	ug/L
MBAS	--	<b>3.3</b>	mg/L
Cyanide	2.00E-01	R	ug/L
pH (liquid)	--	<b>7.1 J</b>	none
Specific Conductance	--	<b>3000 J+</b>	umhos/cm
Bromide	--	2.5 U	mg/L
Chlorate	--	<b>3340</b>	mg/L
Chloride	2.50E+02	<b>2030</b>	mg/L
Nitrate (as N)	1.00E+01	<b>28.8</b>	mg/L
Nitrite	1.00E+00	0.20 U	mg/L
ortho-Phosphate	--	500 U	mg/L
Sulfate	2.50E+02 j	<b>1210</b>	mg/L
Total Organic Carbon	--	50.0 U	mg/L

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
  2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.
- (j) Secondary Drinking Water Regulation value.

**LOU 55 Table 3**  
**Soil Characterization Data - Dioxins and Dibenzofurans**

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<b>Sampling Program</b>				Ph A <sup>1</sup>	Ph A
<b>Boring No.</b>				SA20	SA20
<b>Sample ID</b>				SA20-0.5	SA20-0.5D
<b>Sample Depth (ft)</b>				0.5	0.5
<b>Sample Date</b>				11/16/2006	11/16/2006
<b>chemical_name:</b>	<b>Method</b>	<b>Unit</b>	<b>MSSL<sup>2</sup> ng/kg</b>		
Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (a) ng/kg		ng/kg	--	<b>0.24</b>	
Dioxin SW 846 8290 Total TEQ-ENSR Calculated (a) ng/kg		ng/kg	--		
Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (b) ng/kg		ng/kg	--	<b>0.31</b>	
Dioxin SW 846 8290 Total TEQ-ENSR Calculated (b) ng/kg		ng/kg	--		
1,2,3,4,6,7,8-Heptachlorodibenzofuran	8290 Screen	ng/kg	--	<b>1.328</b>	<b>0.543</b>
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	<b>1.317</b>	<b>0.910</b>
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--		
1,2,3,4,7,8,9-Heptachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.805</b>	0.071 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,4,7,8-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.535</b>	<b>0.172</b>
1,2,3,4,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	<b>0.211</b>	0.056 U
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--		
1,2,3,6,7,8-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.442</b>	<b>0.095</b>
1,2,3,6,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	<b>0.338</b>	0.050 U
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--		
1,2,3,7,8,9-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.345</b>	0.053 U
1,2,3,7,8,9-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	<b>0.351</b>	0.052 U
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--		
1,2,3,7,8-Pentachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.143</b>	0.054 U
1,2,3,7,8-Pentachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	<b>0.086</b>	0.074 U
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--		
2,3,4,6,7,8-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.361</b>	0.047 U
2,3,4,6,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--		
2,3,4,7,8-Pentachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.089</b>	0.050 U
2,3,4,7,8-Pentachlorodibenzofuran	SW 846 8290	ng/kg	--		
2,3,7,8-Tetrachlorodibenzofuran	8290 Screen	ng/kg	--	<b>0.220</b>	0.080 U
2,3,7,8-Tetrachlorodibenzofuran	SW 846 8290	ng/kg	--		
2,3,7,8-Tetrachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	1.00E+03 h,v	0.078 U	0.082 U
2,3,7,8-Tetrachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	1.00E+03 h,v		
Octachlorodibenzofuran	8290 Screen	ng/kg	--	<b>3.376</b>	<b>1.398</b>

**LOU 55 Table 3 (continued)**  
**Soil Characterization Data - Dioxins and Dibenzofurans**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

<b>Sampling Program</b>				Ph A <sup>1</sup>	Ph A
<b>Boring No.</b>				SA20	SA20
<b>Sample ID</b>				SA20-0.5	SA20-0.5D
<b>Sample Depth (ft)</b>				0.5	0.5
<b>Sample Date</b>				11/16/2006	11/16/2006
<b>chemical_name:</b>	<b>Method</b>	<b>Unit</b>	<b>MSSL<sup>2</sup> ng/kg</b>		
Octachlorodibenzofuran	SW 846 8290	ng/kg	--		
Octachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	<b>7.056</b>	<b>6.993</b>
Octachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--		
Tetrachlorinated Dibenzofurans, (Total)	SW 846 8290	ng/kg	--		
Total HpCDD	SW 846 8290	ng/kg	--		
Total HpCDF	SW 846 8290	ng/kg	--		
Total HxCDD	SW 846 8290	ng/kg	--		
Total HxCDF	SW 846 8290	ng/kg	--		
Total PeCDD	SW 846 8290	ng/kg	--		
Total PeCDF	SW 846 8290	ng/kg	--		
Total TCDD	SW 846 8290	ng/kg	--		

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility - Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
  - (a) Calculated assuming 0 for non-detected congeners and 2006 toxic equivalency factors (TEFs).
  - (b) Calculated assuming 1/2 detection limit as proxy for non-detected congeners and 2006 TEFs.
  - (h) Dioxins and furans were expressed as 2,3,7,8- TCDD TEQ (toxic equivalents), calculated using the TEFs published by Van den Berg et al., 2006.
  - (v) USEPA. 1998. Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April, 1998. A value of 1000 ng/kg is applicable to residential soils. The range of 5000 to 20000 ng/kg is applicable to commercial/industrial soils. The Agency for Toxic Substances and Disease Registry (ATSDR) provides a screening level of 50 ng/kg for dioxin in residential soil [<http://www.atsdr.cdc.gov/substances/dioxin/policy/>].



**LOU 55 Table 4  
Soil Characterization Data - Metals**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	
Boring No.		SA20	SA20	SA20	SA20	SA20	
Sample ID		SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25	
Sample Depth (ft)		0.5	0.5	10	20	25	
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	
Metals	MSSL <sup>2</sup> mg/kg						Units
Aluminum	1.00E+05	8090	9460	7230	4170	4710	mg/kg
Antimony	4.50E+02	0.19 J-	0.23 J-	0.16 J-	0.13 J-	0.14 J-	mg/kg
Arsenic	2.80E+02	2.7	3.1	2.3	8.8	14.1	mg/kg
Barium	1.00E+05	176	221	149 J	129 J	107 J	mg/kg
Beryllium	2.20E+03	0.53	0.62	0.49	0.30	0.28	mg/kg
Boron	1.00E+05	4.7 J	7.7 J	5.5 J-	6.0 J-	9.7 J-	mg/kg
Cadmium	5.60E+02	0.091	0.12	0.091	0.086	0.049 J	mg/kg
Calcium	--	16600	21900	14900	37600	15200	mg/kg
Chromium (Total)	7.10E+01	10.7 J-	12.6 J-	9.3 J-	8.5 J-	9.6 J-	mg/kg
Chromium-hexavalent	5.00E+02	0.22 U	0.25 U	0.24 U	0.72	0.29	mg/kg
Cobalt	2.10E+03	6.5	8.2	6.1 J-	2.5 J-	3.2 J-	mg/kg
Copper	4.20E+04	12.0 J-	14.1 J-	11.6 J-	5.8 J-	7.2 J-	mg/kg
Iron	1.00E+05	12100	14300	10300	4890	6620	mg/kg
Lead	8.00E+02	9.7	11.9	8.2	4.9	5.5	mg/kg
Magnesium	--	7500 J-	8460 J-	6390 J-	4590 J-	6080 J-	mg/kg
Manganese	3.50E+04	304	396	334	102	116	mg/kg
Molybdenum	5.70E+03	0.47 J	0.61 J	0.40 J	0.37 J	0.50 J	mg/kg
Nickel	2.30E+04	13.4 J-	15.6 J-	11.5 J-	7.6 J-	11.0 J-	mg/kg
Platinum	--	0.014 J	0.019 J	0.012 U	0.011 U	0.012 U	mg/kg
Potassium	--	2470	2910	2260	1170	1390	mg/kg
Selenium	5.70E+03	0.12 U	0.13 U	0.13 U	0.11 U	0.13 U	mg/kg
Silver	5.70E+03	0.15 J	0.17 J	0.29	0.068 J	0.081 J	mg/kg
Sodium	--	362	420	298 J-	625 J-	603 J-	mg/kg
Strontium	1.00E+05	121	141	102 J	852 J	639 J	mg/kg
Thallium	--	0.12 J	0.25 J	0.14 J	0.077 J	0.083 U	mg/kg
Tin	--	0.51	0.67	0.43	0.32	0.34	mg/kg
Titanium	--	507	572	403 J+	252 J+	318 J+	mg/kg
Tungsten	--	0.33 J-	0.47 J-	0.32 J-	0.24 J-	0.42 J-	mg/kg
Uranium	--	0.81	0.97	0.70	1.4	1.7	mg/kg
Vanadium	5.70E+03	30.5 J-	34.8 J-	23.4 J-	18.0 J-	35.2 J-	mg/kg
Zinc	1.00E+05	26.8 J-	30.4 J-	22.8 J-	13.3 UJ	15.8 UJ	mg/kg
Mercury	3.41E+02 (t)	0.046 U	0.028 U	0.0079 UJ	0.0071 UJ	0.0079 UJ	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
  2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (t) Value for mercury and compounds.

**LOU 55 Table 5  
Groundwater Characterization Data - Metals**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	
Well ID:		M-55	
Sample ID		M-55-Z	
Sample Date		05/08/2007	
Metals	MCL <sup>2</sup> ug/L		Unit
Aluminum	5.00E+01 j	393 U	ug/L
Antimony	6.00E+00	25.0 U	ug/L
Arsenic	1.00E+01	<b>128 J</b>	ug/L
Barium	2.00E+03	<b>46.5 J</b>	ug/L
Beryllium	4.00E+00	4.4 U	ug/L
Boron	7.30E+03	<b>9980</b>	ug/L
Cadmium	5.00E+00	2.9 U	ug/L
Calcium	--	<b>578000</b>	ug/L
Chromium (Total)	1.00E+02	<b>12600 J-</b>	ug/L
Chromium-hexavalent	1.09E+02	<b>14300 J</b>	ug/L
Cobalt	7.30E+02	15.7 UJ	ug/L
Copper	1.30E+03 p	12.5 U	ug/L
Iron	3.00E+02 j	470 UJ	ug/L
Lead	1.50E+01 u	24.6 U	ug/L
Magnesium	1.50E+05 a	<b>340000</b>	ug/L
Manganese	5.00E+01 j	34.9 U	ug/L
Molybdenum	1.82E+02	25.0 U	ug/L
Nickel	7.30E+02	25.8 UJ	ug/L
Platinum	--	5.0 U	ug/L
Potassium	--	<b>48100</b>	ug/L
Selenium	5.00E+01	50.0 U	ug/L
Silver	1.00E+02 j	10.1 U	ug/L
Sodium	--	<b>1780000</b>	ug/L
Strontium	2.19E+04	<b>16100</b>	ug/L
Thallium	2.00E+00	16.0 U	ug/L
Tin	2.19E+04	10.0 U	ug/L
Titanium	1.46E+05	19.6 U	ug/L
Tungsten	--	25.0 UJ	ug/L
Uranium	3.00E+01	<b>49.1 J+</b>	ug/L
Vanadium	3.65E+01	80.0 UJ	ug/L
Zinc	5.00E+03 j	50.0 UJ	ug/L
Mercury	2.00E+00	<b>0.11 J+</b>	ug/L

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.
  - (j) Secondary Drinking Water Regulation value.
  - (p) The national primary drinking water regulations (b) lists a treatment technology action level of 1.3 mg/l as the MCL for Copper. Therefore, the secondary value is not used.
  - (u) See footnote (b). Treatment technology action level.
  - (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.

**LOU 55 Table 6  
Groundwater Characterization Data - Routine Monitoring<sup>1</sup>**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Well ID	Date	Depth to water (ft)	Perchlorate mg/L	Qual	MCL <sup>2</sup> mg/L	Total Chromium mg/L	Qual	MCL <sup>2</sup> mg/L	TDS mg/L	Qual	MCL <sup>2</sup> mg/L	Nitrate (as N) mg/L	Qual	MCL <sup>2</sup> mg/L	Chlorate mg/L	Qual	MCL <sup>2</sup> mg/L
M-25	2/3/2006	30.93	740	d	1.80E-02 a,m	11	d	1.00E-01			5.00E+02 j			1.00E+01			--
M-25	5/4/2006	31.15			1.80E-02 a,m			1.00E-01			5.00E+02 j	3.3	d	1.00E+01			--
M-25	5/4/2006	31.15	550	d	1.80E-02 a,m	11	d	1.00E-01	9980		5.00E+02 j	28	d	1.00E+01	3100	d	--
M-25	8/1/2006	32.06	488	d	1.80E-02 a,m	11	d	1.00E-01	6940		5.00E+02 j	7.8	d	1.00E+01	3200	d	--
M-25	11/2/2006	32.18	617	d	1.80E-02 a,m	12	d	1.00E-01	9800		5.00E+02 j	28.2	d	1.00E+01	3400	d	--
M-25	1/30/2007	32.55	523		1.80E-02 a,m	12		1.00E-01	9280		5.00E+02 j			1.00E+01			--
M-25	5/1/2007	32.97	495		1.80E-02 a,m	12		1.00E-01	9380		5.00E+02 j	11.9		1.00E+01	3440		--
M-25	7/31/2007	33.28	492		1.80E-02 a,m	12		1.00E-01	9400		5.00E+02 j			1.00E+01			--
M-38	2/2/2006	30.23	1200	d	1.80E-02 a,m	29	d	1.00E-01			5.00E+02 j			1.00E+01			--
M-38	5/4/2006	30.51	1100	d	1.80E-02 a,m	28	d	1.00E-01	9450		5.00E+02 j			1.00E+01			--
M-38	8/3/2006	31.65	1010	d	1.80E-02 a,m	29	d	1.00E-01	13300		5.00E+02 j			1.00E+01			--
M-38	11/2/2006	31.01	973	d	1.80E-02 a,m	29	d	1.00E-01	15300		5.00E+02 j			1.00E+01			--
M-38	2/1/2007	31.03	955		1.80E-02 a,m	28		1.00E-01	14500		5.00E+02 j			1.00E+01			--
M-38	5/4/2007	31.13	863		1.80E-02 a,m	26		1.00E-01	13500		5.00E+02 j			1.00E+01			--
M-38	8/3/2007	31.43	906		1.80E-02 a,m	26		1.00E-01	14600		5.00E+02 j			1.00E+01			--
M-64	1/31/2006	25.63	1000	d	1.80E-02 a,m	8	d	1.00E-01			5.00E+02 j			1.00E+01			--
M-64	5/2/2006	25.63	990	d	1.80E-02 a,m	7.3	d	1.00E-01	6090		5.00E+02 j			1.00E+01			--
M-64	8/1/2006	26.75	846	d	1.80E-02 a,m	8.2	d	1.00E-01	7040		5.00E+02 j			1.00E+01			--
M-64	10/31/2006	27.04	737	d	1.80E-02 a,m	6.4	d	1.00E-01	6290		5.00E+02 j			1.00E+01			--
M-64	1/30/2007	27.63	997		1.80E-02 a,m	8.8		1.00E-01	8550		5.00E+02 j			1.00E+01			--
M-64	5/4/2007	28.89	709		1.80E-02 a,m	7.2		1.00E-01	7900		5.00E+02 j			1.00E+01			--
M-64	7/31/2007	29.27	821		1.80E-02 a,m	8.2		1.00E-01	8170		5.00E+02 j			1.00E+01			--
M-65	1/31/2006	27.75	1400	d	1.80E-02 a,m	36	d	1.00E-01			5.00E+02 j			1.00E+01			--
M-65	5/2/2006	28.07	1500	d	1.80E-02 a,m	30	d	1.00E-01	11300		5.00E+02 j			1.00E+01			--
M-65	8/1/2006	28.77	1260	d	1.80E-02 a,m	32	d	1.00E-01	14100		5.00E+02 j			1.00E+01			--
M-65	10/31/2006	29.03	1340	d	1.80E-02 a,m	34		1.00E-01	18000		5.00E+02 j			1.00E+01			--
M-65	1/30/2007	29.52	1330		1.80E-02 a,m	34		1.00E-01	16600		5.00E+02 j			1.00E+01			--
M-65	5/4/2007	30.43	1250		1.80E-02 a,m	33		1.00E-01	14700		5.00E+02 j			1.00E+01			--
M-65	7/31/2007	30.96	1460		1.80E-02 a,m	33		1.00E-01	18700		5.00E+02 j			1.00E+01			--

**Notes:**

1. ENSR, 2007, Quarterly Performance Report for Remediation Systems, Tronox LLC, Henderson, Nevada, July-September 2007, November 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.
  - (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.
  - (m) Equal to the provisional action level derived by NDEP as referenced in "Defining a Perchlorate Drinking Water Standard". NDEP Bureau of Corrective Action. URL: [http://ndep.nv.gov/bca/perchlorate02\_05.htm].
  - (j) Secondary Drinking Water Regulation value.

< = less than the reporting limit  
 Blank cell or --- = no data and or no qualifier  
 Qual = data qualifiers applied by laboratory or during data validation  
 TDS = Total Dissolved Solids  
 mg/l = milligram per liter

Laboratory Qualifiers:  
 d = the sample was diluted

**LOU 55 Table 7**  
**Soil Characterization Data - Organochlorine Pesticides (OCPs)**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	
Boring No.		SA20	SA20	
Sample ID		SA20-0.5	SA20-0.5D	
Sample Depth (ft)		0.5	0.5	
Sample Date		11/16/2006	11/16/2006	
Organochlorine Pesticides	MSSL <sup>2</sup> mg/kg			Unit
4,4'-DDD	1.10E+01	0.0019 U	0.021 U	mg/kg
4,4'-DDE	7.80E+00	0.0019 U	0.021 U	mg/kg
4,4'-DDT	7.80E+00	0.0019 U	0.021 U	mg/kg
Aldrin	1.10E-01	0.0019 U	0.021 U	mg/kg
Alpha-BHC	4.00E-01	0.0019 U	0.021 U	mg/kg
Alpha-chlordane	1.40E+00 (y)	0.0019 U	0.021 U	mg/kg
Beta-BHC	1.40E+00	<b>0.029 J</b>	<b>0.032</b>	mg/kg
Delta-BHC	--	0.0019 U	0.021 U	mg/kg
Dieldrin	1.20E-01	0.0019 U	0.021 U	mg/kg
Endosulfan I	4.10E+03 (aa)	0.0019 U	0.021 U	mg/kg
Endosulfan II	4.10E+03 (aa)	0.0019 U	0.021 U	mg/kg
Endosulfan Sulfate	4.10E+03 (aa)	0.0019 U	0.021 U	mg/kg
Endrin	2.10E+02	0.0019 U	0.021 U	mg/kg
Endrin Aldehyde	2.10E+02 (k)	0.0019 U	0.021 U	mg/kg
Endrin Ketone	2.10E+02 (k)	0.0019 U	0.021 U	mg/kg
Gamma-BHC (Lindane)	1.90E+00	0.0019 U	0.021 U	mg/kg
Gamma-Chlordane	1.40E+00 (y)	0.0019 U	0.021 U	mg/kg
Heptachlor	4.30E-01	0.0019 U	0.021 U	mg/kg
Heptachlor Epoxide	2.10E-01	0.0019 U	0.021 U	mg/kg
Methoxychlor	3.40E+03	0.0037 U	0.041 U	mg/kg
Tech-Chlordane	1.40E+00	0.011 U	0.12 U	mg/kg
Toxaphene	1.70E+00	0.056 U	0.62 U	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
  - (y) Value for chlordane (technical) used as surrogate for alpha-chlordane and gamma-chlordane based on structural similarities.
  - (aa) Value for endosulfan used as surrogate for endosulfan I, endosulfan II and endosulfan sulfate based on structural similarities.
  - (k) Value for endrin used as surrogate for endrin aldehyde and endrin ketone due to structural similarities.

**LOU 55 Table 8**  
**Groundwater Characterization Data - Organochlorine Pesticides (OCP)**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	
Well ID		M-55	M-55D	
Sample ID		M-55	M-55D	
Sample Date		12/07/2006	12/07/2006	
Organochlorine Pesticides	MCL <sup>2</sup> ug/L			Unit
4,4'-DDD	2.80E-01	0.050 U	0.050 U	ug/L
4,4'-DDE	1.98E-01	0.050 U	0.050 U	ug/L
4,4'-DDT	1.98E-01	0.050 U	0.050 U	ug/L
Aldrin	4.00E-03	0.050 U	0.050 U	ug/L
Alpha-BHC	1.10E-02	0.050 U	0.050 U	ug/L
Alpha-chlordane	2.00E+00 (l)	0.050 U	0.050 U	ug/L
Beta-BHC	3.74E-02	0.050 U	0.050 U	ug/L
Delta-BHC	1.10E-02 (z)	0.050 U	0.050 U	ug/L
Dieldrin	4.20E-03 (z)	0.050 U	0.050 U	ug/L
Endosulfan I	2.19E+02 (aa)	0.050 U	0.050 U	ug/L
Endosulfan II	2.19E+02 (aa)	0.050 U	0.050 U	ug/L
Endosulfan Sulfate	2.19E+02 (aa)	0.050 U	0.050 U	ug/L
Endrin	2.00E+00	0.050 U	0.050 U	ug/L
Endrin Aldehyde	1.09E+01 (k)	0.050 U	0.050 U	ug/L
Endrin Ketone	1.09E+01 (k)	0.050 U	0.050 U	ug/L
Gamma-BHC (Lindane)	2.00E-01	0.050 U	0.050 U	ug/L
Gamma-Chlordane	2.00E+00 (l)	0.050 U	0.050 U	ug/L
Heptachlor	4.00E-01	0.050 U	0.050 U	ug/L
Heptachlor Epoxide	2.00E-01	0.050 U	0.050 U	ug/L
Methoxychlor	4.00E+01	0.10 U	0.10 U	ug/L
Tech-Chlordane	2.00E+00 (l)	0.50 U	0.50 U	ug/L
Toxaphene	3.00E+00	2.0 U	2.0 U	ug/L

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.
  - (l) Value for chlordane used as surrogate for alpha-chlordane, chlordane (technical) and gamma-chlordane due to structural similarities.
  - (z) Value for alpha-BHC used as surrogate for delta-BHC based on structural similarities.
  - (aa) Value for endosulfan used as surrogate for endosulfan I, endosulfan II and endosulfan sulfate based on structural similarities.
  - (k) Value for endrin used as surrogate for endrin aldehyde and endrin ketone due to structural similarities.

**LOU 55 Table 9**  
**Soil Characterization Data - Organophosphorus Pesticides (OPPs)**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	
Boring No.		SA20	SA20	
Sample ID		SA20-0.5	SA20-0.5D	
Sample Depth (ft)		0.5	0.5	
Sample Date		11/16/2006	11/16/2006	
OPPs	MSSL <sup>2</sup> mg/kg			Unit
Azinphos-methyl	--	0.014 U	0.016 UJ	mg/kg
Bolstar	--	0.014 U	0.016 U	mg/kg
Chlorpyrifos	2.10E+03	0.022 U	0.025 U	mg/kg
Coumaphos	--	0.014 U	0.016 UJ	mg/kg
Demeton-O	--	0.043 U	0.048 U	mg/kg
Demeton-S	--	0.017 U	0.019 U	mg/kg
Diazinon	6.20E+02	0.024 U	0.027 U	mg/kg
Dichlorvos	6.60E+00	0.026 U	0.029 U	mg/kg
Dimethoate	--	0.024 U	0.027 UJ	mg/kg
Disulfoton	2.70E+01	0.053 U	0.060 U	mg/kg
EPN	--	0.014 U	0.016 UJ	mg/kg
Ethoprop	--	0.017 U	0.019 U	mg/kg
Ethyl Parathion	4.10E+03	0.020 U	0.022 U	mg/kg
Famphur	--	0.014 U	0.016 UJ	mg/kg
Fensulfothion	--	0.014 U	0.016 U	mg/kg
Fenthion	1.70E+02 (ff)	0.037 U	0.041 U	mg/kg
Malathion	1.40E+04	0.017 U	0.019 U	mg/kg
Merphos	--	0.033 U	0.037 U	mg/kg
Methyl parathion	1.70E+02	0.022 U	0.025 U	mg/kg
Mevinphos	--	0.017 U	0.019 U	mg/kg
Naled	1.40E+03	0.037 U	0.041 UJ	mg/kg
Phorate	--	0.022 U	0.025 U	mg/kg
Ronnel	3.40E+04	0.020 U	0.022 UJ	mg/kg
Stirphos	--	0.017 U	0.019 UJ	mg/kg
Sulfotep	--	0.022 U	0.025 U	mg/kg
Thionazin	--	0.020 U	0.022 U	mg/kg
Tokuthion	--	0.022 U	0.025 U	mg/kg
Trichloronate	--	0.022 U	0.025 U	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
  2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.

**LOU 55 Table 10**  
**Groundwater Characterization Data - Organophosphorus Pesticides (OPPs)**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	
Well ID		M-55	M-55D	
Sample ID		M-55	M-55D	
Sample Date		12/07/2006	12/07/2006	
OPPs	MCL <sup>2</sup> ug/L			Unit
Azinphos-methyl	--	2.5 U	2.5 U	ug/L
Bolstar	--	1.0 U	1.0 U	ug/L
Chlorpyrifos	1.09E+02	1.0 U	1.0 U	ug/L
Coumaphos	--	1.0 U	1.0 U	ug/L
Demeton-O	1.46E+00 (cc)	1.0 U	1.0 U	ug/L
Demeton-S	1.46E+00 (cc)	1.0 U	1.0 U	ug/L
Diazinon	3.28E+01	1.0 U	1.0 U	ug/L
Dichlorvos	2.32E-01	1.0 U	1.0 U	ug/L
Dimethoate	7.30E+00	1.0 U	1.0 U	ug/L
Disulfoton	1.46E+00	0.50 U	0.50 U	ug/L
EPN	3.65E-01	1.2 U	1.2 U	ug/L
Ethoprop	--	0.50 U	0.50 U	ug/L
Ethyl Parathion	9.12E+00 (tt)	1.0 U	1.0 U	ug/L
Famphur	--	1.0 U	1.0 U	ug/L
Fensulfothion	--	2.5 U	2.5 U	ug/L
Fenthion	9.10E+00 (ff)	2.5 U	2.5 U	ug/L
Malathion	7.30E+02	1.2 U	1.2 U	ug/L
Merphos	1.09E+00	5.0 U	5.0 U	ug/L
Methyl parathion	9.12E+00	4.0 U	4.0 U	ug/L
Mevinphos	--	6.2 U	6.2 U	ug/L
Naled	7.30E+01	1.0 U	1.0 U	ug/L
Phorate	7.30E+00	1.2 U	1.2 U	ug/L
Ronnel	1.82E+03	10 U	10 U	ug/L
Stirphos	--	3.5 U	3.5 U	ug/L
Sulfotep	1.82E+01	1.5 U	1.5 U	ug/L
Thionazin	--	1.0 U	1.0 U	ug/L
Tokuthion	--	1.6 U	1.6 U	ug/L
Trichloronate	--	0.50 U	0.50 U	ug/L

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.

(cc) Value for demeton used as surrogate for demeton-o and demeton-s based on structural similarities.

(tt) Value for parathion-methyl used as surrogate for parathion-ethyl due to structural similarities.

(ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.

**LOU 55 Table 11**  
**Soil Characterization Data - PCBs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	
Boring ID		SA20	SA20	SA20	SA20	SA20	
Sample ID		SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25	
Sample Depth (ft)		0.5	0.5	10	20	25	
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	
PCBs	MSSL <sup>2</sup> mg/kg						Unit
Aroclor-1016	2.40E+01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg
Aroclor-1221	8.30E-01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg
Aroclor-1232	8.30E-01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg
Aroclor-1242	8.30E-01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg
Aroclor-1248	8.30E-01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg
Aroclor-1254	8.30E-01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg
Aroclor-1260	8.30E-01 (i)	0.037 U	0.041 U	0.039 U	0.035 U	0.039 U	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
  2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (i) For PCBs, the individual Aroclors were compared to the TSCA action level of 10 mg/kg, for high occupancy, restricted (non-residential) use. (40 CFR Part 761; 63 FR 35383-35474, June 29, 1998).



**LOU 55 Table 12**  
**Groundwater Characterization Data - PCBs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	
Well ID		M-55	M-55D	
Sample ID		M-55	M-55D	
Sample Date		12/07/2006	12/07/2006	
PCBs	MCL <sup>2</sup> ug/L			Unit
Aroclor-1016	5.00E-01 (bb)	0.10 U	0.10 U	ug/L
Aroclor-1221	5.00E-01 (bb)	0.10 U	0.10 U	ug/L
Aroclor-1232	5.00E-01 (bb)	0.10 U	0.10 U	ug/L
Aroclor-1242	5.00E-01 (bb)	0.10 U	0.10 U	ug/L
Aroclor-1248	5.00E-01 (bb)	0.10 U	0.10 U	ug/L
Aroclor-1254	5.00E-01 (bb)	0.10 U	0.10 U	ug/L
Aroclor-1260	5.00E-01 (bb)	0.10 U	0.10 U	ug/L

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.  
(bb) Value for total PCBs.

**LOU 55 Table 13**  
**Soil Characterization Data - Perchlorate**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Boring ID	Sample ID	Sample Depth (ft)	Sample Date	Perchlorate ug/kg	MSSL <sup>1</sup> ug/kg	Sampling Program
SA20	SA20-0.5	0.5	11/16/2006	<b>150</b>	7.95E+05	Ph A <sup>2</sup>
SA20	SA20-0.5D	0.5	11/16/2006	<b>158</b>	7.95E+05	Ph A
SA20	SA20-10	10	11/16/2006	<b>855</b>	7.95E+05	Ph A
SA20	SA20-20	20	11/16/2006	<b>60200</b>	7.95E+05	Ph A
SA20	SA20-25	25	11/16/2006	<b>57600</b>	7.95E+05	Ph A

**Notes:**

1. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

**LOU 55 Table 14**  
**Groundwater Characterization Data - Perchlorate**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Well ID Number	Sample ID	Sample Date	Perchlorate	Units	MCL <sup>1</sup> ug/L	Sampling Program
M-55	M-55	12/07/2006	<b>577000 J+</b>	ug/L	1.80E+01 a,(m)	Ph A <sup>2</sup>
M-55D	M-55D	12/07/2006	<b>587000 J+</b>	ug/L	1.80E+01 a,(m)	Ph A

**Notes:**

1. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.
  2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
- (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.
- (m) Equal to the provisional action level derived by NDEP as referenced in "Defining a Perchlorate Drinking Water Standard". NDEP Bureau of Corrective Action. URL [[http://ndep.nv.gov/bca/perchlorate02\\_05.htm](http://ndep.nv.gov/bca/perchlorate02_05.htm)].

**LOU 55 Table 15  
Soil Characterization Data - Radionuclides**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Boring ID Number	Sample ID	Sample Depth (ft)	Date	Ra-226	Ra-228	Th-228	Th-230	Th-232	U-233/234	U-235/236	U-238	Sampling Program
				(gamma)	(gamma)	(TH MOD)	(TH MOD)	(TH MOD)	(U MOD)	(U MOD)	(U MOD)	
				pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	
SA20	SA20-0.5	0.5	11/16/2006	1 J-	1.87 J-							Ph A <sup>1</sup>
SA20	SA20-0.5D	0.5	11/16/2006	0.863 J-	1.56 J-							Ph A
SA20	SA20-10	10	11/16/2006	1.31 J-	1.63 J-							Ph A
SA20	SA20-20	20	11/16/2006	1.47 J-	1.76 J-							Ph A
SA20	SA20-25	25	11/16/2006	1.52 J-	1.82 J-							Ph A

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

**LOU 55 Table 16**  
**Soil Characterization Data - SVOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A
Boring No.			SA20	SA20	SA20	SA20	SA20
Sample ID			SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25
Sample Depth (ft)			0.5	0.5	10	20	25
Sample Date			11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006
SVOC	Analytical Method	MSSL <sup>2</sup> ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
1,4-Dioxane	non-SIM	1.70E+05	370 U	410 U	390 U	350 U	390 U
2-Methylnaphthalene	non-SIM	2.10E+05 (jj)	370 U	410 U	390 U	350 U	390 U
2-Methylnaphthalene	SIM	2.10E+05 (jj)					
Acenaphthene	non-SIM	3.30E+07	370 U	410 U	390 U	350 U	390 U
Acenaphthene	SIM	3.30E+07					
Acenaphthylene	non-SIM	3.30E+07 (pp)	370 U	410 U	390 U	350 U	390 U
Acenaphthylene	SIM	3.30E+07 (pp)					
Anthracene	non-SIM	1.00E+08	370 U	410 U	390 U	350 U	390 U
Anthracene	SIM	1.00E+08					
Benz(a)anthracene	non-SIM	2.30E+03	370 U	410 U	390 U	350 U	390 U
Benz(a)anthracene	SIM	2.30E+03					
Benzo(a)pyrene	non-SIM	2.30E+02	370 U	410 U	390 U	350 U	390 U
Benzo(a)pyrene	SIM	2.30E+02					
Benzo(b)fluoranthene	non-SIM	2.30E+03	370 U	410 U	390 U	350 U	390 U
Benzo(b)fluoranthene	SIM	2.30E+03					
Benzo(g,h,i)perylene	non-SIM	3.20E+07 (w)	370 U	410 U	390 U	350 U	390 U
Benzo(g,h,i)perylene	SIM	3.20E+07 (w)					
Benzo(k)fluoranthene	non-SIM	2.30E+04	370 U	410 U	390 U	350 U	390 U
Benzo(k)fluoranthene	SIM	2.30E+04					
bis(2-Ethylhexyl)phthalate	non-SIM	1.40E+05	370 U	410 U	390 U	350 U	390 U
Butyl benzyl phthalate	non-SIM	2.40E+05	370 U	410 U	390 U	350 U	390 U
Chrysene	non-SIM	2.30E+05	370 U	410 U	390 U	350 U	390 U
Chrysene	SIM	2.30E+05					
Dibenz(a,h)anthracene	non-SIM	2.30E+02	370 U	410 U	390 U	350 U	390 U
Dibenz(a,h)anthracene	SIM	2.30E+02					
Diethyl phthalate	non-SIM	1.00E+08	370 U	410 U	390 U	350 U	390 U
Dimethyl phthalate	non-SIM	1.00E+08	370 U	410 U	390 U	350 U	390 U
Di-N-Butyl phthalate	non-SIM	6.80E+07	370 U	410 U	390 U	350 U	390 U
Di-N-Octyl phthalate	non-SIM	--	370 U	410 U	390 U	350 U	390 U
Fluoranthene	non-SIM	2.40E+07	370 U	410 U	390 U	350 U	390 U
Fluoranthene	SIM	2.40E+07					
Fluorene	non-SIM	2.60E+07	370 U	410 U	390 U	350 U	390 U
Fluorene	SIM	2.60E+07					
Hexachlorobenzene	non-SIM	1.20E+03	370 U	410 U	390 U	350 U	390 U
Hexachlorobenzene	SIM	1.20E+03					
Indeno(1,2,3-cd)pyrene	non-SIM	2.30E+03	370 U	410 U	390 U	350 U	390 U
Indeno(1,2,3-cd)pyrene	SIM	2.30E+03					
Naphthalene	non-SIM	2.10E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Naphthalene	non-SIM	2.10E+05	370 U	410 U	390 U	350 U	390 U

**LOU 55 Table 16 (continued)**  
**Soil Characterization Data - SVOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A
Boring No.			SA20	SA20	SA20	SA20	SA20
Sample ID			SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25
Sample Depth (ft)			0.5	0.5	10	20	25
Sample Date			11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006
SVOC	Analytical Method	MSSL <sup>2</sup> ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Naphthalene	SIM	2.10E+05					
Nitrobenzene	non-SIM	1.10E+05	370 U	410 U	390 U	350 U	390 U
Octachlorostyrene	non-SIM	--	370 U	410 U	390 U	350 U	390 U
Phenanthrene	non-SIM	1.00E+08 (n)	370 U	410 U	390 U	350 U	390 U
Phenanthrene	SIM	1.00E+08 (n)					
Pyrene	non-SIM	3.20E+07	370 U	410 U	390 U	350 U	390 U
Pyrene	SIM	3.20E+07					
Pyridine	non-SIM	6.80E+05	1800 U	2000 U	1900 U	1700 U	1900 U

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
  - (jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
  - (pp) Value for acenaphthene used as surrogate for acenaphthylene based on structural similarities.
  - (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
  - (n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.

**LOU 55 Table 17**  
**Groundwater Characterization Data - SVOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A <sup>1</sup>	Ph A
Well No.			M55	M55D
Sample ID			M55	M55D
Sample Date			12/07/2006	12/07/2006
SVOCs	Analytic Method	MCL <sup>2</sup> ug/L	ug/L	ug/L
1,4-Dioxane	non-SIM	6.11E+00	10 U	10 U
2-Methylnaphthalene	non-SIM	6.20E+00 (jj)	10 U	10 U
2-Methylnaphthalene	SIM	6.20E+00 (jj)	0.20 U	0.20 U
Acenaphthene	non-SIM	3.65E+02	10 U	10 U
Acenaphthene	SIM	3.65E+02	0.20 U	0.20 U
Acenaphthylene	non-SIM	3.65E+02 (pp)	10 U	10 U
Acenaphthylene	SIM	3.65E+02 (pp)	0.20 U	0.20 U
Anthracene	non-SIM	1.83E+03	10 U	10 U
Anthracene	SIM	1.83E+03	0.20 U	0.20 U
Benz(a)anthracene	non-SIM	9.21E-02	10 U	10 U
Benz(a)anthracene	SIM	9.21E-02	0.20 U	0.20 U
Benzo(a)pyrene	non-SIM	2.00E-01	10 U	10 U
Benzo(a)pyrene	SIM	2.00E-01	0.20 U	0.20 U
Benzo(b)fluoranthene	non-SIM	9.21E-02	10 U	10 U
Benzo(b)fluoranthene	SIM	9.21E-02	0.20 U	0.20 U
Benzo(g,h,i)perylene	non-SIM	1.83E+02 (w)	10 U	10 U
Benzo(g,h,i)perylene	SIM	1.83E+02 (w)	0.20 U	0.20 U
Benzo(k)fluoranthene	non-SIM	9.21E-01	10 U	10 U
Benzo(k)fluoranthene	SIM	9.21E-01	0.20 U	0.20 U
bis(2-Ethylhexyl)phthalate	non-SIM	6.00E+00	10 U	10 U
Butyl benzyl phthalate	non-SIM	7.30E+03	10 U	10 U
Chrysene	non-SIM	9.21E+00	10 U	10 U
Chrysene	SIM	9.21E+00	0.20 U	0.20 U
Dibenz(a,h)anthracene	non-SIM	9.21E-03	10 U	10 U
Dibenz(a,h)anthracene	SIM	9.21E-03	0.20 U	0.20 U
Diethyl phthalate	non-SIM	2.92E+04	10 U	10 U
Dimethyl phthalate	non-SIM	3.65E+05	10 U	10 U
Di-N-Butyl phthalate	non-SIM	3.65E+03	10 U	10 U
Di-N-Octyl phthalate	non-SIM	1.46E+03	10 U	10 U
Fluoranthene	non-SIM	1.46E+03	10 U	10 U
Fluoranthene	SIM	1.46E+03	0.23 U	0.26 U
Fluorene	non-SIM	2.43E+02	10 U	10 U
Fluorene	SIM	2.43E+02	0.20 U	0.20 U
Hexachlorobenzene	non-SIM	1.00E+00	10 U	10 U
Hexachlorobenzene	SIM	1.00E+00	0.20 U	0.20 U
Indeno(1,2,3-cd)pyrene	non-SIM	9.21E-02	10 UJ	10 UJ
Indeno(1,2,3-cd)pyrene	SIM	9.21E-02	0.20 U	0.20 U
Naphthalene	non-SIM	6.20E+00	5.0 U	5.0 U
Naphthalene	non-SIM	6.20E+00	10 UJ	10 UJ
Naphthalene	SIM	6.20E+00	0.20 U	0.20 U

**LOU 55 Table 17 (continued)**  
**Groundwater Characterization Data - SVOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A <sup>1</sup>	Ph A
Well No.			M55	M55D
Sample ID			M55	M55D
Sample Date			12/07/2006	12/07/2006
SVOCs	Analytic Method	MCL <sup>2</sup> ug/L	ug/L	ug/L
Nitrobenzene	non-SIM	3.40E+00	10 U	10 U
Octachlorostyrene	non-SIM	--	10 U	10 U
Phenanthrene	non-SIM	1.80E+03 (n)	10 U	10 U
Phenanthrene	SIM	1.80E+03 (n)	0.20 U	0.20 U
Pyrene	non-SIM	1.83E+02	10 U	10 U
Pyrene	SIM	1.83E+02	0.20 U	0.20 U
Pyridine	non-SIM	3.65E+01	20 U	20 U

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.
  - (jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
  - (pp) Value for acenaphthene used as surrogate for acenaphthylene based on structural similarities.
  - (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
  - (n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.



**LOU 55 Table 18**  
**Soil Characterization Data - VOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A
Boring No.		SA20	SA20	SA20	SA20	SA20
Sample ID		SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25
Sample Depth (ft)		0.5	0.5	10	20	25
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006
VOCs	MSSL <sup>2</sup> ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Naphthalene	2.10E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1,1,2-Tetrachloroethane	7.60E+03	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1,1-Trichloroethane	1.40E+06	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1,2,2-Tetrachloroethane	9.70E+02	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1,2-Trichloroethane	2.10E+03	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1-Dichloroethane	2.30E+06	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1-Dichloroethene	4.70E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,1-Dichloropropene	1.75E+03 (gg)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2,3-Trichlorobenzene	2.60E+05 (hh)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2,3-Trichloropropane	1.60E+03	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2,4-Trichlorobenzene	2.60E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2,4-Trimethylbenzene	2.20E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2-Dibromo-3-chloropropane	2.00E+01	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2-Dichlorobenzene	3.70E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2-Dichloroethane	8.40E+02	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,2-Dichloropropane	8.50E+02	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,3,5-Trimethylbenzene	7.80E+04	5.6 U	6.2 U	5.9 U	<b>0.30 J</b>	5.9 U
1,3-Dichlorobenzene	1.40E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,3-Dichloropropane	4.10E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
1,4-Dichlorobenzene	8.10E+03	<b>12</b>	<b>9.1</b>	<b>14</b>	<b>11</b>	<b>9.0</b>
2,2-Dichloropropane	8.50E+02 (ii)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
2-Butanone	3.40E+07	11 U	12 U	12 U	11 U	12 U
2-Chlorotoluene	5.10E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
2-Hexanone	1.72E+07 (nn)	11 UJ	12 UJ	12 UJ	11 UJ	12 UJ
2-Methoxy-2-methyl-butane	--	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
4-Chlorotoluene	5.10E+05 (ww)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
4-Isopropyltoluene	--	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
4-Methyl-2-pentanone	1.70E+07	11 U	12 U	12 U	11 U	12 U
Acetone	6.00E+07	11 U	12 U	12 U	29 U	12 U
Benzene	1.60E+03	5.6 U	6.2 U	5.9 U	<b>0.37 J</b>	5.9 U
Bromobenzene	1.20E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Bromochloromethane	1.75E+03 (qq)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Bromodichloromethane	2.60E+03	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Bromoform	2.40E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Bromomethane	1.50E+04	11 U	12 U	12 U	11 U	12 UJ
Carbon tetrachloride	5.80E+02	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Chlorobenzene	5.00E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Chloroethane	7.20E+03	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ
Chloroform	5.80E+02	<b>0.52 J</b>	6.2 U	<b>0.50 J</b>	<b>0.90 J</b>	<b>0.67 J</b>
Chloromethane	1.70E+05	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ
cis-1,2-Dichloroethene	1.60E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
cis-1,3-Dichloropropene	1.75E+03 (gg)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Dibromochloromethane	2.60E+03	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Dibromomethane	5.90E+05 (xx)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U

**LOU 55 Table 18 (continued)**  
**Soil Characterization Data - VOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A
Boring No.		SA20	SA20	SA20	SA20	SA20
Sample ID		SA20-0.5	SA20-0.5D	SA20-10	SA20-20	SA20-25
Sample Depth (ft)		0.5	0.5	10	20	25
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006
VOCs	MSSL <sup>2</sup> ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Dichlorodifluoromethane	3.40E+05	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ
Ethyl t-butyl ether	7.90E+04 (kk)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Ethylbenzene	2.30E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Ethylene dibromide	7.00E+01	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Hexachlorobutadiene	2.50E+04	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
isopropyl ether	--	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Isopropylbenzene	5.80E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Methyl tert butyl ether	7.90E+04	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Methylene chloride	2.20E+04	5.6 U	6.2 U	5.9 U	5.3 U	<b>3.8 J</b>
N-Butylbenzene	2.40E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 UJ
N-Propylbenzene	2.40E+05	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ
sec-Butylbenzene	2.20E+05	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ
Styrene	1.70E+06	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
t-Butyl alcohol	--	11 UJ	12 UJ	12 UJ	11 UJ	12 UJ
tert-Butylbenzene	3.90E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Tetrachloroethene	1.70E+03	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Toluene	5.20E+05	5.6 U	6.2 U	<b>0.48 J</b>	5.3 U	5.9 U
trans-1,2-Dichloroethylene	2.00E+05	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
trans-1,3-Dichloropropene	1.75E+03 (gg)	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Trichloroethene	1.00E+02	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Trichlorofluoromethane	1.40E+06	5.6 UJ	6.2 UJ	5.9 UJ	5.3 UJ	5.9 UJ
Vinylchloride	8.60E+02	5.6 U	6.2 U	5.9 U	5.3 U	5.9 U
Xylene (Total)	2.10E+05	11 U	12 U	12 U	11 U	12 U

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
  2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (gg) Value for 1,3-dichloropropene used as surrogate for 1,1-dichloropropene, cis-1,3-dichloropropene and trans-1,3-dichloropropene based on structural similarities.
- (hh) Value for 1,2,4-trichlorobenzene used as surrogate for 1,2,3-trichlorobenzene based on structural similarities.
- (ii) Value for 1,2-dichloropropane used as surrogate for 2,2-dichloropropane based on structural similarities.
- (nn) Value for methyl isobutyl ketone used as surrogate for 2-hexanone based on structural similarities.
- (ww) Value for 2-chlorotoluene used as surrogate for 4-chlorotoluene based on structural similarities.
- (qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.
- (xx) Value for methylene bromide used as surrogate for dibromomethane based on structural similarities.
- (kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.

**LOU 55 Table 19**  
**Groundwater Characteristic Data - VOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A
Well ID		M-55	M-55D
Sample ID		M-55	M-55D
Sample Date		12/07/2006	12/07/2006
VOCs	MCL <sup>2</sup> ug/L	ug/L	ug/L
Naphthalene	6.20E+00	5.0 U	5.0 U
1,1,1,2-Tetrachloroethane	4.32E-01	5.0 U	5.0 U
1,1,1-Trichloroethane	2.00E+02	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	5.00E+00	5.0 U	5.0 U
1,1,2-Trichloroethane	5.00E+00	5.0 U	5.0 U
1,1-Dichloroethane	8.11E+02	5.0 U	5.0 U
1,1-Dichloroethene	7.00E+00	5.0 U	5.0 U
1,1-Dichloropropene	3.95E-01 gg	5.0 U	5.0 U
1,2,3-Trichlorobenzene	7.16E+00 hh	5.0 U	5.0 U
1,2,3-Trichloropropane	5.60E-03	5.0 U	5.0 U
1,2,4-Trichlorobenzene	7.00E+01	5.0 U	5.0 U
1,2,4-Trimethylbenzene	1.23E+01	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	2.00E-01	5.0 UJ	5.0 U
1,2-Dichlorobenzene	6.00E+02	<b>0.61 J+</b>	<b>0.55 J</b>
1,2-Dichloroethane	5.00E+00	5.0 UJ	5.0 U
1,2-Dichloropropane	5.00E+00	5.0 U	5.0 U
1,3,5-Trimethylbenzene	1.23E+01	5.0 U	5.0 U
1,3-Dichlorobenzene	1.83E+02	5.0 U	5.0 U
1,3-Dichloropropane	1.22E+02	5.0 U	5.0 U
1,4-Dichlorobenzene	7.50E+01	<b>0.68 J+</b>	<b>0.71 J</b>
2,2-Dichloropropane	1.65E-01 ii	5.0 U	5.0 U
2-Butanone	6.97E+03	10 U	10 U
2-Chlorotoluene	1.22E+02	5.0 U	5.0 U
2-Hexanone	2.00E+03 nn	10 U	10 UJ
2-Methoxy-2-methyl-butane	--	5.0 U	5.0 UJ
4-Chlorotoluene	1.22E+02 ww	5.0 U	5.0 U
4-Isopropyltoluene	--	5.0 U	5.0 U
4-Methyl-2-pentanone	1.99E+03	10 UJ	10 UJ
Acetone	5.48E+03	10 UJ	10 U
Benzene	5.00E+00	5.0 U	5.0 U
Bromobenzene	2.03E+01	5.0 U	<b>0.38 J</b>
Bromochloromethane	1.81E-01 qq	5.0 U	5.0 U
Bromodichloromethane	8.00E+01 r	5.0 U	<b>0.43 J</b>
Bromoform	8.00E+01 r	<b>4.4 J+</b>	<b>12 J</b>
Bromomethane	8.66E+00	10 UJ	10 U
Carbon tetrachloride	5.00E+00	5.0 U	5.0 U
Chlorobenzene	1.00E+02 o	5.0 U	5.0 U
Chloroethane	4.64E+00	5.0 U	5.0 U
Chloroform	8.00E+01 r	<b>690</b>	<b>660 J+</b>
Chloromethane	1.58E+02	5.0 U	5.0 U

**LOU 55 Table 19 (continued)**  
**Groundwater Characteristic Data - VOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A <sup>1</sup>	Ph A
Well ID		M-55	M-55D
Sample ID		M-55	M-55D
Sample Date		12/07/2006	12/07/2006
VOCs	MCL <sup>2</sup> ug/L	ug/L	ug/L
cis-1,2-Dichloroethene	7.00E+01	5.0 U	5.0 U
cis-1,3-Dichloropropene	3.95E-01 gg	5.0 U	5.0 U
Dibromochloromethane	8.00E+01 r	5.0 U	<b>0.50 J</b>
Dibromomethane	6.08E+01 xx	5.0 U	5.0 U
Dichlorodifluoromethane	3.95E+02	5.0 U	5.0 UJ
Ethyl t-butyl ether	1.10E+01 kk	5.0 U	5.0 UJ
Ethylbenzene	7.00E+02	5.0 U	5.0 U
Ethylene dibromide	--	5.0 U	5.0 U
Hexachlorobutadiene	8.62E-01	5.0 U	5.0 U
isopropyl ether	--	5.0 U	5.0 UJ
Isopropylbenzene	6.58E+02	5.0 U	5.0 U
Methyl tert butyl ether	2.00E+01 a,uu	5.0 U	5.0 U
Methylene chloride	5.00E+00	5.0 U	5.0 UJ
N-Butylbenzene	2.43E+02	5.0 U	5.0 U
N-Propylbenzene	2.43E+02	5.0 U	5.0 U
sec-Butylbenzene	2.43E+02	5.0 U	5.0 U
Styrene	1.00E+02	5.0 U	5.0 U
t-Butyl alcohol	--	10 UJ	10 UJ
tert-Butylbenzene	2.43E+02	5.0 U	5.0 U
Tetrachloroethene	5.00E+00	5.0 U	5.0 U
Toluene	1.00E+03	5.0 U	5.0 U
trans-1,2-Dichloroethylene	1.00E+02	5.0 U	5.0 U
trans-1,3-Dichloropropene	--	5.0 U	5.0 U
Trichloroethene	5.00E+00	<b>12 J+</b>	<b>9.9</b>
Trichlorofluoromethane	--	5.0 U	5.0 U
Vinylchloride	2.00E+00	5.0 U	5.0 U
Xylene (Total)	1.00E+04	10 U	10 UJ

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted.  
(gg) Value for 1,3-dichloropropene used as surrogate for 1,1-dichloropropene, cis-1,3-dichloropropene and trans-1,3-dichloropropene based on structural similarities.  
(hh) Value for 1,2,4-trichlorobenzene used as surrogate for 1,2,3-trichlorobenzene based on structural similarities.

**LOU 55 Table 19 (continued)**  
**Groundwater Characteristic Data - VOCs**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

**Notes (continued):**

- (ii) Value for 1,2-dichloropropane used as surrogate for 2,2-dichloropropane based on structural similarities.
- (nn) Value for methyl isobutyl ketone used as surrogate for 2-hexanone based on structural similarities.
- (ww) Value for 2-chlorotoluene used as surrogate for 4-chlorotoluene based on structural similarities.
- (qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.
- (o) See footnote (b). Listed under synonym monochlorobenzene.
- (xx) Value for methylene bromide used as surrogate for dibromomethane based on structural similarities.
- (kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.
- (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.
- (uu) NDEP, 1998. Oxygenated Fuel Corrective Action Guidance. Draft. October, 12 1998. URL [[http://ndep.nv.gov/bca/mtbe\\_doc.htm](http://ndep.nv.gov/bca/mtbe_doc.htm)].

**LOU 55 Table 20**  
**Soil Characterization Data - Long Asbestos Fibers in Respirable Soil Fraction**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Boring No.	Sample ID	Sample Date	Long Amphibole Protocol Structures s/gPM10	Long Amphibole Protocol Structures (structures/samples)	Long Chrysotile Protocol Structures s/gPM10	Long Chrysotile Protocol Structures (structures/samples)	Sampling Program
SA20	SA20	12/07/2006	2942000 U	0	2942000 U	0	Ph A <sup>1</sup>

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

**LOU 55**  
**Notes for Phase A Data Tables**

Area Affected by July 1990 Fire  
Tronox Facility - Henderson, Nevada

Blank	Not analyzed.
<b>Bold</b>	Bold values are constituents detected above the laboratory sample quantitation limit.
Gray	Grayed out values are non-detected values with the laboratory sample quantitation limits shown.
B	The result may be a false positive totally attributable to blank contamination.
D	Dissolved Metals
DO	Dissolved Oxygen
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J-	The result is an estimated quantity and the result may be biased low.
J+	The result is an estimated quantity and the result may be biased high.
JB	The result may be biased high partially attributable to blank contamination.
JK	The result is an estimated maximum possible concentration.
R	The result was rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
S	Soluble metals
T	Total Metals
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
UU	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
ml/min	Milliliters per minute
ng/kg	Nanogram per kilogram.
nm	Not measured
NTUs	Nephelometric Turbidity Units
ORP	Oxidation-reduction potential
pCi/g	PicoCuries per gram
pci/L	PicoCuries per liter
s/gPM10	Revised protocol structures per gram PM10 fraction dust.
TEF	Toxic Equivalency Factor
TEQ	Toxic Equivalent Concentration
ug/kg	Micrograms per kilogram
ug/L	Micrograms per liter.
umhos/cm	MicroSiemens per centimeter
L	Sample ID suffix indicating the sample was collected using low low-flow pumping rates (100-150 ml/min).
F	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min) and field filtered.
Z	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min).
*	No analytical data is available for this sample due to a laboratory error.
(a)	Calculated assuming 0 for non-detected congeners and 2006 toxic equivalency factors (TEFs).
(b)	Calculated assuming 1/2 detection limit as proxy for non-detected congeners and 2006 TEFs.
--	Not established