

## Summary of Available Data for LOU 64 – Koch Materials Company Site Tronox Facility – Henderson, Nevada

<b>Name of Facility:</b>	<b>Koch Materials Company Site</b>
<b>Goal of Closure:</b>	<ul style="list-style-type: none"><li>• Closure for future commercial/industrial use.</li></ul>
<b>Site Investigation Area:</b>	<ul style="list-style-type: none"><li>• Size: Approximately 470 feet by 300 feet (3.2 acres)</li><li>• Location: Approximately east-central portion of the Site, north of Avenue F and east of 5<sup>th</sup> Street.</li><li>• Current Status/Features: The Koch Materials Company Site (LOU 64) is no longer in operation. (LOU 64 is currently vacant and consists of a concrete pad and exposed soil.</li></ul>
<b>Description:</b>	<ul style="list-style-type: none"><li>• LOU 64 was used as an asphalt batch plant for highway tack coats and sealers for asphalt surfaces [Ref. 4].</li><li>• It was operated from May 1979 to May 1983 as a part of the Basic Resources Company, and from May 1983 to January 1995 as Koch Materials Company [Ref. 4].</li><li>• On-site processes involved milling asphalt cement with soap emulsifiers and other additives to make asphalt emulsion products [Ref. 4].</li><li>• Materials and products were stored in the aboveground storage tanks in the bermed areas without secondary containments [Ref. 4].</li><li>• Several storage tanks were placed directly on the soil surface and not on concrete [Ref. 4].</li><li>• Only portions of the facility were paved [Ref. 4].</li><li>• Stained soil was present around the above ground tanks [Ref. 4].</li><li>• Asphalt and oil impacted soils were excavated in March 1996. Limits of excavation were based on visual indications and/or hydrocarbon odors [Ref. 3].</li><li>• Approximately 511 tons of soil were disposed and Type II fill material was brought in to return the site to grade [Ref. 3].</li><li>• As a result of a spill to the storm sewer in June 1983, the facility cleaned up the spill from within the diked area and grounds, and excavated and capped the storm drain to prevent future spills to the storm sewer and initiated procedural changes at the facility [Ref. 4].</li><li>• LOU 60 (Acid Drain System) runs along the northern boundary of LOU 64. The system was operated from 1942 to 1976. Unknown wastes were carried by the system from off-site facilities to the west. Potential impacts to LOU 64 could occur from a possible pipeline leak.</li></ul>

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<b>Process Waste Streams Associated with LOU 64</b>	<b>Known or Potential Constituents Associated with LOU 64</b>
Fluids containing petroleum hydrocarbon-related materials including heavy oils/tars, washout of chemical tanks, and asphalt cement (overflowing during tank to tank transfer).	<ul style="list-style-type: none"> <li>• Metals</li> <li>• VOCs</li> <li>• SVOCs</li> <li>• Wet chemistry analytes</li> <li>• TPH-DRO/ORO</li> </ul>
<b>Process Waste Streams Associated with the Acid Drain System (LOU 60)</b>	
Unknown process waste streams from off-site facilities to the west were carried via the acid drain system that runs along the northern boundary of the Koch Materials Company (LOU 64).	<ul style="list-style-type: none"> <li>• Metals</li> <li>• Hexavalent chromium</li> <li>• Perchlorate</li> <li>• Wet chemistry</li> <li>• VOCs</li> <li>• SVOCs</li> <li>• TPH-DRO/ORO</li> <li>• Organochlorine pesticides</li> </ul>

**Overlapping or Adjacent LOUs:**

The following LOUs overlap or are adjacent to LOU 64:

Overlapping LOUs

- LOU 60 (Acid Drain System – Overlaps the northern (downgradient) boundary of LOU 64.

Adjacent LOUs

- LOU 35 (Former Truck Emptying /Dumping Site) – West (crossgradient) of LOU 64.
- LOU 65a (Nevada Precast Products, Green Ventures International, Buckles Construction Company, and Ebony Construction Sites) – East (crossgradient) to LOU 64.

LOUs 35 and 65a are crossgradient and are not considered to affect LOU 64; therefore, no additional chemical classes have been added to the analytical plan for LOU 64. For detailed information on the LOUs listed above, please refer to the specific LOU data package.

**LOUs Potentially Affecting Soils in LOU 64:**

- LOU 60 – Acid Drain System: The Acid Drain System carried effluent from on-site and off-site sources to the acid effluent neutralization plant. The off-site pipeline entered LOU 64 from the west and carried unknown process waste streams. As a result, the analytical plan for samples collected from LOU 64 will include analyses for hexavalent chromium, perchlorate, and OCPs.
- For detailed information please refer to the LOU 60 data package.

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#### Known or Potential Chemical Classes:

- Metals
- Hexavalent chromium (associated with LOU 60)
- Perchlorate (associated with LOU 60)
- Wet chemistry analytes
- VOCs
- SVOCs
- TPH-DRO/ORO
- Organochlorine pesticides (associated with LOU 60)

#### Known or Potential Release Mechanisms:

- Potential infiltration to subsurface soils and groundwater.
- Possible impacts to surrounding soils from surface releases.
- Documented releases included the following:
  - Numerous soil stains were observed in the tank storage area [Ref. 4].
  - In 1991, a pool of liquid resembling oil and water was observed near the northeast corner of LOU 64, approximately 30 feet northeast of several aboveground storage tanks (ASTs) [Ref. 4].
  - A large area of stained soil was present along the north side of the access road that serviced this facility. [Ref. 4 and 5].
  - In 1983, an oily sheen in Beta Ditch was traced back to this LOU. Sheen resulted from the accumulation of contaminated water from chemical solution tanks, leakage, tank washout, and overflow of asphalt cement (approximately 600 gallons) during a tank to tank transfer [Ref. 4].

#### Results of Historical Sampling:

Several rounds of soil sampling were conducted, including [Ref. 1]:

- In November 1994, 10 samples at a depth of one foot were tested for VOCs, SVOCs, TCLP metals. Three VOCs, two SVOCs, and six metals were detected.
- In 1996, 11 sample locations were tested for TPH-DRO. Seven samples exhibited detectable TPH.
- March 1996, a stockpile sample (SP-01) was tested for TPH, three metals, and VOCs. Only TPH was detected.

Analytical results are summarized: LOU 64 Table 6 (see attached).

#### Did Historical Samples Address Potential Release?

- Not completely. Historical borings were limited in depth and constituents, and were not representative of the full extent of the LOU.

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#### Summary of Phase A SAI:

##### Soil

- Boring SA10 is located within LOU 64 and was specifically sampled to evaluate this LOU [Ref. 2].

##### Groundwater

- Groundwater sample (GWSA10) was collected from Phase A boring SA10 located within LOU 64 which was specifically sampled to evaluate this LOU [Ref. 2].

Chemical classes detected in Phase A soil boring SA10:

- Metals
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs
- Dioxins/furans
- Radionuclides

As a result of the Phase A data, the Phase B analytical plan for samples collected from LOU 64 will be expanded to include analyses for dioxins/furans and radionuclides.

- Analytical results for soil and groundwater from the Phase A sampling event are summarized: LOU 64 Tables 1 through 5 and Tables 7 through 22 [Ref. 2] (see attached).

#### Are Phase A Sample Locations in “Worst Case” Areas?

- No. The Phase A boring location did not evaluate areas where ASTs or processing areas were located.

#### Is Phase B Investigation Recommended?

- Yes

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

- The Phase B investigation of LOU 64 consists of collecting soil samples from twelve (12) locations:
  - Nine (9) borings will be drilled within the boundaries of the LOU;
  - two (2) borings will be drilled north (downgradient) of the LOU; and
  - one (1) boring will be drilled east (crossgradient) from the LOU.
  - All 12 borings along with the analytical program to evaluate soil samples from LOU 64 are listed on **Table A – Soil Sampling and Analytical Plan for LOU 64.**
- Soil sample locations consist of both judgmental and randomly-placed locations.
- Judgmental sample locations:

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- Designed to evaluate soil for known or potential chemical classes associated with LOU 64, based on the known process waste streams; and
- Ten (10) sample locations (SA46, SA47, SA50 (located in Area II), SA54 (located in Area II), SA55, SA176, SA180, SA181, SA182 and SA183) are Judgmental locations.
- Random sample locations:
  - Designed to assess whether unknown constituents associated with LOU 64 are present; and
  - Two (2) sample locations (RSAO3 and RSAO4) are randomly-placed locations.

### Proposed Phase B Constituents List for Soils:

Both Judgmental and Random sample locations will be analyzed for the following constituents:

- 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 64 consists of collecting groundwater samples from five locations to evaluate local groundwater conditions and as part of site-wide evaluation of constituent trends in groundwater.

- One (1) well (M-124) within the boundaries of LOU 64 will be sampled.
- Two (2) wells (M-128 and M-76) will be sampled north (downgradient) from LOU 64. Well M-76 is located in Area II.
- Two (2) wells (M-93 and TR-6) will be sampled south (upgradient) from LOU 64.
- All five wells along with the analytical program to evaluate groundwater samples associated with LOU 64 are listed on **Table B – Groundwater Sampling and Analytical Plan for LOU 64.**

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### 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:

Two (2) soil gas samples will be collected to evaluate area conditions for the presence of vapor-phase VOCs in the vadose zone.

- SG33 will be located within LOU 64 to assess the area of the former Asphalt Batch Plant and the VOCs from a groundwater source as indicated by Phase A Well SA10 (300 µg/L Chloroform/2.1J µg/L TCE)
- SG62 will be placed within LOU 64 to investigate the acid drain system as a potential VOC source and as an eastward stepout for borings is located along the west property boundary.

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, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
3. Kerr-McGee, 1996b, Response to Letter of Understanding, Henderson, Nevada, October 1996.
4. Kleinfelder, 1993, Environmental Conditions Assessment, Kerr-McGee Chemical Corporation, Henderson, Nevada Facility, April 15, 1993 (Final).

**Summary of Available Data for LOU 64 – Koch Materials Company Site**  
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**LOU Map**



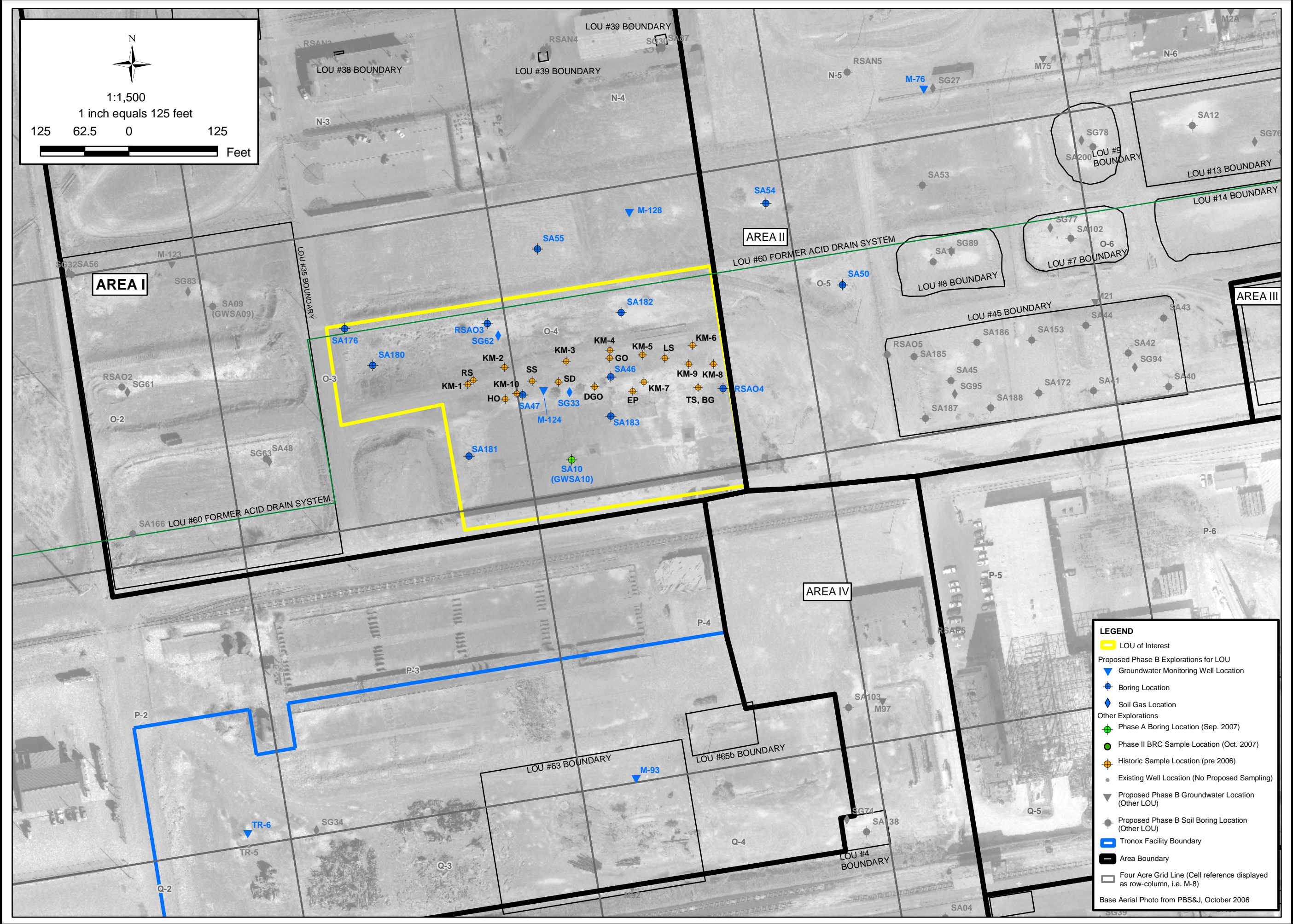
N



1:1,500  
1 inch equals 125 feet

125   62.5   0   125

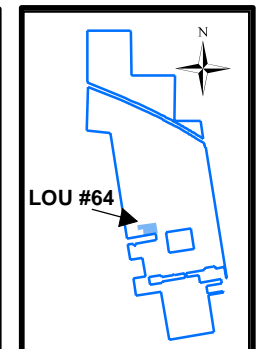
Feet



**LEGEND**

- LOU of Interest
- 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 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)
- Tronox Facility Boundary
- Area Boundary
- Four Acre Grid Line (Cell reference displayed as row-column, i.e. M-8)

Base Aerial Photo from PBS&J, October 2006



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<b>SAMPLE LOCATIONS FOR LOU #64 KOCH MATERIALS COMPANY SITE (FORMER ASPHALT BATCH PLANT)</b>	
Phase B Source Area Investigation Tronox Facility Henderson, Nevada	
SCALE: AS SHOWN	DATE: 4/3/2008
PROJECT NUMBER: 04020-023-430	

FIGURE NUMBER:  <b>1</b>
SHEET NUMBER:  X



**Summary of Available Data for LOU 64 – Koch Materials Company Site**  
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**Sampling and Analytical Plans for LOU 64:**

- Table A – Soil Analytical Plan for LOU 64
- Table B – Groundwater Analytical Plan for LOU 64

**Table A**  
**Soil Sampling and Analytical Plan for LOU 64**  
Phase B Source Area Investigation Work Plan  
Tronox Facility - Henderson, Nevada

Grid Location	LOU Number	Phase B Boring No.	Sample ID Number	Sample Depths (ft, bgs)	Perchlorate (EPA 314.0)	Metals (EPA 6020)	Hex Cr (EPA 7199)	TPH-DRO/ORO (EPA 8016B)	TPH-GRO (EPA 8016B)	VOCs <sup>1</sup> (EPA 8260B)	Wet Chemistry <sup>2</sup>	OCPs <sup>3</sup> (8081A)	SVOCs <sup>4</sup> (EPA 8270C)	Radionuclides <sup>5</sup>	Dioxins/Furans <sup>6</sup>	Formaldehyde Titrant (EPA 8315A)	Asbestos EPA/540/R-97/028	Location Description and Characterized Area Rationale	
<b>Borings are organized by grid location as shown on Plate A - Starting point is on the northwestern most grid in Area 1 (O-3) and ending with the southeastern most grid in Area 1 (O-4).</b>																			
O-3	64	SA180	SA180-0.0	0.0														X	Boring located to evaluate soil stain in northern portion of LOU 64 (Koch Materials Asphalt Batch Plant).
O-3	64		SA180-0.5	0.5	X	X	X	X		X	X	X	X	X	X				
O-3	64		SA180-10	10	X	X	X	X		X	X	Hold	X	X	X				
O-3	64	SA181	SA181-0.0	0.0														X	Boring located to evaluate soil stain in northern portion of LOU 64 (Koch Materials Asphalt Batch Plant).
O-3	64		SA181-0.5	0.5	X	X	X	X		X	X		X	X	X				
O-3	64		SA181-10	10	X	X	X	X		X	X		X	X	X				
O-3	64		SA181-20	20	X	X	X	X		X	X		X	X	X				
O-3	64		SA181-30	30	X	X	X	X		X	X		X	X	X				
O-3	64	SA181-37	37	X	X	X	X		X	X		X	X	X					
O-3	64	RSA03	RSA03-0.0	0.0														X	Boring located to evaluate soil stain in northern portion of LOU 64 (Koch Materials Asphalt Batch Plant) and to evaluate Acid Drain System (LOU 60) from offsite property to the west.
O-3	64		RSA03-0.5	0.5	X	X	X	X		X	X	X	X	X	X				
O-3	64		RSA03-10	10	X	X	X	X		X	X	Hold	X	X	X				
O-3	64		RSA03-20	20	X	X	X	X		X	X		X	X	X				
O-3	64		RSA03-30	30	X	X	X	X		X	X		X	X	X				
O-3	64	RSA03-37	37	X	X	X	X		X	X		X	X	X					
O-3	60, 64	SA176	SA176-0.0	0.0														X	Boring located to evaluate Acid Drain System (LOU 60) pipeline.
O-3	60, 64		SA176-0.5	0.5	X	X	X	X		X	X	X	X	X	X				
O-3	60, 64		SA176-10	10	X	X	X	X		X	X	Hold	X	X	X				
O-4	64	SA46	SA46-0.0	0.0														X	Boring located to evaluate LOU 64 (Koch Materials Asphalt Batch Plant)  OCPs added to SA46 at the request of NDEP in comments to the Phase A report.
O-4	64		SA46-0.5	0.5	X	X	X	X		X	X		X	X	X				
O-4	64		SA46-10	10	X	X	X	X		X	X		X	X	X				
O-4	64		SA46-20	20	X	X	X	X		X	X		X	X	X				
O-4	64		SA46-30	30	X	X	X	X		X	X		X	X	X				
O-4	64	SA46-35	35	X	X	X	X		X	X		X	X	X					
O-4	64	SA47	SA47-0.0	0.0														X	Boring located to evaluate LOU 64 (Koch Materials Asphalt Batch Plant).
O-4	64		SA47-0.5	0.5	X	X	X	X		X	X		X	X	X				
O-4	64		SA47-10	10	X	X	X	X		X	X		X	X	X				
O-4	64		SA47-20	20	X	X	X	X		X	X		X	X	X				
O-4	64		SA47-30	30	X	X	X	X		X	X		X	X	X				
O-4	64	SA47-35	35	X	X	X	X		X	X		X	X	X					
O-4	64	SA55	SA55-0.0	0.0														X	Located as a downgradient boring to LOU 64 (Koch Materials Asphalt Batch Plant) and east step-out to and LOU 35 (former Truck Emptying/Dumping Site) to investigate for VOCs from potential offsite sources to the west and for general site coverage.
O-4	64		SA55-0.5	0.5	X	X	X	X		X	X	X	X	X	X				
O-4	64		SA55-10	10	X	X	X	X		X	X	Hold	X	X	X				
O-4	64		SA55-20	20	X	X	X	X		X	X		X	X	X				
O-4	64		SA55-30	30	X	X	X	X		X	X		X	X	X				
O-4	64	SA55-35	35	X	X	X	X		X	X		X	X	X					
O-4	64	RSA04	RSA04-0.0	0.0														X	Boring located to evaluate LOU 64 (Koch Materials Asphalt Batch Plant).
O-4	64		RSA04-0.5	0.5	X	X	X	X		X	X	X	X	X	X				
O-4	64		RSA04-10	10	X	X	X	X		X	X	Hold	X	X	X				
O-4	64		RSA04-20	20	X	X	X	X		X	X		X	X	X				
O-4	64		RSA04-30	30	X	X	X	X		X	X		X	X	X				
O-4	64	RSA04-37	37	X	X	X	X		X	X		X	X	X					
O-4	64	SA182	SA182-0.0	0.0														X	Boring located to evaluate soil stain in northern portion of LOU 64 (Koch Materials Asphalt Batch Plant).
O-4	64		SA182-0.5	0.5	X	X	X	X		X	X	X	X	X	X				
O-4	64		SA182-10	10	X	X	X	X		X	X	Hold	X	X	X				
O-4	64	SA183	SA183-0.0	0.0														X	Boring located to evaluate soil stain in northern portion of LOU 64 (Koch Materials Asphalt Batch Plant).
O-4	64		SA183-0.5	0.5	X	X	X	X		X	X		X	X	X				
O-4	64		SA183-10	10	X	X	X	X		X	X		X	X	X				
O-4	64		SA183-20	20	X	X	X	X		X	X		X	X	X				
O-4	64		SA183-30	30	X	X	X	X		X	X		X	X	X				
O-4	64	SA183-37	37	X	X	X	X		X	X		X	X	X					
<b>Number of Borings:</b>		<b>10</b>																	
<b>Number of Samples:</b>					<b>41</b>	<b>41</b>	<b>41</b>	<b>41</b>	<b>0</b>	<b>41</b>	<b>41</b>	<b>12</b>	<b>41</b>	<b>41</b>	<b>10</b>	<b>0</b>	<b>10</b>	<b>0</b>	

**Notes:**

- X Sample will be collected and analyzed.
- No sample collected under Phase B sampling program.
- TPH-DRO/ORO Total petroleum hydrocarbons - Diesel-Range Organics/Oil-Range Organics.
- 1. Samples for VOC analysis will be preserved in the field using sodium bisulfate (or DI water) and methanol preservatives per EPA Method 5035.
- 2. Includes wet chemistry parameters listed on Table 1 of the Phase B Source Area Work Plan.
- 3. Organochlorine Pesticides (includes analysis for hexachlorobenzene).
- 4. Semi-volatile Organic Compounds
- 5. Radionuclides consists of alpha spec reporting for Thorium-230/232, Uranium 234/235, Uranium-238, and beta spec for Radium-226/228 (per NDEP).
- 6. Dioxins/furans: 90% will be tested by immunoassay, 10% analyzed by HRGC/HRMS in the laboratory.
- 7. Polychlorinated biphenyls

**Table B**  
**Groundwater Sampling and Analysis Plan for LOU 64**  
Phase B Source Area Investigation Area I Work Plan  
Tronox Facility - Henderson, Nevada

Grid Location	Location Area	Monitoring Well No.	Screen Interval (ft bgs)	Well Sampled for Phase A? (y/n)	Perchlorate (EPA 314.0)	Hex Cr (EPA 7199)	Metals	VOCs1 (EPA 8260)	Wet Chemistry2	OCPs3 (EPA 8081A)	SVOCs4 (EPA 8270C)	Radio-nuclides5	Rationale
<b>Wells are organized by grid location as shown on Plate A - Starting point is on the northwestern-most grid in Area 1 (N-5) and ending with the southeastern-most grid covering Area I (P-4).</b>													
N-5	1N	M-76	34.6 - 49.3	no	X	X	X	X	X	X	X	X	Well not located within a work plan area boundary; however this well serves as a downgradient stepout for LOU 64.
O-4	1	M-124	TBD	new well	X	X	X	X	X	X	X	X	New monitoring well located to evaluate LOU 64; serve as a downgradient stepout for LOU 63; as an upgradient stepout for LOU 39; and for general site coverage.
O-4	1	M-128	TBD	new well	X	X	X	X	X	X	X	X	New monitoring well to serve as a downgradient stepout for LOUs 35 and 64; as an upgradient stepout for LOUs 39, 52, and 57; and for general site coverage.
P-2	N/A	TR-6	60-80	no	X	X	X	X	X	X	X	X	Well not located within a work plan area boundary; however this well serves as a downgradient stepout for LOU 64.
P-4	N/A	M-93	35.4-45.4	no	X	X	X	X	X	X	X	X	Well not located within a work plan area boundary; however this well serves as a downgradient stepout for LOU 64.
<b>Number of Field Samples:</b>					<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	
<b>Notes:</b>													
X	Sample will be collected and analyzed.												
1	Volatile organic compounds- samples for VOC analysis will be preserved in the field using sodium bisulfate(or DI water) and methanol preservatives per EPA method 5035												
2	Includes wet chemistry parameters listed on table 1. of the Phase B Source Area Work Plan.												
3	Organochlorine pesticides(includes analysis for hexachlorobenzene).												
4	Semi-volatile organic compounds												
5	Radionuclides consists of alpha spec reporting for Thorium-230/232, Uranium 234/235, Uranium-238, and beta spec for Radium-226/228 (per NDEP)												
1N	Well located outside (downgradient or cross-gradient) of Area 1.												
TBD	To Be Determined when well is constructed.												
nr	Not recorded in Tronox database (screen intervals to be acquired from BMI).												

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**Soil and Groundwater Characterization Data**

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LOU-specific analytes identified include:

- Wet chemistry analytes
- Dioxins/furans
- Metals
- Organochlorine pesticides
- Perchlorate
- Radionuclides
- SVOCs
- TPH
- VOCs
- Asbestos

The tables in **BOLD** below present Phase A data associated with these LOU-specific analytes.

**LOU 64 Table 1 – Soil Characterization Data – Wet Chemistry**

**LOU 64 Table 2 – Groundwater Characterization Data – Wet Chemistry**

**LOU 64 Table 3 – Soil Characterization Data – Dioxins and Dibenzofurans**

**LOU 64 Table 4 – Soil Characterization Data – Metals**

**LOU 64 Table 5 – Groundwater Characterization Data – Metals**

LOU 64 Table 6 – Soil Characterization Data – Soil Analytical Data

**LOU 64 Table 7 – Soil Characterization Data – Organochlorine Pesticides (OCP)**

**LOU 64 Table 8 – Groundwater Characterization Data – Organochlorine Pesticides (OCP)**

LOU 64 Table 9 – Soil Characterization Data – Organophosphorus Pesticides (OPP)

LOU 64 Table 10 – Groundwater Characterization Data – Organophosphorus Pesticides (OPP)

**LOU 64 Table 11 – Soil Characterization Data – PCBs**

**LOU 64 Table 12 – Groundwater Characterization Data – PCBs**

**LOU 64 Table 13 – Soil Characterization Data – Perchlorate**

**LOU 64 Table 14 – Groundwater Characterization Data – Perchlorate**

**LOU 64 Table 15 – Soil Characterization Data – Radionuclides**

**LOU 64 Table 16 – Groundwater Characterization Data – Radionuclides**

**LOU 64 Table 17 – Soil Characterization Data – SVOC**

**LOU 64 Table 18 – Groundwater Characterization Data – SVOC**

**LOU 64 Table 19 – Soil Characterization Data – TPH and Fuel Alcohols**

**LOU 64 Table 20 – Soil Characterization Data – VOCs**

**LOU 64 Table 21 – Groundwater Characterization Data – VOCs**

**LOU 64 Table 22 – Soil Characterization Data – Long Asbestos Fibers in Respirable Soil Fraction**

Notes for all tables presented at the end of the tables.



**LOU 64 Table 1**  
**Soil Characterization Data - Wet Chemistry**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.		SA10	SA10	SA10	SA10	SA10	SA10	
Sample ID		SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40	
Sample Depth (ft)		0.5	10	10	20	30	40	
Sample Date		11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	
Wet Chemistry Parameter	PRG <sup>2</sup> (mg/kg)							Units
Percent moisture	--	<b>10.0</b>	<b>9.5</b>	<b>13.2</b>	<b>25.8</b>	<b>35.6</b>	<b>32.4</b>	percent
Alkalinity (as CaCO <sub>3</sub> )	--	<b>191</b>	<b>78.1</b>	57.6 U	67.4 U	77.6 U	74.0 U	mg/kg
Bicarbonate	--	<b>488</b>	<b>385</b>	<b>494</b>	<b>143</b>	77.6 U	<b>187</b>	mg/kg
Total Alkalinity	--	<b>679</b>	<b>463</b>	<b>518</b>	<b>144</b>	<b>125</b>	<b>232</b>	mg/kg
Ammonia (as N)	--	R	R	R	R	R	R	mg/kg
Cyanide	12000	0.56 U	0.55 U	0.58 U	0.67 U	0.78 U	0.74 UJ	mg/kg
MBAS	--	4.4 U	4.5 U	4.5 U	4.5 U	6.1 U	5.9 U	mg/kg
pH (solid)	--	<b>9.3</b>	<b>8.6</b>	<b>8.9</b>	<b>8.0</b>	<b>8.2</b>	<b>8.2</b>	none
Bromide	--	2.8 U	2.8 U	2.9 U	3.4 U	3.9 U	3.7 U	mg/kg
Chlorate	--	5.6 UJ	5.5 UJ	5.8 UJ	6.7 UJ	<b>2.9 J-</b>	<b>6.0 J-</b>	mg/kg
Chloride	--	<b>74.1</b>	<b>9.0</b>	<b>11.9</b>	<b>3.8</b>	<b>6.9</b>	<b>134</b>	mg/kg
Nitrate (as N)	--	<b>0.33 J+</b>	0.22 U	0.23 U	0.27 U	<b>0.67 J+</b>	<b>1.0 J+</b>	mg/kg
Nitrite	--	<b>0.16 J</b>	0.22 U	0.23 U	0.27 U	0.31 U	R	mg/kg
ortho-Phosphate	--	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U	mg/kg
Sulfate	--	<b>79.4</b>	<b>128 J+</b>	<b>174 J+</b>	<b>13700</b>	<b>1920</b>	<b>503</b>	mg/kg
Total Organic Carbon	--	<b>9300</b>	<b>11400</b>	<b>14400</b>	<b>9000</b>	<b>12900</b>	<b>11500</b>	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).

**LOU 64 Table 2**  
**Groundwater Characterization Data - Wet Chemistry**

Tronox Facility - Henderson, Nevada  
 Koch Materials Materials Company Site

<b>Sampling Program</b>		Ph A <sup>1</sup>	
<b>Well ID</b>		SA10	
<b>Sample ID</b>		GWSA10 <sup>1.</sup>	
<b>Sample Date</b>		11/07/2006	
<b>Wet Chemistry Parameters</b>	<b>MCL<sup>2</sup> ug/l</b>		<b>Units</b>
Total Dissolved Solids	5.00E+05 j	<b>2370</b>	mg/L
Total Suspended Solids	--	<b>13700</b>	mg/L
Alkalinity (as CaCO <sub>3</sub> )	--	5.0 U	mg/L
Bicarbonate	--	<b>63.0</b>	mg/L
Total Alkalinity	--	<b>63.0</b>	mg/L
Ammonia (as N)	--	50.0 U	ug/L
MBAS	--	0.20 U	mg/L
Cyanide	2.00E+02	5.0 UJ	ug/L
pH (liquid)	--	<b>7.7 J</b>	none
Specific Conductance	--	<b>2880</b>	umhos/cm
Bromide	--	<b>0.60</b>	mg/L
Chlorate	--	<b>26.9</b>	mg/L
Chloride	2.50E+05	<b>375</b>	mg/L
Nitrate (as N)	1.00E+04	<b>6.4</b>	mg/L
Nitrite	1.00E+03	0.020 U	mg/L
ortho-Phosphate	--	<b>3.7 J</b>	mg/L
Sulfate	2.50E+05 j	<b>1090</b>	mg/L
Total Organic Carbon	--	<b>1.2 J-</b>	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.
  - (b) USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. August 2006.
  - (j) See footnote (b). Secondary Drinking Water Regulation value.

**LOU 64 Table 3  
Soil Characterization Data - Dioxins and Dibenzofurans**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

				Sampling Program	Ph A <sup>1</sup>
				Boring No.	SA10
				Sample ID	SA10-0.5
				Sample Depth (ft)	0.5
				Sample Date	11/07/2006
chemical_name:	Method	Unit	PRG <sup>2</sup> ng/kg		
Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (a) ng/kg		ng/kg	--		<b>0.14</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>0.15</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>0.269</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>0.354</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>0.126</b>
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>0.136</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	--		0.028 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>0.081</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>0.082</b>
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>0.066</b>
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>0.086</b>
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>0.089</b>
1,2,3,7,8-Pentachlorodibenzofuran	SW 846 8290	ng/kg	--		
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--		<b>0.054</b>
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>0.090</b>
2,3,4,6,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--		
2,3,4,7,8-Pentachlorodibenzofuran	8290 Screen	ng/kg	--		<b>0.039</b>
2,3,4,7,8-Pentachlorodibenzofuran	SW 846 8290	ng/kg	--		
2,3,7,8-Tetrachlorodibenzofuran	8290 Screen	ng/kg	--		<b>0.080</b>
2,3,7,8-Tetrachlorodibenzofuran	SW 846 8290	ng/kg	--		
2,3,7,8-Tetrachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	1.00E+04 h,v		0.024 U
2,3,7,8-Tetrachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	1.00E+04 h,v		
Octachlorodibenzofuran	8290 Screen	ng/kg	--		<b>0.771</b>
Octachlorodibenzofuran	SW 846 8290	ng/kg	--		
Octachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--		<b>4.401</b>

**LOU 64 Table 3 (continued)**  
**Soil Characterization Data - Dioxins and Dibenzofurans**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

<b>Sampling Program</b>				Ph A <sup>1</sup>
<b>Boring No.</b>				SA10
<b>Sample ID</b>				SA10-0.5
<b>Sample Depth (ft)</b>				0.5
<b>Sample Date</b>				11/07/2006
<b>chemical_name:</b>	<b>Method</b>	<b>Unit</b>	<b>PRG<sup>2</sup></b> ng/kg	
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,
2. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004)
  - (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 (Toxic Equivalency Factors) published by Van den Berg et al., 2006.
  - (v) USEPA, 1998. Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER

**LOU 64 Table 4  
Soil Characterization Data - Metals**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.		SA10	SA10	SA10	SA10	SA10	SA10	
Sample ID		SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40	
Sample Depth (ft)		0.5	10	10	20	30	40	
Sample Date		11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	
Metals	PRG <sup>2</sup> mg/kg							Units
Aluminum	9.21E+05 (oo)	<b>9380 J</b>	<b>8860 J</b>	<b>9140 J</b>	<b>7490 J</b>	<b>18300 J</b>	<b>17400 J</b>	mg/kg
Antimony	4.09E+02	<b>0.12 J-</b>	<b>0.16 J-</b>	<b>0.17 J-</b>	<b>0.19 J-</b>	<b>0.27 J-</b>	<b>0.30 J-</b>	mg/kg
Arsenic	1.59E+00	<b>2.5</b>	<b>3.0</b>	<b>3.7</b>	<b>12.9</b>	<b>25.3</b>	<b>21.4</b>	mg/kg
Barium	6.66E+04	<b>129 J</b>	<b>201 J</b>	<b>333 J</b>	<b>103 J</b>	<b>58.5 J</b>	<b>77.2 J</b>	mg/kg
Beryllium	1.94E+03	<b>0.49</b>	<b>0.49</b>	<b>0.49</b>	<b>0.40</b>	<b>0.78</b>	<b>0.88</b>	mg/kg
Boron	2.00E+05 (oo)	3.5 UJ	5.8 UJ	5.4 UJ	7.5 UJ	<b>29.0 J-</b>	<b>20.2 J-</b>	mg/kg
Cadmium	4.50E+02	<b>0.064</b>	<b>0.066</b>	<b>0.095</b>	<b>0.066 J</b>	<b>0.16</b>	<b>0.15</b>	mg/kg
Calcium	--	12700 U	13200 U	24900 U	<b>74900</b>	18100 U	15300 U	mg/kg
Chromium (Total)	4.48E+02	<b>10.1 J-</b>	<b>12.0 J-</b>	<b>11.2 J-</b>	<b>10.4 J-</b>	<b>25.0 J-</b>	<b>20.2 J-</b>	mg/kg
Chromium-hexavalent	6.40E+01	0.22 U	0.22 U	0.23 U	0.27 U	0.31 U	0.30 U	mg/kg
Cobalt	1.92E+03	<b>7.5 J-</b>	<b>6.6 J-</b>	<b>8.0 J-</b>	<b>5.2 J-</b>	<b>6.5 J-</b>	<b>6.4 J-</b>	mg/kg
Copper	4.09E+04	<b>12.6 J</b>	<b>14.1 J</b>	<b>16.3 J</b>	<b>15.2 J</b>	<b>19.9 J</b>	<b>21.3 J</b>	mg/kg
Iron	3.00E+05 (oo)	<b>14600 J</b>	<b>14100 J</b>	<b>14100 J</b>	<b>10900 J</b>	<b>18500 J</b>	<b>20300 J</b>	mg/kg
Lead	8.00E+02	<b>6.0</b>	<b>8.2</b>	<b>10.0</b>	<b>5.6</b>	<b>11.3</b>	<b>12.5</b>	mg/kg
Magnesium	--	9370 UJ	10500 UJ	11400 UJ	12100 UJ	<b>54100 J-</b>	<b>38900 J-</b>	mg/kg
Manganese	1.95E+04	<b>424 J+</b>	<b>284 J+</b>	<b>435 J+</b>	<b>235 J+</b>	<b>759</b>	<b>610</b>	mg/kg
Molybdenum	5.11E+03	0.41 U	0.71 U	0.80 U	0.47 U	1.1 U	0.89 U	mg/kg
Nickel	2.04E+04	<b>12.5 J</b>	<b>14.2 J</b>	<b>14.2 J</b>	<b>12.6 J</b>	<b>21.0 J-</b>	<b>22.3 J-</b>	mg/kg
Platinum	--	0.011 U	<b>0.012 J</b>	<b>0.013 J</b>	0.014 U	<b>0.018 J</b>	<b>0.026 J</b>	mg/kg
Potassium	--	1760 UJ	1770 UJ	1850 UJ	1430 UJ	3300 UJ	<b>4120 J</b>	mg/kg
Selenium	5.11E+03	0.12 U	0.12 U	0.12 U	0.15 U	0.17 U	0.16 U	mg/kg
Silver	5.11E+03	<b>0.093 J</b>	<b>0.15 J</b>	<b>0.15 J</b>	<b>0.12 J</b>	<b>0.21 J</b>	<b>0.27 J</b>	mg/kg
Sodium	--	917 UJ	738 UJ	1050 UJ	575 UJ	877 UJ	582 UJ	mg/kg
Strontium	6.12E+05 (oo)	103 UJ	<b>168 J</b>	<b>312 J</b>	<b>1100 J</b>	162 UJ	147 UJ	mg/kg
Thallium	6.75E+01	<b>0.082 J</b>	<b>0.10 J</b>	<b>0.11 J</b>	0.094 U	<b>0.33</b>	<b>0.34</b>	mg/kg
Tin	6.12E+05 (oo)	<b>0.49</b>	<b>0.59</b>	<b>0.64</b>	<b>0.47</b>	<b>0.77</b>	<b>0.89</b>	mg/kg
Titanium	3.80E+06 (oo)	<b>405 J</b>	<b>724 J</b>	<b>717 J</b>	<b>506 J</b>	<b>641 J</b>	<b>755 J</b>	mg/kg



**LOU 64 Table 4 (continued)  
Soil Characterization Data - Metals**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.		SA10	SA10	SA10	SA10	SA10	SA10	
Sample ID		SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40	
Sample Depth (ft)		0.5	10	10	20	30	40	
Sample Date		11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	
Metals	PRG mg/kg							Units
Tungsten	--	0.25 J-	0.29 J-	0.33 J-	0.50 J-	0.72 J-	0.61 J-	mg/kg
Uranium	2.04E+02	0.71 U	1.3 U	1.8 U	3.3	3.4	3.1	mg/kg
Vanadium	1.02E+03	31.6 J-	36.3 J-	39.0 J-	41.1 J-	48.2 J-	42.7 J-	mg/kg
Zinc	3.10E+05 (oo)	34.1 J-	30.3 J-	30.9 J-	25.3 J-	66.8 J-	71.6 J-	mg/kg
Mercury	3.10E+02 (t)	0.0074 U	0.0074 U	0.0077 U	0.0090 U	0.010 U	0.0099 U	mg/kg

**Notes:**

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

2. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).

(t) Value for mercury and compounds.

(oo) PRG is based on maximum (1E+05 mg/kg). Therefore, the risk-based value provided in the electronic backup to the PRG table was used.

**LOU 64 Table 5**  
**Groundwater Characterization Data - Metals**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	
Well ID:		SA10	
Sample ID		GWSA10	
Sample Depth (ft)			
Sample Date		11/07/2006	
Metals	MCL <sup>2</sup> ug/l		Unit
Aluminum	5.00E+01	j	157 UJ ug/L
Antimony	6.00E+00		<b>0.62 J-</b> ug/L
Arsenic	1.00E+01		<b>68.3</b> ug/L
Barium	2.00E+03		<b>28.5</b> ug/L
Beryllium	4.00E+00		1.8 UJ ug/L
Boron	7.30E+03	c	<b>1310 J-</b> ug/L
Cadmium	5.00E+00		0.057 U ug/L
Calcium	--		<b>237000 J</b> ug/L
Chromium (Total)	1.00E+02		56.0 UJ ug/L
Chromium-hexavalent	1.09E+02	c	<b>37.8</b> ug/L
Cobalt	7.30E+02	c	6.3 UJ ug/L
Copper	1.30E+03	p	<b>4.9 J-</b> ug/L
Iron	3.00E+02	j	188 UJ ug/L
Lead	1.50E+01	u	9.8 U ug/L
Magnesium	1.50E+05	a	<b>95600 J</b> ug/L
Manganese	5.00E+01	j	<b>14.3 J+</b> ug/L
Molybdenum	1.82E+02	c	<b>19.5</b> ug/L
Nickel	7.30E+02	c	10.3 UJ ug/L
Platinum	--		0.10 U ug/L
Potassium	--		<b>14100 J-</b> ug/L
Selenium	5.00E+01		<b>2.9 J</b> ug/L
Silver	1.00E+02	j	0.20 U ug/L
Sodium	--		<b>308000 J</b> ug/L
Strontium	2.19E+04	c	<b>5350 J</b> ug/L
Thallium	2.00E+00		6.4 U ug/L
Tin	2.19E+04	c	0.20 UJ ug/L
Titanium	1.46E+05	c	<b>4.8</b> ug/L
Tungsten	--		<b>1.2 J-</b> ug/L
Uranium	3.00E+01		<b>6.2 J</b> ug/L
Vanadium	3.65E+01	c	<b>20.1 J-</b> ug/L
Zinc	5.00E+03	j	20.0 UJ ug/L
Mercury	2.00E+00		0.093 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.
  - (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.
  - (b) USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. August 2006.
  - (c) Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater (October, 2004).
  - (j) See footnote (b). 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.

**LOU 64 Table 6**  
**Soil Characterization Data - Summary of Soil Analytical Data**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sample Analyzed for: VOCs and SVOCs  
 Sample Matrix: **Soil**  
 Sample Analysis by: GTEL Environmental Laboratories, Inc., Concord, CA

Sample #	Date	Depth (ft)	VOCs (µg/kg) EPA Method 8240				SVOCs (µg/kg) EPA Method 8270		
			Methylene Chloride	Acetone	Total Xylenes	All Others	Hexachloro-benzene	2, 4, 6-Trichloro-phenol	All Others
BG-1	11/3/1994	0.5-1	<5	<50	<10	ND	1200	950	ND
TS-1	11/3/1994	0.5-1	<5	<50	<10	ND	1700	1000	ND
LS-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
EP-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
DGO-1	11/3/1994	0.5-1	<5	81 <sup>1</sup>	<10	ND	<300	<300	ND
DGO-2	11/3/1994	1.5-2	9.8 <sup>1</sup>	54 <sup>1</sup>	10	ND	<300	<300	ND
SD-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
SS-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
RS-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
HO-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
GO-1	11/3/1994	0.5-1	<5	<50	<10	ND	<300	<300	ND
<b>Detection Limit</b>			5	50	10	various	300	300	various
<b>PRG<sup>2</sup> mg/kg</b>			2.05E+01	5.43E+04	9.00E+02 (mm)	--	1.08E+00	--	--

**Notes:**

µg/kg = micrograms per kilogram  
 VOCs = Volatile organic compounds

ND = Not determined  
 SVOCs = Semi-volatile organic compounds  
 < = not detected above the respective PQL.

- Methylene chloride and acetone are common laboratory contaminants. Through the use of system blanks the instrument was verified to be free of target contaminants.
- U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).

**Source:** Canonie Environmental, 1995: Phase II Environmental Site Assessment, Koch Material Company, Final Report January 1995 **and**

**\* Analytes and detection limits for VOC's that were non-detect (µg/kg):**

Analyte	Reporting Limit (RL)	Analyte	RL	Analyte	RL
Chloromethane	10	1,1,1-Trichloroethane	5	4-Methyl-2-Pentanone	20
Bromomethane	10	Carbon Tetrachloride	5	2-Hexanone	20
Vinyl Chloride	10	Bromodichloromethane	5	1,1,2,2-Tetrachloroethane	5
Chloroethane	10	Vinyl Acetate	50	Tetrachloroethene (PCE)	5
Methylene Chloride	5	1,2-Dichloropropane	5	Toluene	5
Acetone	50	cis-1,3-Dichloropropene	5	Chlorobenzene	5

**LOU 64 Table 6 (continued)**  
**Soil Characterization Data - Summary of Soil Analytical Data**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Carbon Disulfide	5	Trichloroethene (TCE)	5	Ethyl benzene	5
1, 1-Dichloroethene	5	1,1,2-Trichloroethane	5	Styrene	5
1,1-Dichloroethane	5	Benzene	5	1,2-Dichlorobenzene	10
1,2-Dichloroethene	5	Dibromochloromethane	5	1,3-Dichlorobenzene	10
Chloroform	5	trans-1,3-Dichloropropene	5	1,4-Dichlorobenzene	10
1,2-Dichloroethane	5	2-Chloroethylvinyl ether	10	Trichlorofluoromethane	5
2-Butanone	20	Bromoform	5	Total Xylenes	10

**\* Analytes and detection limits for SVOC's that were non-detect (µg/kg):**

<u>Analyte</u>	<u>Reporting Limit (RL)</u>	<u>Analyte</u>	<u>RL</u>	<u>Analyte</u>	<u>RL</u>
Bis (2-chloroethyl) ether	300	Acenaphthene	300	Benzo (k) fluoranthene	300
1,3-Dichlorobenzene	300	Dibenzofuran	300	Benzo (a) pyrene	300
1,4-Dichlorobenzene	300	2,4-Dinitrotoluene	300	Indeno (1,2,3-c,d) pyrene	300
1,2-Dichlorobenzene	300	Diethyl phthalate	300	Dibenzo (a,h) anthracene	300
Bis (2-chloroisopropyl) eth	300	4-Chlorophenyl phenyl e	300	Benzo (g,h,i) perylene	300
N-Nitroso-di-N-propylamine	300	Fluorene	300	Phenol	300
Hexachloroethane	300	4-Nitroaniline	1500	2-Chlorophenol	300
Nitrobenzene	300	N-Nitrosodiphenylamine	300	Benzyl alcohol	300
Isophorone	300	4-Bromophenyl phenyl e	300	2-Methylphenol	300
Bis (2-chloroethoxy) meth	300	Hexachlorobenzene	300	4-Methylphenol	300
<u>Analyte</u>	<u>Reporting Limit (RL)</u>	<u>Analyte</u>	<u>RL</u>	<u>Analyte</u>	<u>RL</u>
1,2,4-Trichlorobenzene	300	Phenanthrene	300	2-Nitrophenol	300
Naphthalene	300	Anthracene	300	2,4-Dimethylphenol	300
4-Chloroaniline	300	Di-n-butyl phthalate	300	Benzoic Acid	1500
Hexachlorobutadiene	300	Fluoranthene	300	2,4-Dichlorophenol	300
2-Methylnaphthalene	300	Pyrene	300	4-Chloro-3-methylphenol	300
Hexachlorocyclopentadiene	300	Butylbenzylphthalate	300	2,4,6-Trichlorophenol	300
2-Chloronaphthalene	300	3,3-Dichlorobenzidine	600	2,4-Dinitrophenol	1500
2-Nitroaniline	1500	Benz (a) anthracene	300	4-Nitrophenol	1500
Dimethyl phthalate	300	Bis (2-ethylhexyl) phthal	300	4,6-Dinitro-2-methylphenol	1500
2,6-Dinitrotoluene	300	Chrysene	300	Pentachlorophenol	1500
Acenaphthylene	300	Di-n-octyl phthalate	300	2,4,5-Trichlorophenol	1500
3-Nitroaniline	1500	Benzo (b) fluoranthene	300		

**LOU 64 Table 6 (continued)**  
**Soil Characterization Data - Summary of Soil Analytical Data**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sample Analyzed for: Metals											
Sample Matrix: <b>Soil</b>											
Sample Analysis by: GTEL Environmental Laboratories, Inc., Concord, CA											
Sample #	Date	Depth (ft)	TCLP METALS (mg/kg) EPA Method 6010								
			As <sup>a</sup>	Ba	Cd	Cr	Pb	Mn	Hg <sup>b</sup>	Se	Ag
BG-1	11/3/1994	0.5-1	33	43	13	29	30	57	<0.1	32	5
TS-1	11/3/1994	0.5-1	1.3	13	<0.5	<1	5	29	<0.1	<5	<1
LS-1	11/3/1994	0.5-1	1.5	100	<0.5	14	7	410	<0.1	<5	<1
EP-1	11/3/1994	0.5-1	2.1	150	<0.5	18	15	430	<0.1	<5	<1
DGO-1	11/3/1994	0.5-1	32	90	<0.5	17	14	470	<0.1	<5	<1
DGO-2	11/3/1994	1.5-2	5.9	100	<0.5	13	71	1100	<0.1	<5	<1
SD-1	11/3/1994	0.5-1	2.8	120	<0.5	12	7	190	<0.1	<5	<1
SS-1	11/3/1994	0.5-1	2.5	110	<0.5	14	6	350	<0.1	<5	<1
RS-1	11/3/1994	0.5-1	2.8	140	<0.5	17	7	550	<0.1	<5	<1
HO-1	11/3/1994	0.5-1	1.9	140	<0.5	16	8	360	<0.1	<5	<1
GO-1	11/3/1994	0.5-1	2.1	98	<0.5	11	9	350	<0.1	<5	<1
	<b>Detection Limit</b>		0.5	1	0.5	1	5	0.5	0.1	5	1
		<b>PRG<sup>1</sup> mg/kg</b>	1.59E+00	6.66E+04	4.50E+02	4.48E+02	8.00E+02	1.95E+04	3.10E+02 (t)	5.11E+03	5.11E+03

**Notes:**

mg/kg = milligrams per kilogram

As <sup>a</sup> = Arsenic using EPA Method 7060

Ba = Barium

Cd = Cadmium

Cr = Chromium

Pb = Lead

Mn = Manganese

Hg <sup>b</sup> = Mercury using EPA Method 7471

Se = Selenium

Ag = Silver

< = not detected above the respective PQL.

**Source:** Canonie Environmental, 1995: Phase II Environmental Site Assessment, Koch Material Company, Final Report January 1995  
**and from** Western Technology, 1996b: Subsurface Soil Exploration, Former Koch Materials Facility, BMI Industrial Complex, Henderson, Nevada, April 1996. **Also from** Kerr-McGee, 1996b, Response to LOU Comments.

1. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004)



**LOU 64 Table 6 (continued)**  
**Soil Characterization Data - Summary of Soil Analytical Data**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sample Analyzed for: TPH-8015 Modified (M)-diesel			
Sample Matrix: <b>Soil</b>			
Sample Analysis: Alpha Analytical, Inc, Las Vegas, Nevada			
Sample #	Date	Depth (ft)	TPH-d (mg/kg) EPA Method 8015
KM-1	3/29/1996	1-2	92*
KM-2	3/29/1996	1-2	19*
KM-3-1	3/29/1996	1-2	<10
KM-3-5	3/29/1996	5-6	<10
KM-4-1	3/29/1996	1-2	<10
KM-4-5	3/29/1996	5-6	<10
KM-5	3/29/1996	1-2	<10
KM-6-1	3/29/1996	1-2	<10
KM-6-5	3/29/1996	5-6	<10
KM-7-1	3/29/1996	1-2	25*
KM-7-5	3/29/1996	5-6	<10
KM-8-1	3/29/1996	1-2	<10
KM-8-5	3/29/1996	5-6	18*
KM-9-1	3/29/1996	1-2	190*
KM-9-5	3/29/1996	5-6	<10
KM-10	3/29/1996	1-2	17*
KM-11	3/30/1996	1-2	32*
<b>Detection Limit</b>			10
<b>PRG<sup>1</sup> mg/kg</b>			1.00E+02 (vv)

**Notes:**

1. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).

TPH-o = Total Petroleum Hydrocarbons, in the range diesel  
 mg/kg = milligrams per kilogram

\* =TPH in the range of light oil and motor oil (C18-C24). Detection limit is 50 mg/kg.

< = not detected above the respective PQL.

**Source:** Kerr-McGee, 1996b, Response to LOU Comments. Canonic Environmental, 1995: Phase II Environmental Site Assessment, Koch Material Company, Final Report January 1995. Western Technology,

**LOU 64 Table 6 (continued)**  
**Soil Characterization Data - Summary of Soil Analytical Data**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sample Analyzed for: TPH, TCLP Metals, & VOCs						
Sample Matrix: <b>Stockpiled soil sample. Analysis for disposal characterization.</b>						
Sample Analysis by: Nevada Environmental Laboratory						
SAMPLE #	Date	TPH-o (mg/kg) EPA Method 8015-	Metals (mg/l) Only 3 Metals analyzed			VOCs* (µg/kg)
			Cadmium	Chromium	Lead	
SP-01	3/18/1996	9000	<0.010	<0.010	<0.05	No Detects
Method Blank	3/18/1996	<10	<0.010	<0.010	<0.05	No Detects
<b>Detection Limit</b>		10	0.01	0.01	0.05	Varied
<b>PRG<sup>1</sup> mg/kg</b>		1.00E+02	4.50E+02	4.48E+02	8.00E+02	

**Notes:**

- U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).  
 8015-M = Method 8015 Modified    mg/l = milligrams per liter    < = not detected above the respective PQL  
 VOCs = Volatile Organic Compounds    TPH-o = Total Petroleum Hydrocarbons, in the range of Oil (C<sub>18</sub>-C<sub>24</sub>).  
 mg/kg = milligrams per kilogram    Detection limit is 50 mg/kg.  
 µg/kg = micrograms per kilogram    From Kerr-McGee, 1996b, Response to LOU Comments

\* **Analytes and detection limits for VOC's that were non-detect**      Sample diluted 1:25 due to matrix interference.

Analyte	Reporting Limit (RL)	Analyte	RL	Analyte	RL
Acetone	1200	1, 1-Dichloroethane	120		
Benzene	120	1,2-Dichloroethane	120	1,1,2,2-Tetrachloroethane	120
Bromodichloromethane	120	1, 1-Dichloroethene	120	Toluene	120
Bromoform	120	cis-1,2-Dichloroethene	120	1,1,1-Trichloroethane	120
Bromomethane	120	trans-1,2-Dichloroethene	120	1,1,2-Trichloroethane	120
2-Butanone	620	1,2-Dichloropropane	120	Trichloroethene (TCE)	120
Carbon Disulfide	120	cis-1,3-Dichloropropene	120	Vinyl Acetate	120
Carbon Tetrachloride	120	trans-1,3-Dichloropropene	120	Vinyl Chloride	120
Chlorobenzene	120	Ethyl benzene	120	m, p-Xylene	120
Chloroethane	120	2-Hexanone	620	o-Xylene	120
Chloroform	120	Methylene Chloride	620	1,3-Dichlorobenzene	120
Chloromethane	120	4-Methyl-2-Pentanone	620	1,4-Dichlorobenzene	120
2-Chloroethylvinyl ether	120	Styrene	120	1,2-Dichlorobenzene	120
Dibromochloromethane	120	Tetrachloroethene (PCE)	120		

**LOU 64 Table 7**  
**Soil Characterization Data - Organochlorine Pesticides (OCP)**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	
Boring No.		SA10	
Sample ID		SA10-0.5	
Sample Depth (ft)		0.5	
Sample Date		11/07/2006	
Organochlorine Pesticides	PRG <sup>2</sup> mg/kg		Unit
4,4'-DDD	9.95E+00	0.0019 U	mg/kg
4,4'-DDE	7.02E+00	0.0019 U	mg/kg
4,4'-DDT	7.02E+00	0.0019 U	mg/kg
Aldrin	1.00E-01	0.0019 U	mg/kg
Alpha-BHC	3.59E-01 (bbb)	0.0019 U	mg/kg
Alpha-chlordane	6.47E+00 (y)	0.0019 U	mg/kg
Beta-BHC	1.26E+00 (bbb)	0.0019 U	mg/kg
Delta-BHC	3.59E-01 (z)	0.0019 U	mg/kg
Dieldrin	1.10E-01	0.0019 U	mg/kg
Endosulfan I	3.70E+03 (aa)	0.0019 U	mg/kg
Endosulfan II	3.70E+03 (aa)	0.0019 U	mg/kg
Endosulfan Sulfate	3.70E+03 (aa)	0.0019 U	mg/kg
Endrin	1.85E+02	0.0019 U	mg/kg
Endrin Aldehyde	1.85E+02 (k)	0.0019 U	mg/kg
Endrin Ketone	1.85E+02 (k)	0.0019 U	mg/kg
Gamma-BHC (Lindane)	1.74E+00 (bbb)	0.0019 U	mg/kg
Gamma-Chlordane	6.47E+00 (y)	0.0019 U	mg/kg
Heptachlor	3.83E-01	0.0019 U	mg/kg
Heptachlor Epoxide	1.89E-01	0.0019 U	mg/kg
Methoxychlor	3.08E+03	0.0037 U	mg/kg
Tech-Chlordane	6.47E+00	0.011 U	mg/kg
Toxaphene	1.57E+00	0.056 U	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
  2. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).
- (k) Value for endrin used as surrogate for endrin aldehyde and endrin ketone due to  
 (y) Value for chlordane (technical) used as surrogate for alpha-chlordane and gamma-  
 (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  
 (bbb) BHC listed as HCH in the PRG table.

**LOU 64 Table 8**  
**Groundwater Characterization Data - Organochlorine Pesticides (OCP)**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program			Ph A <sup>1</sup>	
Well ID			SA10	
Sample ID			GWSA10 <sup>1</sup>	
Sample Date			11/07/2006	
Organochlorine Pesticides	MCL <sup>2</sup>			Unit
4,4'-DDD	2.80E-01	c	0.050 U	ug/L
4,4'-DDE	1.98E-01	c	0.050 U	ug/L
4,4'-DDT	1.98E-01	c	0.050 U	ug/L
Aldrin	4.00E-03	c	0.050 U	ug/L
Alpha-BHC	1.10E-02	c, (bbb)	0.050 U	ug/L
Alpha-chlordane	2.00E+00	(l)	0.050 U	ug/L
Beta-BHC	3.74E-02	c, (bbb)	0.050 U	ug/L
Delta-BHC	1.10E-02	c, (z)	0.050 U	ug/L
Dieldrin	4.20E-03	c, (z)	0.050 U	ug/L
Endosulfan I	2.19E+02	c, (aa)	0.050 U	ug/L
Endosulfan II	2.19E+02	c, (aa)	0.050 U	ug/L
Endosulfan Sulfate	2.19E+02	c, (aa)	0.050 U	ug/L
Endrin	2.00E+00		0.050 U	ug/L
Endrin Aldehyde	1.09E+01	c, (k)	0.050 U	ug/L
Endrin Ketone	1.09E+01	c, (k)	0.050 U	ug/L
Gamma-BHC (Lindane)	2.00E-01		0.050 U	ug/L
Gamma-Chlordane	2.00E+00	(l)	0.050 U	ug/L
Heptachlor	4.00E-01		0.050 U	ug/L
Heptachlor Epoxide	2.00E-01		0.050 U	ug/L
Methoxychlor	4.00E+01		0.10 UJ	ug/L
Tech-Chlordane	2.00E+00	(l)	0.50 U	ug/L
Toxaphene	3.00E+00		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
  - (c) Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater (October, 2004).
  - (k) Value for endrin used as surrogate for endrin aldehyde and endrin ketone due to structural similarities.
  - (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.
  - (bbb) BHC listed as HCH in the PRG table.

**LOU 64 Table 9**  
**Soil Characterization Data - Organophosphorus Pesticides (OPPs)**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	
Boring No.		SA10	
Sample ID		SA10-0.5	
Sample Depth (ft)		0.5	
Sample Date		11/07/2006	
OPPs	PRG <sup>2</sup>		Unit
Azinphos-methyl	--	0.014 U	mg/kg
Bolstar	--	0.014 U	mg/kg
Chlorpyrifos	1.85E+03	0.022 U	mg/kg
Coumaphos	--	0.014 U	mg/kg
Demeton-O	2.46E+01 (cc)	0.043 UJ	mg/kg
Demeton-S	2.46E+01 (cc)	0.017 UJ	mg/kg
Diazinon	5.54E+02	0.024 UJ	mg/kg
Dichlorvos	5.94E+00	0.026 U	mg/kg
Dimethoate	1.23E+02	0.024 U	mg/kg
Disulfoton	2.46E+01	0.053 U	mg/kg
EPN	6.16E+00	0.014 UJ	mg/kg
Ethoprop	--	0.017 U	mg/kg
Ethyl Parathion	1.54E+02 (tt)	0.020 U	mg/kg
Famphur	--	0.014 U	mg/kg
Fensulfothion	--	0.014 U	mg/kg
Fenthion	1.50E+02 (ff)	0.037 U	mg/kg
Malathion	1.23E+04	0.017 U	mg/kg
Merphos	1.85E+01	0.033 U	mg/kg
Methyl parathion	1.54E+02	0.022 U	mg/kg
Mevinphos	--	0.017 U	mg/kg
Naled	1.23E+03	0.037 UJ	mg/kg
Phorate	1.23E+02	0.022 U	mg/kg
Ronnel	3.08E+04	0.020 UJ	mg/kg
Stirphos	--	0.017 U	mg/kg
Sulfotep	3.08E+02	0.022 U	mg/kg
Thionazin	--	0.020 U	mg/kg
Tokuthion	--	0.022 U	mg/kg
Trichloronate	--	0.022 U	mg/kg

**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.  
 (ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.  
 (tt) Value for parathion-methyl used as surrogate for parathion-ethyl due to structural similarities.



LOU 64 Table 10

Groundwater Characterization Data - Organophosphorus Pesticides (OPPs)

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	
Well ID		SA10	
Sample ID		GWSA10 <sup>1</sup>	
Sample Date		11/07/2006	
OPPs	MCL <sup>2</sup>		Unit
Azinphos-methyl	--	2.5 U	ug/L
Bolstar	--	1.0 U	ug/L
Chlorpyrifos	1.09E+02 c	1.0 U	ug/L
Coumaphos	--	1.0 U	ug/L
Demeton-O	1.46E+00 c,(cc)	1.0 U	ug/L
Demeton-S	1.46E+00 c,(cc)	1.0 UJ	ug/L
Diazinon	3.28E+01	1.0 UJ	ug/L
Dichlorvos	2.32E-01	1.0 UJ	ug/L
Dimethoate	7.30E+00	1.0 U	ug/L
Disulfoton	1.46E+00	0.50 U	ug/L
EPN	3.65E-01	1.2 UJ	ug/L
Ethoprop	--	0.50 U	ug/L
Ethyl Parathion	9.12E+00 c,(tt)	1.0 U	ug/L
Famphur	--	1.0 U	ug/L
Fensulfothion	--	2.5 UJ	ug/L
Fenthion	9.10E+00 c,(ff)	2.5 U	ug/L
Malathion	7.30E+02	1.2 U	ug/L
Merphos	1.09E+00	5.0 U	ug/L
Methyl parathion	9.12E+00	4.0 U	ug/L
Mevinphos	--	6.2 U	ug/L
Naled	7.30E+01	1.0 UJ	ug/L
Phorate	7.30E+00	1.2 U	ug/L
Ronnel	1.82E+03	10 UJ	ug/L
Stirphos	--	3.5 U	ug/L
Sulfotep	1.82E+01	1.5 U	ug/L
Thionazin	--	1.0 U	ug/L
Tokuthion	--	1.6 U	ug/L
Trichloronate	--	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.
  - (c) Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater (October, 2004).
  - (cc) Value for demeton used as surrogate for demeton-o and demeton-s based on structural similarities.
  - (ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.
  - (tt) Value for parathion-methyl used as surrogate for parathion-ethyl due to structural similarities.

**LOU 64 Table 11  
Soil Characterization Data - PCBs**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring ID		SA10	SA10	SA10	SA10	SA10	SA10	
Sample ID		SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40	
Sample Depth (ft)		0.5	10	10	20	30	40	
Sample Date		11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	
PCBs	PRG <sup>2</sup> mg/kg							Unit
Aroclor-1016	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg
Aroclor-1221	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg
Aroclor-1232	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg
Aroclor-1242	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg
Aroclor-1248	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg
Aroclor-1254	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg
Aroclor-1260	1.00E+01 (i)	0.037 U	0.036 U	0.038 U	0.044 U	0.051 U	0.049 U	mg/kg

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).  
(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 64 Table 12  
Groundwater Characterization Data - PCBs**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	
Well ID		SA10	
Sample ID		GWSA10 <sup>1</sup>	
Sample Date		11/07/2006	
PCBs	MCL <sup>2</sup> ug/L		Unit
Aroclor-1016	5.00E-01 (bb)	0.10 U	ug/L
Aroclor-1221	5.00E-01 (bb)	0.10 U	ug/L
Aroclor-1232	5.00E-01 (bb)	0.10 U	ug/L
Aroclor-1242	5.00E-01 (bb)	0.10 U	ug/L
Aroclor-1248	5.00E-01 (bb)	0.10 U	ug/L
Aroclor-1254	5.00E-01 (bb)	0.10 U	ug/L
Aroclor-1260	5.00E-01 (bb)	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 64 Table 13  
Soil Characterization Data - Perchlorate**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

<b>Boring ID</b>	<b>Sample ID</b>	<b>Sample Depth (ft)</b>	<b>Sample Date</b>	<b>Perchlorate ug/kg</b>	<b>PRG<sup>1</sup> (mg/kg)</b>	<b>Sampling Program</b>
SA10	SA10-0.5	0.5	11/07/2006	<b>209</b>	1.00E+02	Ph A <sup>2</sup>
	SA10-10	10	11/07/2006	<b>227</b>	1.00E+02	Ph A
	SA10-10D	10	11/07/2006	<b>226</b>	1.00E+02	Ph A
	SA10-20	20	11/07/2006	<b>280</b>	1.00E+02	Ph A
	SA10-30	30	11/07/2006	<b>2250</b>	1.00E+02	Ph A
	SA10-40	40	11/07/2006	<b>656</b>	1.00E+02	Ph A

**Notes:**

1. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).
2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

**LOU 64 Table 14**  
**Groundwater Characterization Data - Perchlorate**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Well ID Number	Sample ID	Sample Date	Perchlorate	Units	PRG <sup>1</sup> mg/kg	Sampling Program
SA10	GWSA10 <sup>1</sup>	11/07/2006	1790	ug/L	1.80E+01 (a),(m)	Ph A <sup>2</sup>

**Notes:**

1. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).
  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 64 Table 15**  
**Soil Characterization Data - Radionuclides**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

				Ra-226	Ra-228	Th-228	Th-230	Th-232	U-233/234	U-235/236	U-238	
				(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	
			PRG <sup>1</sup>	2.60E-02	1.50E-01	2.55E-01	2.02E+01	1.90E+01	3.24E+01	3.98E-01	1.80E+00	
Boring ID Number	Sample ID	Sample Depth (ft)	Date									Sampling Program
SA10	SA10-0.5	0.5	11/07/2006	<b>1.1 J</b>	<b>1.81</b>							Ph A <sup>2</sup>
	SA10-10	10	11/07/2006	<b>0.978 J</b>	<b>1.69</b>							Ph A
	SA10-10D	10	11/07/2006	<b>0.759 J</b>	<b>1.6</b>							Ph A
	SA10-20	20	11/07/2006	<b>1.31 J</b>	<b>0.812 J</b>							Ph A
	SA10-30	30	11/07/2006	<b>1.4 J</b>	<b>1.14</b>							Ph A
	SA10-40	40	11/07/2006	<b>1.58 J</b>	<b>1.42</b>							Ph A

**Notes:**

1. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).
2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

**LOU 64 Table 16**  
**Groundwater Characterization Data - Radionuclides**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

			<b>Ra-226</b>	<b>Ra-228</b>	<b>Th-228</b>	<b>Th-230</b>	<b>Th-232</b>	<b>U-233/234</b>	<b>U-235/236</b>	<b>U-238</b>	
	<b>TW PRG 1,2</b>	8.16E-04	4.58E-02	1.59E-01	5.23E-01	4.71E-01	6.74E-01	6.63E-01	5.47E-01		
<b>Well ID Number</b>	<b>Sample ID</b>	<b>Date</b>	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	<b>Sampling Program</b>
SA10	GWSA10	11/07/2006	<b>2.76 J-</b>	<b>1.96 J-</b>							Ph A <sup>3</sup>

**Notes:**

1. Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater (October, 2004).
2. USEPA, 2004. Radionuclide Toxicity and Preliminary Remediation Goals (PRGs) for Superfund. <http://epa-prgs.ornl.gov/radionuclides/download.shtml>. August 4, 2004. Soil values are the outdoor worker values; water values are the tapwater values. For radionuclides with decay chains, the PRG for the decay chain was used.
3. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

**LOU 64 Table 17**  
**Soil Characterization Data - SVOCs**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program			Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.			SA10	SA10	SA10	SA10	SA10	SA10
Sample ID			SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40
Sample Depth (ft)			0.5	10	10	20	30	40
Sample Date			11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006
SVOC	Analytical Method	PRG <sup>2</sup> mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
1,4-Dioxane	non-SIM	1.57E+02	370 U	360 U	380 U	440 U	510 U	490 U
2-Methylnaphthalene	non-SIM	1.88E+02 (ij)	370 U	360 U	380 U	440 U	510 U	490 U
2-Methylnaphthalene	SIM	1.88E+02 (ij)						
Acenaphthene	non-SIM	2.92E+04	370 U	360 U	380 U	440 U	510 U	490 U
Acenaphthene	SIM	2.92E+04						
Acenaphthylene	non-SIM	2.92E+04 (pp)	370 U	360 U	380 U	440 U	510 U	490 U
Acenaphthylene	SIM	2.92E+04 (pp)						
Anthracene	non-SIM	2.40E+05 (oo)	370 U	360 U	380 U	440 U	510 U	490 U
Anthracene	SIM	2.40E+05 (oo)						
Benz(a)anthracene	non-SIM	2.11E+00	370 U	360 U	380 U	440 U	510 U	490 U
Benz(a)anthracene	SIM	2.11E+00						
Benzo(a)pyrene	non-SIM	2.11E-01	370 U	360 U	380 U	440 U	510 UJ	490 U
Benzo(a)pyrene	SIM	2.11E-01						
Benzo(b)fluoranthene	non-SIM	2.11E+00	370 U	360 U	380 U	440 U	510 UJ	490 U
Benzo(b)fluoranthene	SIM	2.11E+00						
Benzo(g,h,i)perylene	non-SIM	2.91E+04 (w)	370 U	360 U	380 U	440 U	510 UJ	490 U
Benzo(g,h,i)perylene	SIM	2.91E+04 (w)						
Benzo(k)fluoranthene	non-SIM	2.11E+01	370 U	360 U	380 U	440 U	510 UJ	490 U
Benzo(k)fluoranthene	SIM	2.11E+01						
bis(2-Ethylhexyl)phthalate	non-SIM	1.23E+02	370 U	360 U	<b>180 J</b>	440 U	510 U	490 U
Butyl benzyl phthalate	non-SIM	1.23E+05 (oo)	370 U	360 U	380 U	440 U	510 U	490 U
Chrysene	non-SIM	2.11E+02	370 U	360 U	380 U	440 U	510 U	490 U
Chrysene	SIM	2.11E+02						
Dibenz(a,h)anthracene	non-SIM	2.11E-01	370 U	360 U	380 U	440 U	510 U	490 U
Dibenz(a,h)anthracene	SIM	2.11E-01						
Diethyl phthalate	non-SIM	4.92E+05 (oo)	370 U	360 U	380 U	440 U	510 U	490 U
Dimethyl phthalate	non-SIM	6.16E+06 (oo)	370 U	360 U	380 U	440 U	510 U	490 U



**LOU 64 Table 17 (continued)**  
**Soil Characterization Data - SVOCs**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program			Ph A	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.			SA10	SA10	SA10	SA10	SA10	SA10
Sample ID			SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40
Sample Depth (ft)			0.5	10	10	20	30	40
Sample Date			11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006
SVOC	Analytical Method	PRG mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Di-N-Butyl phthalate	non-SIM	6.16E+04	370 U	360 U	380 U	440 U	510 U	490 U
Di-N-Octyl phthalate	non-SIM	2.46E+04	370 U	360 U	380 U	440 U	510 UJ	490 U
Fluoranthene	non-SIM	2.20E+04	370 U	360 U	380 U	440 U	510 U	490 U
Fluoranthene	SIM	2.20E+04						
Fluorene	non-SIM	2.63E+04	370 U	360 U	380 U	440 U	510 U	490 U
Fluorene	SIM	2.63E+04						
Hexachlorobenzene	non-SIM	1.08E+00	370 U	360 U	380 U	440 U	510 U	490 U
Hexachlorobenzene	SIM	1.08E+00						
Indeno(1,2,3-cd)pyrene	non-SIM	2.11E+00	370 U	360 U	380 U	440 U	510 UJ	490 U
Indeno(1,2,3-cd)pyrene	SIM	2.11E+00						
Naphthalene	non-SIM	1.88E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
Naphthalene	non-SIM	1.88E+02	370 U	360 U	380 U	440 U	510 U	490 U
Naphthalene	SIM	1.88E+02						
Nitrobenzene	non-SIM	1.03E+02	370 U	360 U	380 U	440 U	510 U	490 U
Octachlorostyrene	non-SIM	--	370 U	360 U	380 U	440 U	510 U	490 U
Phenanthrene	non-SIM	2.40E+05 (n)	370 U	360 U	380 U	440 U	510 U	490 U
Phenanthrene	SIM	2.40E+05 (n)						
Pyrene	non-SIM	2.91E+04	370 U	360 U	380 U	440 U	510 U	490 U
Pyrene	SIM	2.91E+04						
Pyridine	non-SIM	6.16E+02	1800 U	1800 U	1800 U	2200 U	2500 U	2400 U

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. Preliminary Remediation Goals (PRG's) for industrial soil.
  - (n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.
  - (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
  - (jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
  - (oo) PRG is based on maximum (1E+05 mg/kg). Therefore, the risk-based value provided in the electronic backup to the PRG table was used.
  - (pp) Value for acenaphthene used as surrogate for acenaphthylene based on structural similarities.

**LOU 64 Table 18**  
**Groundwater Characterization Data - SVOCs**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program				Ph A <sup>1</sup>
Well No.				SA10
Sample ID				GWSA10
Sample Date				11/07/2006
SVOCs	Analytical Method	MCL <sup>2</sup> ug/L		ug/L
1,4-Dioxane	non-SIM	6.11E+00	c	10 U
2-Methylnaphthalene	non-SIM	6.20E+00	c,(jj)	10 U
2-Methylnaphthalene	SIM	6.20E+00	c,(jj)	
Acenaphthene	non-SIM	3.65E+02	c	10 U
Acenaphthene	SIM	3.65E+02	c	
Acenaphthylene	non-SIM	3.65E+02	c,(pp)	10 U
Acenaphthylene	SIM	3.65E+02	c,(pp)	
Anthracene	non-SIM	1.83E+03	c	10 U
Anthracene	SIM	1.83E+03	c	
Benz(a)anthracene	non-SIM	9.21E-02	c	10 U
Benz(a)anthracene	SIM	9.21E-02	c	
Benzo(a)pyrene	non-SIM	2.00E-01		10 U
Benzo(a)pyrene	SIM	2.00E-01		
Benzo(b)fluoranthene	non-SIM	9.21E-02	c	10 U
Benzo(b)fluoranthene	SIM	9.21E-02	c	
Benzo(g,h,i)perylene	non-SIM	1.83E+02	c,(w)	10 U
Benzo(g,h,i)perylene	SIM	1.83E+02	c,(w)	
Benzo(k)fluoranthene	non-SIM	9.21E-01	c	10 U
Benzo(k)fluoranthene	SIM	9.21E-01	c	
bis(2-Ethylhexyl)phthalate	non-SIM	6.00E+00		10 U
Butyl benzyl phthalate	non-SIM	7.30E+03	c	10 U
Chrysene	non-SIM	9.21E+00	c	10 U
Chrysene	SIM	9.21E+00	c	
Dibenz(a,h)anthracene	non-SIM	9.21E-03	c	10 U
Dibenz(a,h)anthracene	SIM	9.21E-03	c	
Diethyl phthalate	non-SIM	2.92E+04	c	10 U
Dimethyl phthalate	non-SIM	3.65E+05	c	10 U
Di-N-Butyl phthalate	non-SIM	3.65E+03	c	10 U
Di-N-Octyl phthalate	non-SIM	1.46E+03	c	10 U
Fluoranthene	non-SIM	1.46E+03	c	10 U
Fluoranthene	SIM	1.46E+03	c	
Fluorene	non-SIM	2.43E+02	c	10 U
Fluorene	SIM	2.43E+02	c	
Hexachlorobenzene	non-SIM	1.00E+00		10 U
Hexachlorobenzene	SIM	1.00E+00		
Indeno(1,2,3-cd)pyrene	non-SIM	9.21E-02	c	10 U
Indeno(1,2,3-cd)pyrene	SIM	9.21E-02	c	
Naphthalene	non-SIM	6.20E+00	c	5.0 U
Naphthalene	non-SIM	6.20E+00	c	10 U
Naphthalene	SIM	6.20E+00	c	
Nitrobenzene	non-SIM	3.40E+00	c	10 U
Octachlorostyrene	non-SIM	--	c	10 U
Phenanthrene	non-SIM	1.80E+03	(n)	10 U

**LOU 64 Table 18 (continued)**  
**Groundwater Characterization Data - SVOCs**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program			Ph A <sup>1</sup>
Well No.			SA10
Sample ID			GWSA10
Sample Date			11/07/2006
SVOCs	Analytical Method	MCL <sup>2</sup> ug/L	ug/L
Phenanthrene	SIM	1.80E+03 (n)	
Pyrene	non-SIM	1.83E+02 c	
Pyrene	SIM	1.83E+02 c	
Pyridine	non-SIM	3.65E+01 c	

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. USEPA values unless noted.
  - (c) Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater (October, 2004).
  - (n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.
  - (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
  - (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.

**LOU 64 Table 19  
Soil Characterization Data - TPH and Fuel Alcohols**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

				Fuel Alcohols			Total Petroleum Hydrocarbons			Sampling Program
				Ethanol	Ethylene glycol	Methanol	TPH - ORO	TPH - DRO	TPH - GRO	
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
			<b>PRG<sup>1</sup></b>	--	1.23E+06 oo	3.08E+05 oo	1.00E+02 w	1.00E+02 w	1.00E+02 w	
<b>Boring No.</b>	<b>Sample ID.</b>	<b>Sample Depth (ft)</b>	<b>Sample Date</b>							
SA10	SA10-0.5	0.5	11/07/2006				28 U	28 U	0.11 U	Ph A <sup>2</sup>
	SA10-10	10	11/07/2006				28 U	28 U	0.11 U	Ph A
	SA10-10D	10	11/07/2006				29 U	29 U	0.12 U	Ph A
	SA10-20	20	11/07/2006				34 U	34 U	0.13 U	Ph A
	SA10-30	30	11/07/2006				39 U	39 U	0.16 U	Ph A
	SA10-40	40	11/07/2006				37 U	37 U	0.15 U	Ph A

**Notes:**

1. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).
  2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
- (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
- (oo) PRG is based on maximum (1E+05 mg/kg). Therefore, the risk-based value provided in the electronic backup to the PRG table was used.

LOU 64 Table 20  
Soil Characterization Data - VOCs

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program	Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.	SA10	SA10	SA10	SA10	SA10	SA10	
Sample ID	SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40	
Sample Depth (ft)	0.5	10	10	20	30	40	
Sample Date	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	
VOCs	PRG <sup>2</sup> mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	
Naphthalene	1.88E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1,1,2-Tetrachloroethane	7.28E+00	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1,1-Trichloroethane	6.90E+03 (mm)	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1,2,2-Tetrachloroethane	9.29E-01	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1,2-Trichloroethane	1.61E+00	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1-Dichloroethane	1.74E+03	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1-Dichloroethene	4.13E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,1-Dichloropropene	1.76E+00 (gg)	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2,3-Trichlorobenzene	2.16E+02 (hh)	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2,3-Trichloropropane	7.60E-02 (yy)	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2,4-Trichlorobenzene	2.16E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2,4-Trimethylbenzene	1.70E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2-Dibromo-3-chloropropane	2.02E+00	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2-Dichlorobenzene	4.00E+03 (mm)	<b>0.56 J</b>	<b>0.19 J</b>	5.8 U	6.7 U	7.8 U	7.4 U
1,2-Dichloroethane	6.03E-01	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,2-Dichloropropane	7.42E-01	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,3,5-Trimethylbenzene	6.97E+01	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,3-Dichlorobenzene	2.10E+03 (mm)	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,3-Dichloropropane	3.61E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
1,4-Dichlorobenzene	7.87E+00	<b>1.9 J</b>	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
2,2-Dichloropropane	7.42E-01 (ii)	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
2-Butanone	1.13E+05	11 U	11 U	12 U	13 U	16 U	15 U
2-Chlorotoluene	5.60E+02	5.6 U	5.5 U	5.8 U	6.7 U	7.8 U	7.4 U
2-Hexanone	4.70E+04 (nn)	11 UJ	11 UJ	12 UJ	13 UJ	16 UJ	15 UJ
2-Methoxy-2-methyl-butane	--	5.8 U	6.7 U	7.8 U	7.4 U		
4-Chlorotoluene	5.60E+02 (ww)	5.8 U	6.7 U	7.8 U	7.4 U		
4-Isopropyltoluene	--	5.8 U	6.7 U	7.8 U	7.4 U		
4-Methyl-2-pentanone	4.70E+04	12 U	13 U	16 U	15 U		
Acetone	5.43E+04	12 U	13 U	16 U	15 U		
Benzene	1.41E+00	<b>0.20 J</b>	6.7 U	7.8 U	7.4 U		
Bromobenzene	9.22E+01	5.8 U	6.7 U	7.8 U	7.4 U		

LOU 64 Table 20 (continued)  
Soil Characterization Data - VOCs

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program	Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.	SA10	SA10	SA10	SA10	SA10	SA10
Sample ID	SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40
Sample Depth (ft)	0.5	10	10	20	30	40
Sample Date	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006
VOCs	PRG <sup>2</sup> mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Bromochloromethane	1.83E+00 (qq)	5.8 U	6.7 U	7.8 U	7.4 U	
Bromodichloromethane	1.83E+00	5.8 U	6.7 U	7.8 U	7.4 U	
Bromoform	2.18E+02	5.8 U	6.7 U	7.8 U	7.4 U	
Bromomethane	1.31E+01	12 U	13 U	16 U	15 U	
Carbon tetrachloride	5.49E-01	5.8 U	6.7 U	7.8 U	7.4 U	
Chlorobenzene	5.30E+02	<b>1.4 J</b>	<b>1.7 J</b>	<b>1.1 J</b>	<b>0.80 J</b>	
Chloroethane	6.49E+00	5.8 UJ	6.7 UJ	7.8 UJ	7.4 UJ	
Chloroform	4.70E-01	<b>0.92 J</b>	<b>43</b>	<b>170</b>	<b>93</b>	
Chloromethane	1.56E+02	5.8 UJ	6.7 Uj	7.8 UJ	7.4 UJ	
cis-1,2-Dichloroethene	1.46E+02	5.8 U	6.7 U	7.8 U	7.4 U	
cis-1,3-Dichloropropene	1.76E+00 (gg)	5.8 U	6.7 U	7.8 U	7.4 U	
Dibromochloromethane	2.55E+00	5.8 U	6.7 U	7.8 U	7.4 U	
Dibromomethane	2.34E+02 (xx)	5.8 U	6.7 U	7.8 U	7.4 U	
Dichlorodifluoromethane	3.08E+02	5.8 UJ	6.7 UJ	7.8 UJ	7.4 UJ	
Ethyl t-butyl ether	3.64E+01 (kk)	5.8 U	6.7 U	7.8 U	7.4 U	
Ethylbenzene	7.40E+03 (mm)	5.8 U	6.7 U	7.8 U	7.4 U	
Ethylene dibromide	7.30E-02	5.8 U	6.7 U	7.8 U	7.4 U	
Hexachlorobutadiene	2.21E+01	5.8 U	6.7 U	7.8 U	7.4 U	
isopropyl ether	--	5.8 U	6.7 U	7.8 U	7.4 U	
Isopropylbenzene	2.00E+03 (zz)	5.8 U	6.7 U	7.8 U	7.4 U	
Methyl tert butyl ether	3.64E+01	5.8 U	6.7 U	7.8 U	7.4 U	
Methylene chloride	2.05E+01	5.8 U	6.7 U	7.8 U	7.4 U	
N-Butylbenzene	2.19E+03 (mm)	5.8 U	6.7 U	7.8 U	7.4 U	

**LOU 64 Table 20 (continued)  
Soil Characterization Data - VOCs**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.		SA10	SA10	SA10	SA10	SA10	SA10
Sample ID		SA10-0.5	SA10-10	SA10-10D	SA10-20	SA10-30	SA10-40
Sample Depth (ft)		0.5	10	10	20	30	40
Sample Date		11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006	11/07/2006
VOCs	PRG <sup>2</sup> mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
N-Propylbenzene	2.19E+03 (mm)	5.8 U	6.7 U	7.8 U	7.4 U		
sec-Butylbenzene	1.63E+03 (mm)	5.8 U	6.7 U	7.8 U	7.4 U		
Styrene	1.80E+04 (mm)	5.8 U	6.7 U	7.8 U	7.4 U		
t-Butyl alcohol	--	12 UJ	13 UJ	16 UJ	15 UJ		
tert-Butylbenzene	1.97E+03 (mm)	5.8 U	6.7 U	7.8 U	7.4 U		
Tetrachloroethene	1.31E+00	5.8 U	6.7 U	7.8 U	7.4 U		
Toluene	2.20E+03 (mm)	5.8 U	6.7 U	7.8 U	7.4 U		
trans-1,2-Dichloroethylene	--	5.8 U	6.7 U	7.8 U	7.4 U		
trans-1,3-Dichloropropene	1.76E+00 (gg)	5.8 U	6.7 U	7.8 U	7.4 U		
Trichloroethene	1.15E-01	5.8 U	6.7 U	7.8 U	7.4 U		
Trichlorofluoromethane	1.28E+03 (mm)	5.8 UJ	6.7 UJ	7.8 UJ	7.4 UJ		
Vinylchloride	7.46E-01	5.8 U	6.7 U	7.8 U	7.4 U		
Xylene (Total)	9.00E+02 (mm)	12 U	13 U	16 U	15 U		

**Notes:**

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 9, Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004).  
(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.  
(kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.  
(mm) PRG is based on the soil saturation limit. Therefore, the risk-based value provided in the electronic backup to the PRG table was used.  
(nn) Value for methyl isobutyl ketone used as surrogate for 2-hexanone based on structural similarities.  
(qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.  
(ww) Value for 2-chlorotoluene used as surrogate for 4-chlorotoluene based on structural similarities.  
(xx) Value for methylene bromide used as surrogate for dibromomethane based on structural similarities.  
(yy) PRG table (c) lists both cancer and non-cancer endpoint-based values. The cancer endpoint-based values were selected, as the cancer endpoint-based values are lower than the noncancer endpoint-based values.  
(zz) Isopropyl benzene is listed as cumene (isopropylbenzene) in the PRG table.

**LOU 64 Table 21**  
**Groundwater Characterization Data - VOCs**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>
Well ID		SA10
Sample ID		GWSA10
Sample Date		11/07/2006
VOCs	MCL <sup>2</sup> ug/L	ug/L
Naphthalene	6.20E+00 c	5.0 U
1,1,1,2-Tetrachloroethane	4.32E-01 c	5.0 U
1,1,1-Trichloroethane	2.00E+02	5.0 U
1,1,2-Tetrachloroethane	5.00E+00	5.0 U
1,1,2-Trichloroethane	5.00E+00	5.0 U
1,1-Dichloroethane	8.11E+02 c	5.0 U
1,1-Dichloroethene	7.00E+00	5.0 U
1,1-Dichloropropene	3.95E-01 c,gg	5.0 U
1,2,3-Trichlorobenzene	7.16E+00 c,hh	5.0 U
1,2,3-Trichloropropane	5.60E-03 c,yy	5.0 U
1,2,4-Trichlorobenzene	7.00E+01	5.0 U
1,2,4-Trimethylbenzene	1.23E+01	5.0 U
1,2-Dibromo-3-chloropropane	2.00E-01	5.0 U
1,2-Dichlorobenzene	6.00E+02	<b>0.28 J</b>
1,2-Dichloroethane	5.00E+00	5.0 U
1,2-Dichloropropane	5.00E+00	5.0 U
1,3,5-Trimethylbenzene	1.23E+01 c	5.0 U
1,3-Dichlorobenzene	1.83E+02 c	5.0 U
1,3-Dichloropropane	1.22E+02 c	5.0 U
1,4-Dichlorobenzene	7.50E+01	<b>0.50 J</b>
2,2-Dichloropropane	1.65E-01 c,ii	5.0 U
2-Butanone	6.97E+03 c	10 U
2-Chlorotoluene	1.22E+02 c	5.0 U
2-Hexanone	2.00E+03 c,nn	10 UJ
2-Methoxy-2-methyl-butane	--	5.0 U
4-Chlorotoluene	1.22E+02 c,ww	5.0 U
4-Isopropyltoluene	--	5.0 U
4-Methyl-2-pentanone	1.99E+03 c	10 U
Acetone	5.48E+03 c	10 U
Benzene	5.00E+00	<b>0.40 J</b>
Bromobenzene	2.03E+01 c	5.0 U
Bromochloromethane	1.81E-01 c,qq	5.0 U
Bromodichloromethane	8.00E+01 r	5.0 U
Bromoform	8.00E+01 r	5.0 U
Bromomethane	8.66E+00 c	10 U
Carbon tetrachloride	5.00E+00	<b>5.7</b>
Chlorobenzene	1.00E+02 c,o	<b>2.5 J</b>
Chloroethane	4.64E+00	5.0 UJ
Chloroform	8.00E+01 r	<b>300</b>
Chloromethane	1.58E+02 c	<b>0.77 J</b>
cis-1,2-Dichloroethene	7.00E+01	5.0 U
cis-1,3-Dichloropropene	3.95E-01 c,gg	5.0 U



**LOU 64 Table 21 (continued)**  
**Groundwater Characterization Data - VOCs**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

Sampling Program		Ph A <sup>1</sup>
Well ID		SA10
Sample ID		GWSA10
Sample Date		11/07/2006
VOCs	MCL <sup>2</sup> ug/L	ug/L
Dibromochloromethane	8.00E+01 r	5.0 U
Dibromomethane	6.08E+01 c,xx	5.0 U
Dichlorodifluoromethane	3.95E+02 c	5.0 UJ
Ethyl t-butyl ether	1.10E+01 c,kk	5.0 U
Ethylbenzene	7.00E+02	5.0 U
Ethylene dibromide	--	5.0 U
Hexachlorobutadiene	8.62E-01 c	5.0 U
isopropyl ether	--	5.0 U
Isopropylbenzene	6.58E+02 c,zz	5.0 U
Methyl tert butyl ether	2.00E+01 a,uu	5.0 U
Methylene chloride	5.00E+00	5.0 U
N-Butylbenzene	2.43E+02 c	5.0 U
N-Propylbenzene	2.43E+02 c	5.0 U
sec-Butylbenzene	2.43E+02 c	5.0 U
Styrene	1.00E+02	5.0 U
t-Butyl alcohol	--	10 UJ
tert-Butylbenzene	2.43E+02 c	5.0 U
Tetrachloroethene	5.00E+00	5.0 U
Toluene	1.00E+03	<b>19</b>
trans-1,2-Dichloroethylene	1.00E+02	5.0 U
trans-1,3-Dichloropropene	--	5.0 U
Trichloroethene	5.00E+00	<b>2.1 J</b>
Trichlorofluoromethane	--	5.0 UJ
Vinylchloride	2.00E+00	5.0 U
Xylene (Total)	1.00E+04	10 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.
  - (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.
  - (b) USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. August 2006.
  - (c) Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater (October, 2004).
  - (o) See footnote (b). Listed under synonym monochlorobenzene.
  - (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.

**LOU 64 Table 21 (continued)**  
**Groundwater Characterization Data - VOCs**

Tronox Facility - Henderson, Nevada  
Koch Materials Company Site

(kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.

(qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.

(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)].

(ww) Value for 2-chlorotoluene used as surrogate for 4-chlorotoluene based on structural similarities.

(yy) PRG table (c) lists both cancer and non-cancer endpoint-based values. The cancer endpoint-based values were selected, as the cancer endpoint-based values are lower than the noncancer endpoint-based values.

(zz) Isopropyl benzene is listed as cumene (isopropylbenzene) in the PRG table.

**LOU 64 Table 22**  
**Soil Characterization Data - Long Asbestos Fibers in Respirable Soil Fraction**

Tronox Facility - Henderson, Nevada  
 Koch Materials Company Site

			<b>Long Amphibole Protocol Structures</b>	<b>Long Amphibole Protocol Structures (structures/samples)</b>	<b>Long Chrysotile Protocol Structures</b>	<b>Long Chrysotile Protocol Structures (structures/samples)</b>	<b>Sampling Program</b>
<b>No.</b>	<b>Sample ID</b>	<b>Sample Date</b>	s/gPM10		s/gPM10		
SA10	SA10	12/05/2006	2951000 U	0	2951000 U	0	Ph A <sup>1</sup>

**Notes:**

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

## Notes for Phase A Data Tables

Koch Materials Company Site  
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.
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.
UJ	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.
--	PRG not established