TRONOX

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September 27, 2007

Ms. Shannon Harbour, P.E.
Nevada Division of Environmental Protection
2030 East Flamingo Road, Suite 230
Las Vegas, Nevada 89119-0818

Subject: **Phase A Source Area Investigation Results (including Phase B Work Plan)**
Tronox LLC, Henderson, Nevada

Dear Ms. Harbour:

Tronox LLC (Tronox) has undertaken an Environmental Conditions Assessment (ECA) as directed by the Nevada Division of Environmental Protection. Key to this ECA is an understanding of the soil and groundwater conditions adjacent to potential source areas. Towards this understanding, Tronox sampled both groundwater and soil following an approved *Phase A Source Area Investigation Work Plan*. The results have been received and Tronox is providing the enclosed report titled *Phase A Source Area Investigation Results*. Included with this results report is a description of work for further characterization, the *Phase B Source Area Investigation Work Plan*, as Appendix I in the enclosed. Tronox proposes to begin field work associated with the Phase B characterization work in very early November 2007. We will facilitate NDEP's review of the results report in any way possible. We are hopeful for NDEP's approval of the *Phase B Source Area Investigation Work Plan* by late-October. Again, we will provide any assistance possible to facilitate NDEP's review.

Please contact me at (702) 651-2234 if you have any comments or questions concerning this correspondence.

Sincerely,

SM Crowley

Susan M. Crowley
Staff Environmental Specialist

Overnight Mail

Attachment: As stated
CC: See attached Distribution List

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			& Hard Data		
Bailey	Keith	Environ Answers	X	X	
Krish	Ed	ENSR	X	X	
Bilodeau	Sally	ENSR	X	X	
Gerry	Dave	ENSR		X	
Lambeth	Jeff	Veolia			
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Guerriero	Joe	AIG		X	
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Kelly	Joe	Montrose			
Sundberg	Paul	Montrose		X	
Gibson	Jeff	AmPac			
Sylvia	Chris	Pioneer		X	
Wilkinson	Craig	Timet		X	
Mack	Joel	Montrose Counsel			

Prepared for:
Tronox LLC
Henderson, Nevada

Phase A Source Area Investigation Results Tronox Facility, Henderson, Nevada

Report, Figures, Tables, and Plates Volume 1 of 2

ENSR Corporation
September 2007
Document No.: 4020-023-402

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Prepared for:
Tronox LLC
Henderson, Nevada

Phase A Source Area Investigation Results
Tronox Facility, Henderson, Nevada

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September 2007
Document No.: 4020-023-402

Phase A Source Area Investigation Results
Tronox Facility
Henderson, Nevada

Responsible CEM for this project

I hereby certify that all laboratory analytical data were generated by a laboratory certified by the NDEP for each constituent and method presented herein with the exceptions noted in Appendix E on Tables E-1 and E-2.

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and, to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances.

SM Crowley 9-24-07

Susan M. Crowley, CEM 1428 exp. date 3/8/09
Staff Environmental Specialist
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ABBREVIATIONS AND ACRONYMS

ANOVA	One-Way Analysis of Variance
Al	Aluminum
AOC	Administrative Order on Consent
AP&CC	American Potash and Chemical Company
Ag	Silver
As	Arsenic
ASB	Analytical Services Branch
B	Boron
Ba	Barium
Be	Beryllium
bgs	below ground surface
BMI	Basic Metals, Inc. also known as Basic Management Inc. and Black Mountain Industrial (Complex)
BRC	Basic Remediation Company
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
Ca	Calcium
Cd	Cadmium
CDDs	Chlorinated Dibenzo-p-Dioxins
CDFs	Chlorinated Dibenzofurans
CEC	Cation Exchange Capacity
CEM	Certified Environmental Manager
CLP	Contract Laboratory Program
Co	Cobalt
COC	Chain-of-Custody
COH	City of Henderson
Cr	Chromium
CSM	Conceptual Site Model
Cu	Copper
DAF	Dilution Attenuation Factor
DOE	Department of Energy
DOT	Department of Transportation

ABBREVIATIONS AND ACRONYMS (CONTINUED)

DQI	Data Quality Indicator
DQO	Data Quality Objective
DRO	Diesel-Range Organics
DVSR	Data Validation Summary Report
EA	Evaluation Area
EC	Electrical Conductivity
ECA	Environmental Conditions Assessment
e.g.	*exempli gratia,* “for example”
eV	Electron volt
F	Fahrenheit
FBR	Fluidized-Bed Reactor
Fe	Iron
FID	Flame Ionization Detector
FOD	Frequency of Detection
FOE	Frequency of Exceedance
FOND	Frequency of Non-Detects
ft	feet
ft/ft	feet per foot
GC	Gas Chromatography
gpd/ft	gallons per day per foot
gpd/ft^2	gallons per day per square foot
gpm	gallons per minute
GRO	Gasoline-Range Organics
H	Henry’s Law Constant
HF	Hydrofluoric Acid
ICP	Inductively Coupled Plasma
ID	Identification
IDW	Investigation-Derived Waste
in/yr	inches per year
IX	Ion Exchange

ABBREVIATIONS AND ACRONYMS (CONTINUED)

K	Potassium
Kd	Soil-water Partitioning Coefficient
Kerr-McGee	Kerr-McGee Chemical LLC
lbs	Pounds
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOU	Letter of Understanding
MARLAP	Multi-Agency Radiological Laboratory Analytical Protocols Manual
MCcg1	Muddy Creek Formation, first, coarse-grained facies
MCcg2	Muddy Creek Formation, second, coarse-grained facies
MCfg1	Muddy Creek Formation, first, fine-grained facies
MCfg2	Muddy Creek Formation, second, fine-grained facies
MC Fm	Muddy Creek Formation
MCL	Maximum Contaminant Level
Mg	Magnesium
MDL	Method Detection Limit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ml/min	milliliters per minute
mm/yr	millimeter per year
Mn	Manganese
Mo	Molybdenum
MS	Mass Spectrometry
MS/MSD	Matrix Spike/Matrix Spike Duplicate
msl	mean sea level
MTBE	Methyl-tert-butyl-ether
Na	Sodium
NAC	Nevada Administrative Code
NAD83	North American Datum 1983
NDEP	Nevada Division of Environmental Protection

ABBREVIATIONS AND ACRONYMS (CONTINUED)

NELAP	National Environmental Laboratory Accreditation Program
ng/kg	nanograms per kilogram
Ni	Nickel
NPDES	National Pollutant Discharge Elimination System
NRS	Nevada Revised Statutes
NTU	Nephelometric Turbidity Unit
OCH	Organochlorine Herbicide
OCP	Organochlorine Pesticide
OPP	Organophosphorous Pesticide
ORO	Oil-Range Organics
PAH	Polycyclic Aromatic Hydrocarbon
PARCCS	Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity
Pb	Lead
PCB	Polychlorinated Biphenyls
PCDD	Polychlorinated Dibenzo-p-dioxins
PCDF	Polychlorinated Dibenzofuran
PID	Photo Ionization Detector
PMI0	Particulate Matter of diameter 10 um or less
ppb	parts per billion
PPE	Personal Protective Equipment
ppt	parts per trillion
PRG	Preliminary Remediation Goal
PRG-SSLS	Preliminary Remediation Goal Soil Screening Levels
Pt	Platinum
PVC	Poly Vinyl Chloride
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
Qal	Quaternary Alluvium
QC	Quality Control
R	Rejected

ABBREVIATIONS AND ACRONYMS (CONTINUED)

RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
RPRG	Radionuclide Preliminary Remediation Goal
Sb	Antimony
SDG	Sample Delivery Group
Se	Selenium
SOP	Standard Operating Procedure
Sr	Strontium
SRC	Site-Related Chemical
SIM	Selected Ion Monitoring
Sn	Tin
SQL	Sample Quantitation Limit
SSL	Soil Screening Level
ssSSL	Site-Specific Soil Screening Level
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TBE	TBE Group
TDS	Total Dissolved Solids
TEF	Toxic Equivalent Factor
TEQ	Toxic Equivalent Concentration
Tl	Thallium
Ti	Titanium
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
Tronox	Tronox LLC
TTAL	Treatment Technology Action Level
U	Uranium
UCL	Upper Confidence Limit
ug/kg	micrograms per kilogram

ABBREVIATIONS AND ACRONYMS (CONTINUED)

ug/L	micrograms per liter
um	micrometer or micron
U.S.	United States
USA	Underground Services Alert
uS/cm	microSiemens/centimeter
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
V	Vanadium
VI	Vapor Intrusion
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
W	Tungsten
WECCO	Western Electrochemical Company
Zn	Zinc

EXECUTIVE SUMMARY

This report describes the activities that were conducted to characterize the soil and groundwater conditions at the Tronox (formerly Kerr-McGee) facility located within the Black Mountain Industrial (BMI) Complex at 8000 West Lake Mead Parkway in Henderson, Nevada (the Site). The facility is owned and operated by Tronox LLC (Tronox). The work was conducted by ENSR on behalf of Tronox in response to requests by the Nevada Division of Environmental Protection (NDEP).

The Phase A Source Area investigation focused on soil and groundwater conditions associated with 192 site-related chemicals (SRCs) and their suspected source areas. The selection of the soil and groundwater sample locations were guided by information from past Site investigations (ENSR 2005), information on chemical use at the Site, and Letter of Understanding (LOU) study areas as identified by NDEP (1994). One-hundred and twenty soil and 27 groundwater samples were collected from 27 suspected source area locations as part of the Phase A program. The goals of the investigation were to gather soil and groundwater chemistry data to refine the conceptual site model (CSM), characterize site conditions, and to provide data for future risk assessments. There were 192 parameters identified as SRCs for the Tronox facility. In addition to these SRCs, 44 additional parameters were analyzed and reported by the laboratory. Therefore, for the Phase A investigation, a total of 236 parameters were analyzed. In the remainder of this report, these are referred to collectively as SRCs, although not all are specifically "site-related." The majority of the 236 SRCs analyzed in Phase A were either not detected or determined to be adequately characterized. SRCs determined not to be adequately characterized were identified and are included for further investigation in the Phase B Source Area Investigation Work Plan, which is included in this document (see Appendix I).

Phase A Investigation

The following scope of work was conducted between November 1 and December 8, 2006.

- Soil borings were drilled at 27 locations using sonic drilling techniques at locations selected in consultation with the NDEP to characterize specific areas of past or current operations at the Site.
- Each soil boring location was sampled at a depth of 0.5-foot, and thereafter, at 10-foot intervals until groundwater was first encountered. The only exception to this was soil boring SA01, a 10-feet-deep boring where soil samples were collected at 5-feet (0.5-, 5-, and 10-feet below ground surface [bgs]) intervals as specified in the Work Plan (ENSR 2006a).
- Soil samples from the 27 locations were analyzed for asbestos (surface soil sample) metals, wet chemistry constituents, total petroleum hydrocarbons (TPHs) including fuel oxygenates, organochlorine pesticides (OCPs), polychlorinated biphenyl (PCB) compounds, dioxins and furans, radionuclides, organophosphorus pesticides (OPPs), organochlorine herbicides (OCHs), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs).
- One manganese ore and one manganese tailing sample were collected for analysis of metals and radionuclides.
- Two near surface (1.5- and 3-ft bgs) soil samples were collected for physical and geotechnical analyses to provide data for future risk assessment purposes.
- Groundwater samples were collected from 20 existing monitoring wells and one existing interceptor well (I-AR). Water-table wells were chosen for their proximity to a Phase A soil boring

to understand the relationship between analytes in soil and groundwater and their leachability potential.

- Groundwater wells were sampled using micro-purge methods with low-flow pumping rates ranging from 100 milliliters per minute (ml/min) to about 480 ml/min. Water quality parameters were measured during purging using a water quality instrument fitted with a flow-through cell. Water was purged until water quality parameters had stabilized to a fluctuation of 10 percent or less for three consecutive readings.

- Six groundwater grab samples were collected from open boreholes where nearby wells either did not exist, or were not functional. A second set of groundwater grab samples were collected from each open borehole and filtered in the field for metals analysis. In addition, two filtered samples (M29 and GWSA15) were collected from the open boreholes for radionuclide analyses.

- To collect groundwater grab samples, the boreholes were advanced at least four feet into the water table. The water level in each borehole was allowed to stabilize and depth-to-water was measured. Groundwater grab samples were collected using a new disposable bailer.

- Both groundwater and groundwater grab samples were analyzed for metals, wet chemistry constituents, fuel alcohols, OCPs, PCBs, radionuclides, OPPs, OCHs, VOCs, and SVOCs.

Subsequent to the completion of this scope of work, additional groundwater sampling was conducted in May 2007. Groundwater samples were collected from 20 wells to assess the potential for analytical bias of metals and radionuclides in groundwater results based on high turbidity levels associated with November/December 2006 data. Groundwater samples were collected from the same monitoring wells sampled during the November/December 2006 sampling event, with the exception of M98, which was dry at the time of the May 2007 sampling event.

Soil and groundwater data were analyzed for the parameters specified in the Work Plan (ENSR 2006a). All of the resulting laboratory data were reviewed and validated using standardized guidelines and procedures recommended by the United States Environmental Protection Agency (USEPA) and NDEP. Based on this validation, 80 percent of the analytical results for Phase A were accepted as reported by the laboratory and should be considered valid for all decision making purposes. Twenty percent of the results of the total analytical dataset for this project were qualified as “estimated” due to minor quality control (QC) problems with precision, accuracy, and representativeness. Based on guidance in the USEPA data usability document (USEPA 1992a), estimated data are considered usable with the appropriate interpretation (e.g., consideration of the potential bias). Only 0.4 percent of the results were rejected as unusable due to more serious QC problems such as gross holding time violations and low spike recoveries. The impact of the rejected results on the overall project goals was minimal. Qualified results were evaluated with respect to the data quality indicators and compared to the Quality Assurance Project Plan (QAPP) and Work Plan goals. Based on the results of data validation, the overall goals for data quality were achieved for this project.

The Phase A data were evaluated with respect to the adequacy of characterization, as identified in the NDEP-approved Work Plan (ENSR 2006a) outlined as follows:

- Determination of whether the SRC is either absent or is rare in frequency;

- Determination of whether the measured SRC concentrations are less than the corresponding risk-based comparison levels;

- Determination of whether the SRC data are consistent with background or upgradient conditions/application of appropriate statistical tools to verify the comparability of the SRC with other data populations;

- Determination of whether there is a potential complete pathway for the SRCs detected in soil to leach from soil to groundwater at concentrations of concern; and,

- Determination of whether the probability of occurrence at a specific location or depth is remote based on knowledge of historical occurrence and site use.

The Phase A data were compiled and summarized to address each of these evaluations. Conservative comparison levels were developed in consultation with NDEP to address potential exposure and migration pathways including direct contact with soil and groundwater, migration of SRCs from soil to groundwater and migration of SRCs from groundwater to indoor air.

The majority of the 236 SRCs analyzed in Phase A were either not detected or determined to be adequately characterized. In general, the Phase A data support the CSM that environmental impacts at the Site are generally associated with groundwater. While there are SRCs present in soils at concentrations above comparison levels and/or background, these instances are focused on a short list of SRCs. Evaluation of the Phase A data with respect to the determinants of adequacy of characterization indicates that the following parameter groups are detected either infrequently or at low concentrations such that further characterization in Phase B is not warranted: dioxins and furans, OPPs, OCPs, OCHs, PCBs, and SVOCS. SRCs that were not adequately characterized and will be carried forward into the Phase B investigation are as follows:

- Metals
  - Arsenic
  - Boron
  - Iron
  - Lead
  - Manganese
  - Molybdenum
  - Strontium
  - Uranium
  - Vanadium
  - Hexavalent chromium

- OCPs (plus Hexachlorobenzene)

- Perchlorate

- VOCs

- Asbestos

The results of the Phase A adequacy of characterization for all 236 SRCs are summarized on **Table ES-1.**

Phase B Program

Based on discussions with NDEP, it was agreed that the Phase B investigation should be risk-based. Therefore, potential exposure pathways to be addressed by additional data collection will include direct contact with surface and subsurface soils, and direct contact with groundwater (via ingestion, dermal contact, and inhalation pathways) both for SRCs already present in groundwater, and those that may migrate there from soil, and inhalation of volatiles that may migrate from groundwater and/or soil to indoor air. Based on the CSM for the SRC distribution at the Site, the investigation proposed for Phase B will be tailored to address: direct contact with constituents in soils by Site-related receptors, vapor migration from the subsurface, and source area characterization for metals, pesticides, radionuclides, TPH, VOCs, and asbestos.

As it is likely that future industrial/commercial development will occur at the Site, the Site has been subdivided into evaluation areas (EAs). The EA boundaries have been developed in consultation with Tronox facility staff and the Basic Remediation Company (BRC), and are based on anticipated future uses. The sampling programs for direct contact with soils have been developed on a per-EA basis, as this most accurately reflects potential exposures. The sampling program for soil gas will be conducted on a Site-wide basis, based on the occurrence of VOCs in soil and groundwater. The source area investigation is a Site-wide sampling program for deep soil (0 ft to the water table) and groundwater that has been developed on a per-SRC basis. A total of 33 soil borings are proposed for evaluation of SRCs along the direct contact pathway, 63 soil vapor borings are proposed for evaluation of vapor migration to indoor air, and 61 soil borings are proposed to evaluate the soil to groundwater pathway and to further evaluate potential source areas on the Site. Groundwater samples are proposed from a total of 97 wells both on and off the site to further delineate Phase B SRCs in groundwater for the Phase B program. Details of the program are presented in the Phase B Work Plan, which is an attachment to this document.

Table ES-1
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Wet Chemistry															
Alkalinity (total, CO3--, HCO3-)	Alk as CaCO3	Yes					X	X							X
Ammonia	7664-41-7	Yes					X		X					X	X
Bromide	24959-67-9	Yes						X					X		
Chlorate	14866-68-3	Yes					X	X							X
Chloride	16887-00-6	Yes			X		X	X			X				X
Conductivity	COND	Yes						X							X
Cyanide (total)	57-12-5	Yes	X					X		X			X		
Nitrate	NO3	Yes			X		X	X			X				X
Nitrite	14797-55-8	Yes			X		X	X			X				X
Percent Moisture	Per Moisture	No						X					X		
Perchlorate	14797-73-0	Yes		X	X	X	X		X		X			X	
pH	PH	Yes						X					X		
Phosphate (ortho)	14265-44-2	Yes					X	X					X		
Sulfate	14808-79-8	Yes			X		X	X			X		X		
Surfactants (MBAS)	MBAS	Yes						X					X		
Total Dissolved Solids (TDS)	TDS	Yes						X	(h)		X			(h)	X
Total Organic Carbon (TOC)	TOC	Yes						X					X		
Total Suspended Solids (TSS)	TSS	Yes						X					X		
Dioxins and Furans															
PCDD/PCDFs total TEQ as 2,3,7,8-TCDD	TCDF2378	Yes						X		NA			X		
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	Yes						X		NA			X		
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	Yes						X		NA			X		
1,2,3,4,6,7,8-Heptatchlorodibenzofuran	67562-39-4	Yes						X		NA			X		
1,2,3,4,6,7,8-Heptatchlorodibenzo-p-dioxin	35822-46-9	Yes						X		NA			X		
1,2,3,4,7,8,9-Heptatchlorodibenzofuran	55673-89-7	Yes						X		NA			X		
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	Yes						X		NA			X		
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	Yes						X		NA			X		
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	Yes						X		NA			X		
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	Yes						X		NA			X		
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	Yes						X		NA			X		
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	Yes						X		NA			X		
1,2,3,7,8-Pentachlorodibenzof-p-dioxin	40321-76-4	Yes						X		NA			X		
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	Yes						X		NA			X		
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	Yes						X		NA			X		
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	Yes						X		NA			X		
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	Yes						X		NA			X		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Yes						X		NA			X		
Metals															
Aluminum	7429-90-5	Yes					X	X			X		X		

Table ES-1
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Antimony	7440-36-0	Yes					X	X					X		
Arsenic	7440-38-2	Yes		X	X	X	X		X		X			X	X
Barium	7440-39-3	Yes					X	X			X		X		
Beryllium	7440-41-7	Yes						X			X		X		
Boron	7440-42-8	Yes			X		X		X		X			X	X
Cadmium	7440-43-9	Yes					X	X			X		X		
Calcium	7440-70-2	Yes					X	X					X		X
Chromium (hexavalent)	18540-29-9	Yes		X	X	X	X		X		X			X	X
Chromium (total)	7440-47-3	Yes		X	X	X		X			X			X	
Cobalt	7440-48-4	Yes					X	X			X		X		
Copper	7440-50-8	Yes						X					X		
Iron	7439-89-6	Yes					X		X		X			X	
Lead	7439-92-1	Yes		X	X	X	X		X		X		X		X
Magnesium	7439-95-4	Yes			X		X	X			X		X		
Manganese	7439-96-5	Yes		X		X	X		X		X			X	X
Mercury	7439-97-6	Yes						X					X		
Molybdenum	7439-98-7	Yes					X		X		X			X	X
Nickel	7440-02-0	Yes					X	X			X		X		
Platinum	7440-06-4	Yes						X					X		
Potassium	7440-09-7	Yes			X		X	X							X
Selenium	7782-49-2	Yes	X					X					X		
Silver	7440-22-4	Yes						X					X		
Sodium	7440-23-5	Yes			X		X	X							X
Strontium	7440-24-6	Yes					X		X		X			X	X
Thallium	7440-28-0	Yes					X	X			X		X		
Tin	7440-31-5	Yes						X					X		
Titanium	7440-32-6	Yes						X					X		
Tungsten	7440-33-7	Yes						X					X		
Uranium	7440-61-1	Yes			X		X		X		X			X	X
Vanadium	7440-62-2	Yes							X		X			X	X
Zinc	7440-66-6	Yes						X					X		
Organochlorine Pesticides (OCPs)															
4,4'-DDD	72-54-8	Yes							(e)	X				(e)	
4,4'-DDE	72-55-9	Yes							(e)	X				(e)	
4,4'-DDT	50-29-3	Yes							(e)	X				(e)	
Aldrin	309-00-2	Yes	X						(e)	X				(e)	
alpha-BHC	319-84-6	Yes	X						(e)		X	X		X	
alpha-Chlordane	5103-71-9	Yes	X						(e)	X				(e)	
beta-BHC	319-85-7	Yes				X	X		X		X			X	
Chlordane, technical	57-74-9	Yes	X						(e)	X				(e)	
delta-BHC	319-86-8	Yes	X						(e)		X			(e)	
Dieldrin	60-57-1	Yes	X						(e)	X				(e)	

Table ES-1
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Endosulfan I	959-98-8	Yes	X						(e)	X				(e)	
Endosulfan II	33213-65-9	Yes	X						(e)	X				(e)	
Endosulfan sulfate	1031-07-8	Yes	X						(e)	X				(e)	
Endrin	72-20-8	Yes	X						(e)	X				(e)	
Endrin aldehyde	7421-93-4	Yes							(e)	X				(e)	
Endrin Ketone	53494-70-5	Yes	X						(e)	X				(e)	
gamma-BHC (Lindane)	58-89-9	Yes	X						(e)		X			X	
gamma-Chlordane	5103-74-2	Yes	X						(e)					(e)	
Heptachlor	76-44-8	Yes	X						(e)		X	X		X	
Heptachlor epoxide	1024-57-3	Yes	X						(e)	X				(e)	
Methoxychlor	72-43-5	Yes							(e)					(e)	
Toxaphene	8001-35-2	Yes	X						(e)	X				(e)	
Organophosphorus Pesticides (OPPs)															
Azinphos-methyl	86-50-0	Yes	X					X		X			X		
Bolstar	35400-43-2	Yes	X					X		X			X		
Chlorpyrifos	2921-88-2	Yes	X					X		X			X		
Coumaphos	56-72-4	Yes	X					X		X			X		
Demeton-O	298-03-3	Yes					X	X		X			X		
Demeton-S	126-75-0	Yes	X					X		X			X		
Diazinon	333-41-5	Yes	X					X		X			X		
Dichlorvos	62-73-7	Yes	X					X		X			X		
Dimethoate	60-51-5	Yes					X	X		X			X		
Disulfoton	298-04-4	Yes	X					X		X			X		
EPN (Ethyl p-nitrophenyl phenylphosphorothioate)	2104-64-5	Yes	X					X		X			X		
Ethoprop	13194-48-4	Yes	X					X		X			X		
Famphur	52-85-7	Yes	X					X		X			X		
Fensulfothion	115-90-2	Yes	X					X		X			X		
Fenthion	55-38-9	Yes	X					X		X			X		
Malathion	121-75-5	Yes	X					X		X			X		
Merphos	150-50-5	Yes	X					X		X			X		
Mevinphos	7786-34-7	Yes	X					X		X			X		
Naled	300-76-5	Yes	X					X		X			X		
Parathion-ethyl (Ethyl Parathion)	56-38-2	Yes	X					X		X			X		
Parathion-methyl (Methyl Parathion)	298-00-0	Yes	X					X		X			X		
Phorate	298-02-2	Yes	X					X		X			X		
Ronnel	299-84-3	Yes	X					X		X			X		
Stirphos	22248-79-9	Yes	X					X		X			X		
Sulfotepp (Tetraethyldithiopyrophosphate)	3689-24-5	Yes	X					X		X			X		
Thionazin	297-97-2	Yes	X					X		X			X		
Tokuthion	34643-46-4	Yes	X					X		X			X		
Trichloronate	327-98-0	Yes	X					X		X			X		

Table ES-1
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	Chemical Abstracts Service Number	Site-Related Chemical? (Yes or No)	Never Detected In Soil	Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)	Not Consistent with Background Any Soil Depths (a,b)	Max> Comparison Level Direct Contact Pathways?	Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Never Detected In Groundwater	Max> Comparison Level Direct Contact Pathways?	Max> Comparison Level Vapor Intrusion Pathway?	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Proposed for Further Sampling to Evaluate Background Groundwater
Organochlorine Herbicides															
Silvex (2-(2,4,5-trichlorophenoxy) propionic acid)	93-72-1	Yes	X					X		X			X		
Polychlorinated Biphenyl (PCB) Compounds															
Aroclor 1016	12674-11-2	Yes	X					X		X			X		
Aroclor 1221	11104-28-2	Yes	X					X		X			X		
Aroclor 1232	11141-16-5	Yes	X					X		X			X		
Aroclor 1242	53469-21-9	Yes	X					X		X			X		
Aroclor 1248	12672-29-6	Yes	X					X		X			X		
Aroclor 1254	11097-69-1	Yes	X					X		X			X		
Aroclor 1260	11096-82-5	Yes					X	X		X			X		
Radionuclides															
Radium 226	13982-63-3	Yes			X	X	X	X			X		X		
Radium 228	15262-20-1	Yes				X	X	X			X		X		
Thorium 228	14274-82-9					X	X	X		X	X		X		
Thorium 230	14269-63-7	Yes				X	X	X			X		X		
Thorium 232	7440-29-1	Yes						X		X	X		X		
Uranium 234	13966-29-5	Yes					X	X			X			X	X
Uranium 235	15117-96-1	Yes				X	X	X			X		X		
Uranium 238	7440-61-1	Yes				X	X	X			X			X	X
Semi-Volatile Organic Compounds (SVOCs)															
1,4-Dioxane	123-91-1	Yes	X					X			X		X		
2-Methylnaphthalene	91-57-6	Yes	X					X		X			X		
Acenaphthene	83-32-9	Yes	X						(i)	X			X		
Acenaphthylene	208-96-8	Yes	X						(i)	X			X		
Anthracene	120-12-7	Yes	X						(i)	X			X		
Benzo(a)anthracene	56-55-3	Yes					X		(i)	X			X		
Benzo(a)pyrene	50-32-8	Yes				X			(i)	X			X		
Benzo(b)fluoranthene	205-99-2	Yes							(i)	X			X		
Benzo(g,h,i)perylene	191-24-2	Yes							(i)	X			X		
Benzo(k)fluoranthene	207-08-9	Yes							(i)	X			X		
Bis(2-ethylhexyl)phthalate	117-81-7	Yes						X			X		X		
Butylbenzylphthalate	85-68-7	Yes	X					X		X			X		
Chrysene	218-01-9	Yes							(i)	X			X		
Dibenzo(a,h)anthracene	53-70-3	Yes	X						(i)	X			X		
Diethylphthalate	84-66-2	Yes						X		X			X		
Dimethylphthalate	131-11-3	Yes	X					X		X			X		
Di-n-butylphthalate	84-74-2	Yes						X					X		
Di-n-octylphthalate	117-84-0	Yes	X					X		X			X		
Fluoranthene	206-44-0	Yes							(i)	X			X		
Fluorene	86-73-7	Yes	X						(i)	X			X		
Hexachlorobenzene	118-74-1	Yes				X	X		(g)	X			X		
Indeno(1,2,3-cd)pyrene	193-39-5	Yes							(i)	X			X		
Naphthalene	91-20-3	Yes	X						(i)		X		X		

Table ES-1
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Nitrobenzene	98-95-3	Yes	X					X		X			X		
Octachlorostyrene	29082-74-4	Yes						X		X			X		
Phenanthrene	85-01-8	Yes							(i)	X			X		
Pyrene	129-00-0	Yes							(i)	X			X		
Pyridine	110-86-1	Yes	X					X		X			X		
Total Petroleum Hydrocarbons (TPH) and															
fuel alcohols															
GRO(C6 -C10)	TPH-gasoline	Yes						X		X			X		
DRO(C10 -C28)	TPH-diesel	Yes				X			(i)	X			X		
ORO (C28 -C38)	TPH-MOTOR	Yes				X			(i)	X			X		
Methanol	67-56-1	Yes	X					X		X			X		
Ethanol	64-17-5	Yes	X					X					X		
Ethylene glycol	107-21-1	Yes	X					X		X			X		
Volatile Organic Compounds (VOCs)															
1,1,1,2-Tetrachloroethane	630-20-6	No	X						(f)	X				(f)	
1,1,1-Trichloroethane	71-55-6	Yes							(f)					(f)	
1,1,2,2-Tetrachloroethane	79-34-5	No	X						(f)	X				(f)	
1,1,2-Trichloroethane	79-00-5	No	X						(f)	X				(f)	
1,1-Dichloroethane	75-34-3	No							(f)					(f)	
1,1-Dichloroethene	75-35-4	No	X						(f)		X			X	
1,1-Dichloropropene	563-58-6	No	X						(f)	X				(f)	
1,2,3-Trichlorobenzene	87-61-6	No					X		X					(f)	
1,2,3-Trichloropropane	96-18-4	No	X						(f)	X				(f)	
1,2,4-Trichlorobenzene	120-82-1	No					X		X					(f)	
1,2,4-Trimethylbenzene	95-63-6	Yes	X						(f)	X				(f)	
1,2-Dibromo-3-chloropropane	96-12-8	No	X						(f)	X				(f)	
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	No	X						(f)	X				(f)	
1,2-Dichlorobenzene	95-50-1	Yes							(f)		X	X		X	
1,2-Dichloroethane	107-06-2	No					X		X					(f)	
1,2-Dichloropropane	78-87-5	No	X						(f)	X				(f)	
1,3,5-Trimethylbenzene	108-67-8	Yes							(f)	X				(f)	
1,3-Dichlorobenzene	541-73-1	Yes							(f)					(f)	
1,3-Dichloropropane	142-28-9	No	X						(f)	X				(f)	
1,4-Dichlorobenzene	106-46-7	Yes					X		X		X	X		X	
2,2-Dichloropropane	594-20-7	No	X						(f)	X				(f)	
2-Butanone	78-93-3	Yes							(f)	X				(f)	
2-Chlorotoluene	95-49-8	No							(f)	X				(f)	
2-Hexanone	591-78-6	Yes							(f)	X				(f)	
4-Chlorotoluene	106-43-4	No	X						(f)	X				(f)	
4-Methyl-2-pentanone	108-10-1	Yes	X						(f)	X				(f)	
Acetone	67-64-1	Yes							(f)	X				(f)	
Benzene	71-43-2	Yes				X	X		X		X	X		X	

Table ES-1
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Bromobenzene	108-86-1	No	X						(f)					(f)	
Bromochloromethane	74-97-5	No	X						(f)	X				(f)	
Bromodichloromethane	75-27-4	No	X						(f)			X		X	
Bromoform	75-25-2	No							(f)			X		X	
Bromomethane	74-83-9	No	X						(f)		X			X	
Carbon Tetrachloride	56-23-5	No					X		X		X	X		X	
Chlorobenzene	108-90-7	Yes					X		X		X	X		X	
Chloroethane	75-00-3	No	X						(f)	X				(f)	
Chloroform	67-66-3	Yes				X	X		X		X	X		X	
Chloromethane	74-87-3	No	X						(f)			X		X	
cis-1,2-Dichloroethene	156-59-2	No	X						(f)	X				(f)	
cis-1,3-Dichloropropene	10061-01-5	No	X						(f)	X				(f)	
Dibromochloromethane	124-48-1	No	X						(f)			X		X	
Dibromomethane	74-95-3	No	X						(f)	X				(f)	
Dichlorodifluoromethane	75-71-8	No	X						(f)	X				(f)	
Diisopropyl ether (DIPE)	108-20-3	Yes	X						(f)	X				(f)	
Ethylbenzene	100-41-4	Yes	X						(i)	X				(f)	
Ethyl-tert-butyl ether (ETBE)	637-92-3	Yes	X						(f)	X				(f)	
Hexachlorobutadiene	87-68-3	No							(f)	X				(f)	
Isopropyl Benzene (Cumene)	98-82-8	Yes	X						(f)	X				(f)	
Methylene Chloride	75-09-2	No					X		X	X				(f)	
Methyl-tert-butyl ether (MTBE)	1634-04-4	Yes	X						(f)					(f)	
Naphthalene	91-20-3	Yes							(f)	X				(f)	
n-Butylbenzene	104-51-8	Yes	X						(f)	X				(f)	
n-Propylbenzene	103-65-1	Yes	X						(f)	X				(f)	
p-Isopropyltoluene	99-87-6	Yes	X						(f)	X				(f)	
sec-Butylbenzene	135-98-8	Yes	X						(f)	X				(f)	
Styrene	100-42-5	No	X						(f)	X				(f)	
tert-Amyl-methyl ether (TAME)	994-05-8	Yes	X						(f)	X				(f)	
tert-Butyl alcohol (TBA)	75-65-0	Yes	X						(f)	X				(f)	
tert-Butylbenzene	98-06-6	Yes	X						(f)	X				(f)	
Tetrachloroethene	127-18-4	Yes					X		X		X	X		X	
Toluene	108-88-3	Yes							(i)					(f)	
trans-1,2-Dichloroethene	156-60-5	No	X						(f)	X				(f)	
trans-1,3-Dichloropropene	10061-02-6	No	X						(f)	X				(f)	
Trichloroethene	79-01-6	Yes					X		X		X	X		X	
Trichlorofluoromethane	75-69-4	No							(f)		X	X		X	
Vinyl Chloride	75-01-4	No	X						(f)	X				(f)	
Xylenes (total)	1330-20-7	Yes	X						(i)	X				(f)	
Asbestos															
Asbestos	132207-33-1	Yes				Yes (d)			X	NA					

Notes:
SIM - Selected Ion Monitoring
(a) Detemined not to be consistent with background to direct contact comparison levels. See Table 5-15.
(b) Background comparisons only performed for inorganic parameters; organic parameters are generally non detect in background soils. The inorganic parameters calculated include metals, radionuclides and chloride, nitrate, sulfate and perchlorate.
(c) The background comparison for shallow soils (0-15 ft bgs) was only performed for those parameters listed in (b) that also exceeded the risk-based comparison for direct contact.
(d) Further characterization of asbestos identified for specific areas on-site. See Table 5-16.
(e) Analyte does not need to be further evaluated in Phase B, but will be analyzed nonetheless as part of the entire suite of OCPs since Beta-BHC must be further evaluated in Phase B.
(f) Analyte does not need to be further evaluated in Phase B, but will be analyzed nonetheless as part of the entire suite of VOCs since individual VOCs must be further evaluated in Phase B.
(g) Will be evaluated using EPA method 8081A for organochlorine pesticides.
(h) TDS is evaluated through characterization of major contributors to TDS: chlorate, chloride, sulfate, calcium, magnesium, and sodium.
(i) Polycyclic Aromatic hydrocarbons, benzene, toluene, ethybenzene, & xylenes, and TPH are included in Ph B in select locations to address potential historical source areas not evaluated in Phase A.

1.0 Introduction

This document describes the activities that were conducted to initially characterize the soil and groundwater conditions at the Tronox LLC facility (the Site) located within the Black Mountain Industrial (BMI) Complex in Henderson, Nevada. The Site is owned and operated by Tronox LLC (formerly Kerr-McGee Chemical LLC), headquartered in Oklahoma City, Oklahoma (Tronox). The assessment was conducted under the regulatory oversight of the Nevada Division of Environmental Protection (NDEP) and per the Phase A Source Area Investigation Work Plan (Work Plan) approved by the NDEP in October 2006 (ENSR 2006a) and the Work Plan Addendum to the Tronox Phase A Source Area Investigation dated May 1, 2007 (ENSR 2007).

The Phase A Source Area Investigation includes a preliminary characterization of Site-related chemicals (SRCs) in both soil and groundwater and the development of geologic data along five, sub-parallel, east-west transects across the Site. The list of SRCs was developed in consultation with the NDEP, as part of the Environmental Conditions Assessment (ECA) process and includes known and postulated SRCs, products, intermediate and breakdown products, and chemical combinations that may be associated with the current or historic activities at the Site. This investigation focuses on the soil and groundwater conditions associated with areas within the Site that are suspected to be impacted or comprise potential SRC source areas. **Table 1-1** lists the 69 potential study areas identified by the NDEP in their August 15, 1994 Letter of Understanding (LOU). Historically these areas have been called LOU study areas, or LOU areas, for short, and many of them are suspected contaminant source areas. Along with the LOU areas, the former United States (U.S.) Vanadium site was added to **Table 1-1**.

Plate 1-1 depicts the LOU areas and the other potential source areas, and shows the locations where soil and groundwater samples were collected for this investigation.

The Phase A results are to be used in determining which of the SRCs and LOUs are adequately characterized for future risk assessments and which of the SRCs or LOUs require further study.

1.1 Phase A Source Area Investigation – Objectives

The objective of the Phase A Source Area Investigation was to characterize the SRCs at 27 suspected source areas on Tronox property. The rationale for selection of each of the boring locations and wells that were sampled is discussed in Section 3.2. The goal of the investigation was to develop data that can be used to refine the conceptual site model (CSM), to characterize site conditions, and to provide data for future risk assessments. On the basis of this characterization, Tronox is making recommendations to the NDEP regarding which of the SRCs have been adequately characterized, and which SRCs require additional sampling efforts. The Phase A Work Plan (ENSR 2006a) included specific criteria that would serve as the basis for making determinations on the adequacy of characterization.

1.2 Site Background

The following discussion presents background information regarding the Site. A brief physical description of the Site is provided followed by a summary of its history. The discussion concludes with a summary of the environmental conditions of the Site.

1.2.1 Site Description

The Site is approximately 450 acres in size and is located 13 miles southeast of Las Vegas in an unincorporated section of Clark County, Nevada (**Figure 1-1**). It is completely surrounded by the incorporated area comprising the City of Henderson. The Site is in Township 22 South, Range 62 East, and covers portions of Sections 1, 12, and 13. The approximate center of the Site is located at longitude 36°02’45” W and latitude 115°00'20" N. The northern portion of the Site is bisected by Warm Springs Road – a southeast-northwest trending public right-of-way. Phase A of the Source Area Investigation focused on gathering information from potentially impacted and/or potential SRC source area locations across the entire Site, as depicted on **Plate 1-1**.

1.2.2 Site History

The BMI complex has been the site of industrial operations since 1942 and was originally sited and operated by the U.S. government as a magnesium production plant in support of the World War II effort. Following the war, a portion of the complex was leased by Western Electrochemical Company (WECCO). By August 1952, WECCO had purchased several portions of the complex, including six of the large unit buildings, and produced manganese dioxide, sodium chlorate, and various perchlorates. In addition, in the early 1950s, pursuant to a contract with the U.S. Navy, WECCO constructed and operated a plant to produce ammonium perchlorate on land purchased by the Navy. In 1955, WECCO merged with American Potash and Chemical Company (AP&CC) and continued to operate the processes, with the Navy's continued involvement in the ammonium perchlorate process.

In 1962, AP&CC purchased the ammonium perchlorate plant, sodium perchlorate plant, and half of the sodium chlorate plant from the Navy but continued to supply the Navy, and its contractors, material from the operating process. AP&CC merged with Kerr-McGee Corporation (Kerr-McGee) in 1967. This merger included boron production processes in California, which were moved to Henderson and began operation in the early 1970s. At this time, the Henderson facilities were expanded to include the production of elemental boron, boron trichloride, and boron tribromide.

During the 1970s, the U.S. Environmental Protection Agency (USEPA), the State of Nevada, and Clark County investigated potential environmental impacts from the BMI companies' operations, including atmospheric emissions, groundwater and surface water discharges, and soil impacts (E&E 1982). From 1971 to 1976, Kerr-McGee modified their manufacturing process and constructed lined surface impoundments to recycle and evaporate industrial wastewater. In 1976, the facility achieved zero discharge status regarding industrial wastewater management. In 1980, the USEPA requested specific information from the BMI companies regarding their manufacturing processes and their waste management practices by issuing Section 308 letters. In 1994, the NDEP issued a LOU that identified 69 specific areas or items of interest and specified the level of environmental investigation Kerr-McGee was required to conduct.

In 1994, the boron tribromide production process was shut down and processing equipment dismantled. In 1997, the sodium chlorate process was shut down, and in 1998, production of commercial ammonium perchlorate ended as well. The ammonium perchlorate production equipment was used to reclaim perchlorate from on-Site materials until early 2002, when the equipment was permanently shut down.

In 2005, Kerr-McGee Chemical LLC's name was changed to Tronox LLC. Processes currently operated by Tronox at the Henderson facility are for the production of manganese dioxide, boron trichloride, and elemental boron. Additional companies operate within the BMI complex; details regarding ownership and leases within the BMI complex are described in the 1993 Phase 1 ECA report (Kleinfelder 1993).

Tronox has undertaken environmental investigations to assess specific impacts in the area. A detailed discussion of the specific areas or items of interest identified in the LOU and a list of the products made, years of production, and approximate waste volumes for WECCO, AP&CC and Tronox are found in the Conceptual Site Model document (ENSR 2005). The primary environmental investigations are summarized below.

1.2.2.1 Chromium Investigations

A groundwater investigation was initiated by Kerr-McGee in July 1981 to comply with the federal Resource Conservation and Recovery Act (RCRA) standards for monitoring the existing on-Site impoundments. A

Consent Order between Kerr-McGee and NDEP was issued in September 1986 (NDEP 1986), which stipulated the requirement for additional site characterization and the implementation of remedial activities to address chromium in the groundwater. As a result of the 1986 Consent Order, groundwater interceptor wells, additional monitoring wells, and two treated-water injection trenches were installed prior to the start-up of the chromium mitigation system in September 1987.

From initiation of remedial activities through 1993, the chromium mitigation system captured and treated over 200 million gallons of groundwater and removed an estimated 8,500 pounds (lbs) (4 tons) of chromium from the environment (ENSR 2005).

To enhance the capture of groundwater by the interceptor wells, Kerr-McGee installed a groundwater barrier wall along the downgradient side of the interceptor well line that was completed in September 2001. The bentonite-slurry barrier wall measured approximately 1,600-feet long, 60-feet deep, and 3-feet wide. By November 2001, groundwater recovery volume from the interceptor well field had more than doubled. In the nearly six years since construction of the barrier wall was finished, over 9,000 lbs (4.5 tons) of chromium have been removed from the environment.

Kerr-McGee has been providing the NDEP with performance reports of the chromium mitigation program on a regular basis since 1987.

1.2.2.2 Perchlorate Investigations

In mid-1997, analytical methods were developed to detect low perchlorate concentrations (down to 0.004 milligrams per liter (mg/L)), and governmental and regulatory concern increased regarding the health hazards of perchlorate in drinking water. Perchlorate was subsequently discovered in the Colorado River and traced upstream to Henderson, Nevada and specifically to the location of two ammonium perchlorate manufacturing facilities, one of which was the Site.

In late 1997, Kerr-McGee undertook a perchlorate characterization study (Kerr-McGee 1997) to determine the subsurface pathway(s) and the perchlorate concentrations in the shallow groundwater downgradient from the Kerr-McGee Henderson facility to its discharge in the Las Vegas Wash. The result of the groundwater investigation (Kerr-McGee 1998a) was the identification of a perchlorate plume extending from the Kerr-McGee property northwards to the Athens Road area in Henderson (about one-mile south of Las Vegas Wash).

Groundwater recovery began along the Athens Road area in September 1998 as Kerr-McGee installed recovery wells to remove perchlorate-bearing shallow groundwater (Kerr-McGee 1998b).

On-Site capture of perchlorate-bearing groundwater began in late 1998. At this time, the chromium interceptor well line continued to capture on-Site groundwater for chromium removal. However, instead of re-injecting the treated groundwater into the shallow aquifer, the treated water was impounded for additional treatment to remove perchlorate. An 11-acre lined pond (GW-11 pond) was constructed by late 1998 to contain this recovered groundwater.

In 1999, perchlorate-impacted groundwater was discovered discharging into Las Vegas Wash from a groundwater seep (Seep) along the bank of the Las Vegas Wash. In July 1999, Kerr-McGee and NDEP entered into a Consent Agreement (NDEP 1999) to initiate remedial measures to intercept and treat the perchlorate-bearing water flowing from the Seep area into Las Vegas Wash. By October 1999, groundwater collection for perchlorate reduction in the Seep area began as construction of a weir-sump and temporary ion-exchange unit were completed and the ion-exchange unit was brought on-line. In 2001, Kerr-McGee constructed recovery wells in the Seep area for perchlorate removal via the temporary ion-exchange unit.

In October 2001, Kerr-McGee and NDEP entered into an Administrative Order on Consent (AOC) (NDEP 2001). The 2001 AOC stipulated that Kerr-McGee would construct a treatment system capable of treating 825 gallons per minute (gpm) for removal of the perchlorate from surface and groundwater collected upgradient from the barrier wall, the Athens Road groundwater extraction well system, and the Las Vegas Wash and Seep collection areas. Furthermore, the collected groundwater would be treated to remove perchlorate and discharged in accordance with the limits set forth in the existing National Pollutant Discharge Elimination System (NPDES) permit.

Through 2002 and 2003, Kerr-McGee installed additional groundwater recovery wells along the Athens Road Area and in the Seep well field area to enhance the recovery of perchlorate-bearing groundwater. In early 2004, construction was completed on a biological Fluidized-Bed Reactor (FBR) on the Site as a long-term treatment system designed to remove perchlorate from the recovered groundwater. In 2004, with the FBR system treating recovered groundwater from all three groundwater recovery systems (the on-Site interceptor wells, the Athens Road groundwater recovery wells, and the Seep area well field), the temporary ion-exchange system at Las Vegas Wash near the Seep well field was shut down.

Between 1998 (when the perchlorate remediation program began) and October 2004 (when the FBR system began operations), approximately 2,802,000 lbs (1,401 tons) of perchlorate had been removed from the environment (ENSR 2005). In 2006, approximately 498 million gallons of groundwater were pumped (1.36 million gallons of water per day) and the total amount of perchlorate removed from the environment was approximately 667,000 lbs (334 tons) (ENSR 2006b).

Tronox (formerly Kerr-McGee) has been providing the NDEP with performance reports of the perchlorate mitigation program on a regular basis since 1997.

1.2.3 Environmental Conditions Summary

Numerous investigations have been conducted to evaluate the nature, extent, and movement of contaminants on the Site and in downgradient and cross-gradient areas. A summary of the Site history, soil, and groundwater investigations is presented below.

In April 1991, Tronox, then Kerr-McGee, was one of six companies that entered into a Consent Agreement with the NDEP (NDEP 1991) to conduct environmental studies to assess site-specific environmental conditions that are the result of past and present industrial operations and waste disposal practices. The six companies that entered into the Consent Agreement included those past or present entities that conducted business within the BMI complex. The six companies that are a party to the 1991 Consent Agreement with the NDEP include: Kerr-McGee Chemical Corporation (now Tronox); Titanium Metals Corporation; Stauffer Management Company, Inc.; Chemstar; Montrose Chemical Corporation of California, Inc.; and Pioneer Chlor Alkali Company, Inc. The 1991 Consent Agreement specified that the companies accomplish the following:

- Identify past industrial practices and waste products generated;
- Identify known or suspected waste management units or areas active on or after November 19, 1980;
- Identify known or suspected spills of any pollutant or contaminant;
- Identify all current and prior owners and operators of any part of the Site;
- Collect and summarize records or investigations that identify, document, or address soil, surface water, groundwater, or air impacts; and
- Provide documentation of all measures that have been taken to monitor, characterize, mitigate, or clean up Site environmental impacts.

In April 1993, in compliance with the 1991 Consent Agreement, Tronox submitted the Phase 1 Environmental Conditions Assessment (ECA) (Kleinfelder 1993) to the NDEP. The purpose of the report was to identify and document Site-specific environmental impacts resulting from past or present industrial activities. The Phase 1 ECA included an assessment of the geologic and hydrologic setting, as well as historical manufacturing activities. The assessment identified 31 solid waste management units (SWMUs), 20 areas of known or suspected releases or spills, and 14 miscellaneous areas where Site activities may have impacted the soil, air, or groundwater.

In response to the NDEP review of the Phase 1 ECA and discussions between the NDEP and Tronox, the NDEP prepared a LOU summarizing requirements for additional information and data collection (NDEP 1994). The LOU identified 69 items to be addressed further (see ENSR 2005). The LOUs are listed on **Table 1-1**. Each of the LOU items was addressed by one or more of the following actions, as requested by the NDEP:

1. Tronox provided additional information to the NDEP in a written response (35 LOU items);

2. Tronox conducted field sampling and data collection (12 LOU items);

3. Field investigation by the Henderson Industrial Site Steering Committee (2 LOU items); and/or

4. "No further action required at this time" (20 LOU items).

On October 2, 1996, Tronox submitted complete responses to the 35 LOU items requiring additional information or explanation (Kerr-McGee 1996a).

In 1996 and 1997, Tronox conducted additional data collection as part of a Phase II ECA. The field investigations were conducted in compliance with an NDEP-approved work plan (Kerr-McGee 1996b). The Phase II ECA addressed the 12 LOU items that were identified as needing additional characterization. In August 1997, Tronox submitted the Phase II ECA (ENSR 1997) report to the NDEP.

On June 10, 1998, the NDEP issued comments on the Phase II ECA report (NDEP 1998a), which conditionally approved the document subject to selected additional work and development of a conceptual site model.

On November 9, 1998, Tronox submitted a response to the NDEP comments to the Phase II ECA report and included with the responses a Supplemental Phase II ECA Work Plan (Kerr-McGee 1998c) designed to provide the supplemental data required by the NDEP for the Phase II ECA.

On December 17, 1998, the NDEP replied to Tronox, then Kerr-McGee; NDEP conditionally approved Tronox's Response to Comments and the Supplemental Work Plan. According to the NDEP, the Work Plan was approved subject to "the development of a CSM for the Site and comparing the soil sample results that were and will be obtained to the Nevada cleanup standards and actual background values."

In March and April 1999, the field work approved by the NDEP for the supplemental Phase II ECA was conducted. In April 2001, Tronox prepared a report of the findings of the field work and submitted them to the NDEP as the Supplemental Phase II ECA (ENSR 2001).

In February 2004, the NDEP provided a response to the Tronox, then Kerr-McGee, Supplemental Phase II ECA (NDEP 2004). NDEP indicated that additional work would be required including identification of all potential contaminants associated with the Site, background sampling, assessment of site-specific action levels, and identification of data gaps.

In March 2006, six boreholes were drilled and sampled as part of the Tronox upgradient investigation. These data were used to supplement the data generated through the source area investigation.

In February 2006, the Phase A Source Area Work Plan was provided to the NDEP (ENSR 2006a). NDEP provided comments on the Work Plan on March 11, 2006, June 15, 2006, and October 24, 2006. The Work Plan was revised in response to the NDEP comments and the Phase A Work Plan was approved by the NDEP in October 2006 (NDEP 2006). Data collection for Phase A was conducted in November and December 2006. On May 1, 2007 a Work Plan Addendum to the Tronox Phase A Source Area Evaluation (ENSR 2007) was sent to the NDEP for additional sampling of the 21 wells previously sampled in December 2006. (The re-sampling was performed to examine the effects of turbidity on the analytical results of metals and radionuclides in groundwater.) The work plan addendum was approved on May 1, 2007 and the wells were resampled on May 4 through May 11, 2007. Copies of Tronox and NDEP correspondence pertaining to the Phase A Source Area Investigation are included in **Appendix A**.

1.3 Report Organization

The Phase A Source Area Investigation report is organized as follows:

Section 1 is the introduction and describes the purpose of the source area investigation. The objectives of the investigation, along with a brief history of the Site are presented, and the section concludes with a summary of the environmental conditions at the Site.

Section 2 discusses the physical setting of the Site, including site location, site topography, climate, regional and local geology/hydrogeology, and a brief summary of the results of background studies from adjacent areas and the upgradient investigation performed at the Site.

Section 3 describes the Phase A Source Area Investigation activities including the field activities, sample handling and management, a discussion of the procedures by which the laboratory data were evaluated, and variances from the work plan.

Section 4 presents results of the Phase A investigation, including a discussion of the geology encountered and the laboratory results for the soil and groundwater samples that were analyzed.

Section 5 provides an assessment of whether SRCs have been adequately characterized, following the evaluation steps identified in the Work Plan (ENSR 2006a). Recommendations are made on SRCs considered to be adequately characterized for future risk assessment purposes and on constituents which will require additional investigation. Separation of the Site into "Evaluation Areas" for future risk assessment is proposed to ensure that the Phase B study generates adequate sample coverage and the appropriate number of samples for the future risk assessment.

Section 6 evaluates approaches for a subsequent Phase B Site Investigation and recommends a path forward, the procedures for which are presented in the Phase B Work Plan appended to this document.

Section 7 provides a bibliographic list for each of the references that were cited in this document.

Appendices included in this document are listed below.

- **Appendix A** contains the pertinent NDEP and Tronox correspondence regarding the Phase A Source Area Investigation.
- **Appendix B** contains copies of the soil boring logs that were generated during drilling activities.
- **Appendix C** contains groundwater sampling field data sheets.

- **Appendix D** contains the coordinates and elevations of the soil borings and monitoring wells, and manganese sample locations that were measured by the surveyor.

- **Appendix E** is a compact disc containing copies of the laboratory certified analytical reports and chain-of-custody documentation.

- **Appendix F** contains the laboratory reports for the geotechnical data collected.

- **Appendix G** presents the data validation summary report (DVSR) and data validation memoranda.

- **Appendix H** contains the backup data that were generated as part of the statistical evaluation of the laboratory data.

- **Appendix I** contains the Phase B work plan, for review by the NDEP.

- **Appendix J** presents the evaluation of the Phase A asbestos data.

- **Appendix K** presents the evaluation of Data Usability Evaluation of Detection Limits.

- **Appendix L** presents a summary (in chronological order) of LOUs, data tables, and select figures from the Conceptual Site Model

2.0 Physical Setting of Study Area

This section describes the physical setting of the Site and includes a brief description of the location of the Site, the topography of the Site, and the local and regional climate. This is followed by a discussion of the geology and hydrogeology of the area both from a regional and local perspective, including a summary of the geological results from the 2006 upgradient study that was performed along the southern perimeter of the Site (ENSR 2006c).

2.1 Site Location

The Site is approximately 450 acres in size and is located 13 miles southeast of Las Vegas in an unincorporated section of Clark County, Nevada (**Figure 1-1**). It is completely surrounded by the incorporated area comprising the City of Henderson. The Site is in Township 22 South, Range 62 East, and covers portions of Sections 1, 12, and 13. The approximate center of the Site is located at longitude 36°02'45" W and latitude 115°00'20" N. Phase A of the Source Area Investigation focused on gathering information from selected locations across the entire Site as depicted on **Plate 1-1**.

2.2 Site Topography

Elevations across the Site range from 1,677 to 1,877 feet above mean sea level (msl). The land surface across the Site slopes toward the north at a gradient of approximately 0.023 feet per foot (ft/ft). The developed portions of the Site have been modified by grading to accommodate building foundations, surface impoundments, and access roads.

2.3 Climate

The climate of the Las Vegas Valley is arid, consisting of mild winters and dry hot summers. Average annual precipitation as measured in Las Vegas from 1971 to 2000 was 4.49 inches (ENSR 2005). Precipitation generally occurs during two periods, December through March and July through September. The winter storms generally produce low intensity rainfall over a large area. The summer storms generally produce a high intensity rainfall over a smaller area for a short duration. These violent summer thunderstorms account for most of the documented floods in the Las Vegas area. Temperatures can rise to 120° Fahrenheit (°F) in the summer, and average relative humidity is 20 percent. The mean annual evaporation from lake and reservoir surfaces ranges from 60 to 82 inches per year (ENSR 2005).

Winds frequently blow from the southwest or northwest and are influenced by nearby mountains. Strong winds in excess of 50 miles per hour are experienced occasionally.

2.4 Geology and Hydrogeology

In this section, the geology of the Site and surrounding area is discussed from both a regional and a local perspective, followed by a brief summary of the local hydrogeology of the area.

2.4.1 Regional Geology

The Las Vegas Valley occupies a topographic and structural basin trending northwest-southeast and extending approximately 55 miles from near Indian Springs on the north to Railroad Pass on the south. The valley is bounded by the Las Vegas Range, Sheep Range, and Desert Range to the north; by Frenchman and Sunrise Mountains to the east; by the McCullough Range and River Mountains to the south and southeast; and the Spring Mountains to the west. The mountain ranges bounding the east, north, and west sides of the valley consist primarily of Paleozoic and Mesozoic sedimentary rocks (limestones, sandstones, siltstones, and fanglomerates), whereas the mountains on the south and southeast consist primarily of Tertiary volcanic rocks (basalts, rhyolites, andesites, and related rocks) that lie directly on Precambrian metamorphic and granitic rocks (Bell 1981).

In the Las Vegas Valley, basin-fill consists of Tertiary and Quaternary sedimentary and volcanic rocks and unconsolidated deposits, which can be up to 13,000 feet thick (Langenheim et al. 1998). The valley floor consists of fluvial, paludal (swamp), and playa deposits surrounded by more steeply sloping alluvial fan aprons derived from erosion of the surrounding mountains. Generally, the deposits grade finer with increasing distance from the source area and with decreasing elevation. The structure within the Quaternary and Tertiary-age basin-fill is characterized by a series of generally north-south trending fault scarps. The origin of the faults is somewhat controversial. They may be tectonic in origin or may be the response to compaction and subsidence within the basin due to groundwater withdrawal.

A detailed discussion of the geology of the Site and surrounding area is found in the CSM report (ENSR 2005).

2.4.2 Local Geology

The local geology and hydrology are defined by data collected from the numerous borings and wells that have been installed in the area.

Alluvium. The Site is located on Quaternary age alluvial deposits that slope north toward Las Vegas Wash. The Quaternary alluvium (Qal) consists of a reddish-brown heterogeneous mixture of well-graded sand and gravel with lesser amounts of silt, clay, and caliche. Clasts within the alluvium are primarily composed of volcanic material. Boulders and cobbles are common. Due to their mode of deposition, no distinct beds or units are laterally continuous over the area.

A major feature of the alluvial deposits is the stream-deposited sands and gravels that were laid down within paleochannels that were eroded into the surface of the underlying Muddy Creek Formation during infrequent flood runoff periods. These deposits are thickest within the paleochannel boundaries, which are narrow and linear. These sand and gravel deposits exhibit higher permeability than the adjacent, well-graded deposits. In general, these paleochannels trend northeastward.

The thickness of the alluvial deposits ranges from less than a foot at the southern boundary to more than 50 feet beneath the Site. In general, alluvial sediments thicken to and extend to the groundwater toward the Las Vegas Wash. Soil types identified in boreholes on-Site include poorly sorted gravel, silty gravel, poorly sorted sand, well sorted sand, and silty sand. The thickness of the alluvium, as well as the surface of the underlying Muddy Creek formation, was mapped to locate these paleochannels due to their hydrogeologic importance.

Muddy Creek Formation. The Muddy Creek Formation of Miocene and Pliocene age occurs in Las Vegas Valley as valley-fill deposits that are coarse-grained near mountain fronts and become progressively finer-grained toward the center of the valley (Plume 1989). Beneath the Site, the Muddy Creek Formation is present beneath the alluvium and is more than 250 feet thick. At least four distinctive lithologic facies have been identified within the Muddy Creek Formation. These faces are identified (in order of increasing depth) as:

- First fine-grained facies (MCfg1);
- First coarse-grained facies (MCcg1);
- Second fine-grained facies (MCfg2); and
- Second coarse-grained facies (MCcg2).

In general, the fine-grained facies consist of predominantly well-sorted silt and clay sediments with occasional lenses of fine-grained sand and silty sand. The coarse-grained facies are generally characterized by poorly-sorted coarse- to fine-grained sand and gravel with occasional lenses of silt.

Everywhere beneath the Site (except for the southernmost 1,000 feet adjacent to Lake Mead Parkway), Qal rests directly on top of MCfg1. Along the southern boundary of the Site, MCfg1 is absent and the Qal rests directly on top of MCcg1. Where this occurs, the sediments of the Qal and MCcg1 are very similar in appearance and texture, and it is often difficult to distinguish the contact between the two units.

MCfg1 first occurs roughly 1,000 feet north of Lake Mead Parkway and gradually thickens northward up to 180 feet thick beneath the north end of the Site. In on-Site borings, the contact between the Qal and the MCfg1 is typically marked by the first extensive occurrence of well-compacted, moderate brown silt-to-sandy silt or a stiff clay-to-sandy clay. Near the Las Vegas Wash, the contact is easily discernable as the MCfg1 is marked by gray-green to yellow-green gypsiferous clays and silts. Beneath the Site, the MCcg1 facies ranges from 40 to 60 feet thick and the underlying MCfg2 facies is from 25 to 145 feet thick. The deepest of the four facies (MCcg2) is more than 20 feet thick along the southern boundary of the Site and appears to thicken northward, where it is over 70 feet thick beneath the northern Site boundary.

The Muddy Creek Formation represents deposition in an alluvial apron environment that grades into fluvial (river/stream), paludal (swamp), playa, and lacustrine environments further out into the valley center. On the Site, the Muddy Creek does not crop out but instead subcrops beneath a veneer of Qal.

2.4.3 Local Hydrogeology

Aquifers in the Las Vegas Valley are separated by thick sequences of fine-grained deposits that exhibit low permeability. Interconnection between these aquifers in the valley occurs along fault zones and through semi-confining layers (ENSR 2005). Recharge to the deep or “principal aquifers” is primarily through artesian flow and run-off from precipitation occurring in the surrounding mountains which infiltrates the alluvium along the valley margins. Recharge of the shallow aquifer is generally through “upward leakage” along fault zones and semi-confining layers. Other contributions of recharge to the shallow aquifer include over-irrigation and other forms of water application to the land surface, but contribution brought by the infiltration of surface water is considered to be minimal. Discharge is by evapotranspiration and downgradient movement to Las Vegas Wash.

Alluvial Aquifer. The first groundwater encountered at the Site occurs more than 30 feet bgs beneath the Site on the south, and is at, or near, the ground surface at Las Vegas Wash to the north. The measured horizontal hydraulic gradients in this aquifer are generally northward between 0.001 to 0.04 ft/ft, whereas the average hydraulic gradient is 0.017 ft/ft (ENSR 2005). The flow direction of the potentiometric surface mimics the ground surface and is to the north-northeast with minor variations.

One of the results of the perchlorate groundwater investigation that was performed in 1998 (Kerr-McGee 1998b) was the identification of a buried alluvium-filled channel incised into the underlying muddy formation (known as the “Main Channel”) that is present near the northern boundary of the Site. The Main Channel continues downgradient northeastward towards Las Vegas Wash. The Main Channel ranges from 700 to 1000 feet wide with a maximum depth approaching 60 feet.

The Main Channel serves as a preferred pathway for groundwater flow. Based on tracer tests north of Athens Road, the average rate of groundwater flow was 35 feet per day (Kerr McGee 1998b and 2001). Extrapolating this velocity over the total distance involved and assuming that perchlorate travels at the same rate as the groundwater, the residence time for perchlorate in the Main Channel to move from Athens Road to Las Vegas Wash (a distance of approximately 1.2 miles) was estimated to be about six months (ENSR 2005).

The results of a 1998 pump test in the Athens Road area indicate a permeability of 50 gallons per day per square foot (gpd/ft^2), a transmissivity of 1,300 gpd/ft, and a groundwater velocity of 220 feet per year for groundwater in the Main Channel (Kerr-McGee 1998b).

The chemistry of the shallow aquifer is generally a sodium-chloride-sulfate type and is classified as slightly to moderately saline. Evapotranspiration concentrates the natural salts in the shallow aquifer, resulting in low-quality water with high total dissolved solids (TDS) in the range of 3,000 to over 10,000 mg/L (Zikmund 1996, Kerr-McGee 1998b).

Muddy Creek Aquifer. Within the Las Vegas Valley, groundwater also occurs within the coarse-grained facies of the Muddy Creek formation. This water, averaging an electrical conductivity of about 1,000 micro Siemens per centimeter (uS/cm), is of generally good quality where not impacted by industrial and residential contaminants. As sampled beneath the Site in February 2005 in well TR-1, the groundwater from the highest coarse-grained Muddy Creek unit contained 45 mg/L calcium, 180 mg/L chloride, 150 mg/L sodium, and 200 mg/L sulfate. Deep wells drilled into the Muddy Creek formation all exhibit artesian conditions, with some wells flowing at the surface. Most shallow wells drilled into the shallow Muddy Creek also demonstrate an upward hydraulic gradient (ENSR 2005).

Surface Water. Surface water at the Site flows to the north toward Las Vegas Wash. Flow occurs as infrequent storm runoff that drains across the alluvial apron in shallow washes. Drainage and diversion structures have been constructed around the perimeters of the BMI complex to channel surface water flow. Las Vegas Wash is a tributary to Lake Mead and it is the only channel through which the valley's excess water flows to the lake. The water flowing through Las Vegas Wash comprises less than two percent of the water that flows into Lake Mead and consists of urban runoff, shallow groundwater, storm water, and releases from the valley's three water reclamation facilities (Southern Nevada Water Authority 2004).

Water Supply. Lake Mead is a major reservoir on the Colorado River, which supplies about 85 percent of the total water used in the Las Vegas Valley. Groundwater is used to meet approximately 15 percent of the annual water needs for the Las Vegas Valley (ENSR 2005). During the hot summer months from May to September, groundwater extracted from 6,800 wells within the Las Vegas Valley can account for 39 percent of the valley's water supply. This source provides groundwater year-round to residents and other users that are not connected to a municipal water supply. The NDEP has identified one water supply well (56903) located on private property west of Gibson Road in Henderson, Nevada (NDEP 2007b). It is not certain if the well still exists. The NDEP has asked the well owner for additional information on the well and for the well to be properly plugged and abandoned, if it exists. There are no other known water supply wells within four miles of the Site that extract water from the "shallow aquifer."

Further details on the local hydrogeology of the area can be found in the CSM report for the Tronox property (ENSR 2005).

3.0 Phase A Source Area Investigation Field Activities

This section describes the field activities that were performed in support of the Phase A Source Area Investigation. The following subsections describe the methodologies used in the field and describe the variances from the NDEP-approved Phase A Work Plan (ENSR 2006a) and the Addendum to the Phase A Work Plan (ENSR 2007).

This section is organized by the particular field activity performed at the Site, and presents each activity in approximate chronological order. The sampling program was designed to collect co-located soil and groundwater samples. Borings were drilled at specific locations across the Site so that depth-specific soil samples could be collected for laboratory analyses. Groundwater samples, collected from existing monitoring wells that were near the boring locations, were also sent to a laboratory for chemical analyses. At those boring locations where nearby monitoring wells did not exist, or were not functional, groundwater grab samples were collected from the open borehole for laboratory analyses. Brief discussions of drilling activities, sample-handling procedures, field QC procedures, and investigation-derived waste (IDW) handling procedures are included in this section.

3.1 Utility Clearance

Prior to drilling, Underground Services Alert (USA) was notified as to the location and scope of the proposed drilling locations. The TBE Group (TBE) of Las Vegas, Nevada performed a geophysical survey using electromagnetic and other utility locating instruments to search for existing underground utility lines and structures at the proposed locations. Existing utility maps and electromagnetic instruments indicated that numerous buried utility lines were in close proximity to two proposed boring locations (borings SA04 and SA05) therefore, an air knife was used near the proposed locations to perform a non-destructive search for buried utilities. At these locations, the air knife verified that utility lines did not run beneath the proposed drilling locations and borings SA04 and SA05 were drilled as planned.

3.2 Soil Borings

Boring locations were selected in consultation with the NDEP to characterize specific areas of past or current operations at the Site and by evaluating previous data gathered during earlier soil assessments (ENSR 1997). The rationale for each Phase A boring location is shown in **Table 3-1**. Soil borings were drilled using a track-mounted all-terrain sonic drill rig operated by PROSONIC® Corporation of Mesa, Arizona. During drilling operations, organic vapors were monitored with a photo ionization detector (PID) fitted with an 11.8 electron volt (eV) lamp and a flame ionization detector (FID).

A total of 27 soil borings (SA01 through SA27) were drilled at the Site between November 1 and November 21, 2006. Boring locations are shown on **Plate 1-1.** Soil cores were logged in the field by a geologist under oversight by a Nevada Certified Environmental Manager (CEM). Soil characteristics such as texture, color, relative moisture content, relative grain size, ambient temperature, headspace measurements, and features such as staining or unusual odors were noted and recorded on soil boring log sheets. Soil types were classified according to the Unified Soil Classification System (USCS). Copies of the soil boring logs are included in **Appendix B**. Soil was screened for VOCs in the field using a PID and FID. These headspace measurements are shown on the soil boring logs in **Appendix B**.

At each boring location, a soil sample for laboratory analysis was collected at 0.5-foot depth, and thereafter, at 10-feet depth intervals until water was first encountered. The only exception to this was soil boring SA01, a 10-feet-deep boring where soil samples were collected at 5-feet intervals (0.5, 5, and 10 feet bgs) as specified in the Phase A Work Plan (ENSR 2006a). The deepest soil sample from each boring was collected from a depth corresponding to within one to two feet of the water table.

Following the completion of sampling activities, the boreholes were filled with bentonite-neat cement grout using a tremie pipe. Soil cuttings and residual soil cores (i.e., soil that was not needed for laboratory analyses) were placed into U.S. Department of Transportation (DOT)-approved 55-gallon drums. The drums were sealed, labeled and placed on pallets in a temporary on-Site storage area while awaiting the receipt of the laboratory results. Further details regarding the handling of drummed soils are discussed in Section 3.8 – Investigation Derived Waste Management.

3.3 Soil Sampling

Soil sampling for laboratory analysis consisted of the following:

1. Collection of a composite surface soil sample (0-1 inches bgs) for asbestos analysis, moisture content, and silt content at each soil sampling location.

2. Collection of near surface samples (1.5 to 3 feet bgs) for physical and geotechnical analyses at a subset of soil boring locations.

3. Collection of a surface soil sample (0 to 0.5 feet bgs) from each soil boring for analysis of SRCs (see **Table 3-2**).

4. Collection of subsurface samples from each soil boring at 10 feet intervals until water was first encountered, for analysis of SRCs (see **Table 3-2**).

5. Collection of manganese ore and manganese tailing samples for analysis of metals and radionuclides.

Field procedures that were used for this investigation are described in detail in the Phase A Work Plan (ENSR 2006a). The following subsections briefly describe the field procedures that were used for each type of sample.

3.3.1 Surface Soil Sampling for Asbestos

Surface soil samples were collected from each of the 27 boring locations and sent to an off-site laboratory for asbestos testing using the elutriator method (EPA Method 540 R-97/028). The 27 samples were collected using the procedures described in BRC's Standard Operating Procedure (SOP)-12 *Surface Soil Sampling for Asbestos* (BRC 2006). A brief description of the sampling procedure is summarized below.

A 50-foot-by-50-foot sampling area grid was centered over the boring location. The 50-feet-by-50-feet grid area was further subdivided into quadrants measuring 25 feet on each side. A 12-inch-square plastic template was placed in a pre-selected random location in each of the four quadrants and a stainless steel hand trowel was used to carefully scrape the surface soil within each template to a depth of approximately one-inch, and transfer the soil into a one-gallon Ziploc™ plastic bag. The sample from each of the four quadrants was placed into a single Ziploc™ plastic bag to form a composite soil sample weighing at least one kilogram, and representing conditions within the 50-ft square. Following this, the bag was sealed, labeled, and prepared for shipment to the laboratory. No special preservation procedures such as placing samples on ice were required.

At boring locations in areas where the ground surface was covered with asphalt or concrete pavement, the sampling grid was moved to the closest patch of unpaved soil and four 25-foot square quadrants were established so that the 12-inch square template could be placed into pre-selected random locations. From there, surface soil was collected using the same techniques as described above. This modification to the sample collection method was applied at the following locations:

SA02	SA04
SA05	SA06
SA08	SA10
SA13	SA15
SA19	SA20

In order to analyze a soil sample for asbestos using the elutriator method, the moisture content and silt content for each soil sample analyzed must be known; therefore, a second surface soil sample was collected from the center of each 50-foot-by-50-foot grid for determination of moisture and silt content as described in *SOP-12 Surface Soil Sampling for Asbestos* (BRC 2006). For each sample, a minimum of one kilogram of surface soil was placed into wide-mouth laboratory-supplied glass jars fitted with threaded screw-on lids. Once filled, the jars were sealed, labeled, and prepared for shipment to the laboratory.

3.3.2 Physical and Geotechnical Soil Sampling

Physical or geotechnical properties of near surface soil from the Site were measured to provide data that can be used for future risk assessment purposes. Samples were collected at two locations (SA08 and SA21) from between 1.5 and 3 feet bgs. The samples were collected using a split-spoon sampler fitted with brass sleeves. Once collected, Teflon™ sheets and plastic end caps were placed on each end of the soil-filled brass sleeve. Labels were affixed to each sleeve and each sleeve was sealed in a Ziploc™ plastic bag and placed on ice in an ice chest while awaiting shipment to the laboratory.

3.3.3 Surface and Subsurface Soil Sampling at Soil Boring Locations

Soil samples were collected using the methods described in the NDEP-approved Phase A Work Plan (ENSR 2006a). Sampling methodology is briefly described below.

Soil borings were drilled using a sonic drill rig equipped with a seven-inch sonic core barrel. At each boring location, a surface soil sample was collected at 0.5 feet bgs, and thereafter, at 10-foot intervals until water was first encountered. The only exception to this was soil boring SA01, a 10-foot-deep boring where a soil sample was also collected at 5-feet bgs (as specified in the Phase A Work Plan [ENSR 2006]), in addition to samples taken at 0.5 and 10 feet bgs. All soil samples were sent to off-site NDEP-certified laboratories for analyses.

Soil samples designated for analysis of temperature-sensitive constituents (e.g., VOCs, gasoline-range organics [GRO], and fuel alcohols) were collected using a split-spoon sampler fitted with brass sleeves. Once the target depth was reached, the split-spoon sampler was pushed 18 inches into the undisturbed soil beyond the tip of the hollow sonic core barrel.

As soon as the split-spoon sampler was removed from the borehole and disassembled, the brass sleeve corresponding to the target sample depth was chosen for analysis. Soil samples to be analyzed for VOCs, GRO and fuel alcohol analyses were taken from the brass sleeve and placed into laboratory supplied 40-ml volatile organic analysis (VOA) vials filled with preservatives as prescribed under USEPA Test Method 5035. Once filled, the vials were sealed, labeled and placed on ice in an ice chest.

Soil samples intended for other analyses such as metals, PCBs, perchlorate, dioxins, radionuclides, total organic carbon (TOC), pesticides, SVOCs, etc., were sent to the laboratory in glass jars and brass sleeves. The glass jars were provided by the laboratory. Both types of containers were sealed, labeled and placed on ice in an ice chest for delivery to the laboratory.

All samples were labeled immediately following their collection. The following information was recorded on each label using a waterproof marker: project name, sample identification number, date and time of sample collection, sampler's initials, sample preservatives, and analysis to be performed.

3.3.4 Manganese Ore and Manganese Tailings Sampling

Manufacturing activities at the Site involve the processing of manganese ore in order to produce manganese dioxide. One sample of the manganese ore and one sample of the processed manganese tailings were collected for laboratory analyses.

The manganese ore sample was collected using a stainless steel hand trowel to transfer the ore from the manganese ore stockpile into plastic sample bags. The bag was sealed, labeled, and placed inside an ice chest with ice and shipped to the laboratory for metals and radionuclide analyses.

One sample of manganese tailings was also collected for laboratory analyses. In August 2006, nine exploratory borings were drilled into the manganese tailings pile at the Site using a hollow-stem-auger drill rig. Each boring was drilled downward until the tailings-soil interface was reached. At each boring, samples of tailings were collected from three depths: 1) near the surface of the borehole, 2) from the midpoint of the borehole and, 3) from the bottom of the borehole, for a total of 27 depth-discrete samples. These samples were placed into individual plastic containers. The containers were labeled, sealed and stored at the Site.

To collect the manganese tailings sample for the Phase A investigation, a stainless steel hand trowel was used to transfer one scoop of tailings from each of the 27 containers into a single plastic bag to form a composite sample of tailings. Once collected, the plastic bag was sealed, labeled, and placed in an ice chest with ice and shipped to the laboratory for metals and radionuclide analyses.

3.3.5 Soil Analytical Testing Program

In addition to the samples collected for asbestos and physical/geotechnical analyses, soil samples collected at all boring locations at the 0.5-ft bgs, and at the 10-ft bgs intervals thereafter were analyzed for SRCs that belong to the following analyte suites:

- Inorganic compounds (metals and cyanide),
- Wet chemistry constituents (also referred to as general chemistry constituents) including perchlorate,
- TPH compounds (i.e., GRO, DRO, and ORO) and fuel alcohols,
- OCPs,
- PCB compounds,
- Dioxins and furans,
- Radionuclides,
- OPPs,
- OCHs,
- VOCs, and
- SVOCs.

A complete list of SRCs including the analytical method used by the laboratories is presented in **Table 3-2.** The list of SRCs represents a list of chemicals that may be present at the Site due to their potential association with historical operations at the Site.

Dioxin/furan analysis was performed by Columbia Analytical Services and asbestos analysis was performed by EMSL laboratories Inc.. All other analyses were performed by Severn Trent Laboratories, Inc. All of these laboratories are certified by the NDEP to perform environmental testing of soil and water.

Analyses of physical or geotechnical parameters of the near surface soil samples were performed by PTS Laboratories, Inc. and consisted of the following:

- Soil dry bulk density (API RP40 method),
- Grain density (API RP40 method),
- Soil total porosity (API RP40 method),
- Soil water-filled porosity (API RP40 method),
- Fraction organic carbon content (Walkley-Black method),
- Grain size distribution (API RP40 method), and
- Moisture content (API RP40/ASTM D2216 methods).

3.4 Groundwater Sampling

As part of the Phase A investigation, groundwater samples were collected and analyzed for the presence of SRCs. Groundwater samples were collected from 20 existing monitoring wells and one existing interceptor well (I-AR). Each well was chosen for its close proximity to one of the soil boring locations and because the well was a water table well. The proximity of soil and shallow groundwater samples was intended to allow for the assessment of whether or not underlying groundwater has been impacted by chemicals detected in the overlying soils. In addition, groundwater grab samples were collected from the open boreholes at six locations where nearby wells either did not exist, or were not functional. In total, 27 groundwater samples were collected as part of the Phase A investigation. The procedures used to collect the groundwater samples are described below.

3.4.1 Groundwater Grab Samples

Groundwater grab samples were collected from open boreholes at six locations where existing nearby monitoring wells were not present. The boreholes and corresponding grab sample identification numbers are shown below.

Phase A Soil Boring Number	Groundwater Grab Sample Number
SA02	GWSA02
SA08	M29*
SA09	GWSA09
SA10	GWSA10
SA14	GWSA14
SA15	GWSA15
* Grab sample was inadvertently assigned a monitoring well ID number – see Section 3.10 for details.	

To collect the groundwater grab samples, the boreholes were advanced at least four feet into the water table. At each location, the water level in the borehole was allowed to stabilize, and from there the depth-to-water was measured with an electric water level indicator. At this point, a new disposable bailer was lowered into the water to retrieve the sample. Water from the bailer was then poured directly into the laboratory-supplied sample containers. The bailer was repeatedly lowered into the water to retrieve groundwater until all of the sample containers were filled.

Sample containers were filled in the order of decreasing volatilization potential. Containers for VOC analyses were filled first followed by containers for SVOCs, metals, perchlorate, general chemistry analytes, pesticides and PCBs. Sample containers for radionuclide analyses were filled last. The groundwater grab samples were analyzed for the same SRCs as the water samples from the monitoring wells.

Unfiltered groundwater grab samples for metals and radionuclide analyses were collected from the open boreholes according to the Phase A Work Plan (ENSR 2006a). Although filtered water samples were not specified in the Phase A Work Plan, a second groundwater grab sample from each open borehole was collected and filtered in the field for metals analyses. In addition, samples were collected from two open boreholes M29 and SA15 and filtered and submitted for radionuclide analyses. A peristaltic pump was used to transfer water samples through disposable water filters into the laboratory-supplied bottles. The filters removed suspended particulate matter greater than 0.45 micrometers (um) in size from the water.

Once the groundwater analytical data were received from the laboratory and validated, the analytical results of the filtered samples were compared to the unfiltered samples from the Phase A groundwater sampling. An evaluation of the November/December 2006 results indicated that elevated turbidity levels in the unfiltered water samples resulted in analytical results that were biased high for metals and radionuclides. As a result, another round of groundwater samples was collected in May 2007 to evaluate the effect of turbidity on the results for metals and radionuclides. Unfiltered samples were collected from the same 21 Phase A monitoring wells for metals and radionuclides analyses using two different low-flow rates to evaluate the effect of pump rates on turbidity levels in water samples; and a third set of samples was collected and field filtered to provide a baseline from which comparisons could be made between the filtered and unfiltered analytical results. All of the groundwater data from the 2006 and 2007 sampling events are presented in the data tables in Section 4.0. In total, for most wells included in the Phase A sampling program, four sets of analytical data are available for metals and radionuclides.

The groundwater analytical testing program is described in further detail in Section 3.4.3. The results of the filtered and unfiltered samples are discussed in greater detail in Section 4.

3.4.2 Micro-purge/Low-Flow Groundwater Sampling from Monitoring Wells (November/December 2006)

Groundwater samples were collected from 21 wells to assess the presence of SRCs. The soil borings and corresponding monitoring wells are shown below.

Soil Boring Number	Nearest Located Well	Soil Boring Number	Nearest Located Well
SA1	M120	SA18	M5A
SA3	M92	SA19	I-AR
SA4	M97	SA20	M55
SA5	M13	SA21	M7B
SA6	M12A	SA22	M98
SA7	M11	SA23	M100
SA11	M76	SA24	M48
SA12	M2A	SA25	MC45
SA13	M31A	SA26	M95

SA16	M89	SA27	PC40
SA17	M39	--	--

Monitoring well sampling followed a sequential procedure to ensure that the most representative sample was obtained. First, static water levels were measured with an electronic water level indicator and recorded. Water levels were measured to the nearest one-hundredth of one foot (0.01 foot). A stainless steel bladder pump was lowered into each well to a depth corresponding to the middle of the well screen. Prior to well insertion, the pump was fitted with a new bladder and new tubing. Although the same bladder pump was used from well-to-well, the bladder and tubing were dedicated to each well. After waiting to allow the water level to stabilize, groundwater was pumped from each well using low-flow purge rates.

For each well, pump rates were adjusted until a rate was attained where water levels remained relatively stable with minimal drawdown (less than 3 inches) as water was removed from the well. Pump rates varied from well-to-well but generally ranged from 100 ml/min to about 480 ml/min. Water quality parameters (e.g., temperature, pH, conductivity, dissolved oxygen, oxygen-redox potential, and turbidity) were measured during purging using a water quality instrument (e.g., Horiba™ U-22) fitted with a flow-through cell. Water was purged from each well until water quality parameters had stabilized to a fluctuation of 10 percent or less for three consecutive readings. Once this was achieved, the flow-through cell was detached from the pump discharge tubing and water from the discharge tubing was placed directly into the laboratory-supplied sample containers. Copies of the groundwater sampling field data records are presented in **Appendix C.**

Well I-AR is a groundwater interceptor well located south of the groundwater barrier wall on the Site. The well has a permanent electric submersible pump in it and groundwater from this well is pumped along a pipeline to the on-Site groundwater treatment systems where it passes through the chromium and perchlorate destruction systems. To collect a water sample from I-AR, the valve on the discharge pipeline near the well head was gradually opened so that water could discharge from the spigot directly into the sample containers. Low-flow purging/sampling was not possible from this well. At the time of sample collection, the flow rate from this well was between one half to one gpm.

Water samples, including groundwater, field blanks, equipment rinsates, and pump blanks, were collected in appropriate glass and plastic containers supplied by the analytical laboratory. For the groundwater samples collected with the bladder pump, the pump discharge tubing was placed directly over the mouth of the sample container and the container was filled with the water exiting from the discharge tubing. Containers used for VOC analysis were filled slowly – for the wells, the pump rate was lowered to approximately 40 ml/min and for I-AR, the valve was closed to lower the flow from the spigot while these containers were filled. Each 40-ml VOA container was examined to ensure that it was capped with zero headspace. Once filled, the sample containers were placed into Ziploc™ plastic bags and immediately placed in an ice chest containing ice. In addition, six groundwater grab samples for the metals analysis and two of the groundwater grab samples for radionuclides analysis were filtered in the field.

Sample containers were filled in the order of decreasing volatilization potential. Containers for VOC analyses were filled first followed by containers for SVOCs, metals, perchlorate, general chemistry analytes, pesticides and PCBs. Sample containers for radionuclide analyses were filled last. The groundwater analytical testing program is described in further detail in Section 3.4.3.

All samples were labeled immediately following their collection. The following information was recorded on each label using a waterproof marker: project name, sample identification number, date and time of sample collection, sampler's initials, sample preservatives, and analysis to be performed. The containers were placed on ice inside an ice chest while awaiting shipping to the laboratory. In general, at the end of each day of sampling, samples were shipped overnight to an NDEP-certified laboratory (under chain-of-custody protocol) for analyses.

3.4.3 Groundwater Analytical Testing Program

All groundwater samples, whether from monitoring wells or open boreholes, were analyzed for SRCs that belong to the following analyte suites:

- Inorganic compounds (metals and cyanide),
- Wet chemistry constituents (also referred to as general chemistry constituents) including perchlorate,
- Fuel alcohols,
- OCPs,
- PCBs,
- Radionuclides,
- OPPs,
- OCHs,
- VOCs, and
- SVOCs.

In contrast to the soil samples, groundwater samples were not analyzed for TPH, dioxins/furans, and asbestos in keeping with the NDEP-approved Phase A Work Plan (ENSR 2006a). All of the groundwater analyses were performed by Severn Trent Laboratories, Inc., which is certified by the NDEP to perform environmental analytical testing. A full list of the analytes (and analytical methods) is shown on **Table 3-2.**

3.4.4 May 2007 Groundwater Sampling Event

Groundwater samples were collected from 20 wells to assess the potential for analytical bias of metals and radionuclides in groundwater results based on high turbidity levels associated with sampling methodology. Groundwater samples were collected from the same monitoring wells sampled during the November/December 2006 sampling event, with the exception of M98, which was dry at the time of the May 2007 sampling event.

Well Sampled	Well Sampled
M120	M39
M92	M5A
M97	I-AR
M13	M55
M12A	M7B
M11	M100
M76	M48
M2A	MC45
M31A	M95
M89	PC40

Monitoring well sampling during the May 2007 event followed the same sequential procedures described for the November/December 2006 event (see Section 3.4.2) to ensure that the most representative sample was obtained and that data sets were comparable.

For each well, three samples were collected using the methods described in the Phase A Work Plan Addendum (ENSR 2007). Pumps were fitted with the dedicated bladder and tubing from the November/December 2006 sampling event. The pump rates were adjusted until a rate was attained where water levels remained relatively stable with minimal drawdown (less than 3 inches) as water was removed from the well. Low-flow and low low-flow pumping rates were used to collect samples.

For low low-flow samples, the pump rate was set at 100 ml/min. For low-flow samples the pump rate varied from well to well but generally ranged from 150 ml/min to about 400 ml/min. Water quality parameters (e.g., temperature, pH, conductivity, dissolved oxygen, and oxygen-redox potential) were measured during purging using a water quality instrument fitted with an in-line flow-through cell. Turbidity was measured with a stand-alone turbidity meter (nephelometer). Water was purged from each well until water quality parameters had stabilized to the acceptance criteria defined in the Phase A Work Plan Addendum (ENSR 2007) for three consecutive readings. Once this was achieved water from the discharge tubing was placed directly into the laboratory-supplied sample containers. One sample from each well was field filtered using low-flow pumping rates.

Groundwater sample identification names include the well number and a letter to indicate the method used to collect the sample. The letters L, Z, and F were assigned to the sample identification.

- "L" indicates the sample was unfiltered and collected using low low-flow pumping rates (100 to 150 ml/min).

- "F" indicates the sample was collected using low-flow pumping rates (150 to 480 ml/min) and the sample was field filtered.

- "Z" indicates the sample was unfiltered and collected using the same pump rate as the "F" sample.

As an example, groundwater sample identification M55-F would indicate that well M55 was sampled using low-flow pumping rates and the sample was field filtered.

Copies of the groundwater sampling field data records are presented in **Appendix C.**

3.5 Sample Custody

Sample information was recorded on a chain-of-custody form following sample collection. Information that was recorded includes: project name, project location, project number, sample identification number, date and time of sample collections, matrix type, analysis requested, sampler signature, and analytical laboratory name and address.

All samples were retained in the custody of field personnel from the time of collection until the time the samples were shipped.

3.6 Field Quality Control Samples

QC samples were collected in accordance with the project Quality Assurance Project Plan (QAPP) and as described in the Phase A Work Plan (ENSR 2006a). The QC samples consisted of trip blank samples, equipment rinsate blanks, a field blank sample, duplicate samples, matrix spike and matrix spike duplicate (MS/MSD) samples, and a pump rinsate blank sample.

3.6.1 Trip Blanks

Trip blanks were used to determine whether samples and/or vials may have been impacted by VOCs during transit to and from the laboratory. The analytical laboratory provided field personnel with 40-ml VOA vials filled with analyte-free water to be used as trip blanks. Two trip blank VOA vials were placed inside each ice chest that contained samples designated for VOC (i.e., TPH-GRO, VOCs) analyses prior to shipping the samples to the laboratory.

3.6.2 Field Blanks

The field blank sample was collected in order to determine if water sources used during the investigation had the potential to introduce SRC analytes into the Site samples. Arrowhead® distilled water bottled in 5-gallon containers was supplied to the Site and used for sampling equipment decontamination (split-spoon samplers, stainless steel hand trowels, and stainless steel bladder pumps) and equipment rinsate samples. The field blank sample (FB-1) was analyzed for the full list of SRC analytes.

3.6.3 Equipment Blanks

Equipment rinsates or blanks were collected in order to assess the adequacy of equipment decontamination procedures. The rinsate samples were collected following the decontamination of the sampling equipment. Equipment rinsates were collected by pouring distilled water over the decontaminated sampling equipment and collecting the runoff for analysis. Equipment rinsates were analyzed for the same set of parameters as the samples collected that day (except for cations, pH, and electrical conductivity, for which an equipment rinsate was not collected). Equipment blanks were taken from split spoons and stainless steel trowels for the soil sampling, and from the bladder pumps for the groundwater sampling.

3.6.4 Pump Rinsate Blanks

A total of four non-dedicated, stainless steel bladder pumps were used to collect groundwater samples from the monitoring wells. Prior to the start of sampling activities, all four stainless steel bladder pumps were disassembled and washed with Simple Green™ detergent and rinsed with distilled water. The final rinse water from all four pumps was combined into a composite pump rinsate blank (pump blank) sample. Each pump was assigned a unique identification number for tracking purposes, and the pump ID number was recorded on the groundwater sampling field data sheet for each well. For the equipment rinsate samples that were collected during groundwater sampling, one out of the four pumps were chosen each day to be evaluated with the equipment rinsate sample. During the course of the groundwater sampling, an equipment rinsate sample was collected from each bladder pump at least once. Pump rinsate blanks were collected using the equipment blank procedures described in Section 3.7.

3.6.5 Duplicate Samples

Duplicate soil and groundwater samples were collected at a frequency of one duplicate sample for every 10 samples. Soil duplicates were collected from consecutive sample sleeves or by filling additional sample jars with soil from the sonic continuous core using a hand trowel.

3.6.6 Matrix Spike/Matrix Spike Duplicate Samples

MS/MSD samples were collected at a frequency of one MS/MSD sample for every 10 samples collected. Both the MS/MSD samples were analyzed for the full list of SRC analytes.

3.7 Equipment Decontamination Procedures

Drilling equipment was decontaminated prior to the start of drilling at each boring, by steam cleaning in a designated area on-Site. All non-disposable soil sampling equipment (e.g., split-spoon samplers, etc.) were disassembled and decontaminated prior to the collection of each sample. The equipment was decontaminated by either steam cleaning or by washing with Simple Green™ detergent followed by triple rinsing with distilled water. Decontamination fluids were deposited into the GW-11 Pond, an 11-acre pond that is located on-Site. Water from the GW-11 Pond passes through a granular activated carbon filtration system before entering the on-Site perchlorate destruction system. Drilling equipment was also decontaminated between locations.

For the non-dedicated groundwater sampling equipment (e.g., bladder pumps), the stainless steel pump housing and interior fittings were decontaminated using Simple Green™ detergent followed by triple-rinsing with distilled water. New bladders and pump tubing were used at each well, and then disposed. Thus, decontamination of these components was not needed.

3.8 Investigation-Derived Waste Management

IDW consists of all contaminated or potentially contaminated material generated as a result of field activities for the Phase A investigation. These materials include soil from drilling activities, water from equipment decontamination activities, purge water from monitoring well sampling activities, and disposable personal protective equipment (PPE) worn by field personnel.

Soils from drilling activities were placed into DOT-approved 55-gallon drums. Each drum was assigned a unique drum identification number and affixed with a permanent label listing the drum identification (ID) number, contents, date generated and source. A total of 29 drums of soil were generated. The drums were placed on wooden pallets in a temporary storage area within the Site. Once the final laboratory results have been received, the soil will be disposed in an appropriate manner.

Water from equipment decontamination activities and monitoring well purge water was placed in the on-Site GW-11 Pond and treated on-Site by first passing through a granular activated carbon filtration system followed by processing through the perchlorate destruction system.

Used PPE (e.g., disposable protective gloves) and trash were double-bagged in plastic garbage bags that were then placed into municipal trash dumpsters on the Site.

3.9 Surveying

Each boring location was surveyed to an accuracy of 0.01-foot vertical and 0.1-foot horizontal relative to U.S. Geological Survey (USGS) elevation and Nevada Coordinate System datum (NAVD83 and NAD83 - Nevada East Plane) by Stantec Consulting, Inc., a Las Vegas-based land surveyor. A copy of the surveying data is presented in **Appendix D**.

3.10 Variances from the Approved Work Plan

As the Phase A field activities proceeded, the following deviations from the approved Phase A Work Plan occurred:

- A groundwater grab sample was collected from borehole SA08 instead of monitoring well M29 as called for in the Phase A Work Plan. During field activities, it was discovered that M29 was actually located inside the Unit 6 building, roughly 300 feet south of (and upgradient to) SA08. (Previous documents on which the Phase A Work Plan was based had indicated that M29 was within 20 feet of the planned location of SA08.)

  Because of the long distance (300 feet) between SA08 and the true location of M29, and because M29 was upgradient from SA08, it was decided that groundwater results from M29 may not be comparable to soil analytical results from boring SA08. Therefore, a groundwater grab sample was collected from SA08 open borehole in-lieu of well M29.

(Note: The groundwater grab sample from SA08 was inadvertently assigned a sample ID number of "M29" on the chain-of-custody forms. Hence, the groundwater sample hereafter referred to as "M29" in this document is the groundwater grab sample taken from borehole SA08.)

- A groundwater grab sample was collected from borehole SA15 instead of monitoring well M111 as was called for in the Phase A Work Plan. At the onset of Phase A field activities, it was discovered that ongoing demolition of the infrastructure in the vicinity of SA15 / M111 had inadvertently damaged M111 such that groundwater was no longer accessible in M111. Thus, a groundwater grab sample was collected from the SA15 open borehole and the groundwater sample was assigned an identification number of GWSA15.

- In the area immediately north of the GW-11 Pond, boring SA22 was drilled approximately 100 feet north of the proposed location. Originally, SA22 was to be drilled within close proximity to existing well M98. However, overhead high-voltage electrical lines were in close proximity to M98, and erecting the drill rig mast at the original proposed drilling location would have posed a safety hazard to the field personnel. To eliminate needless risk to field personnel, the location of boring SA22 was moved to the nearest location where drilling could be conducted safely. As a result, SA22 was drilled 100 feet north of the location originally proposed in the Phase A Work Plan.

- In the area north of Warm Springs Road near the western boundary of the Site, a groundwater sample was not collected from well MC60 as originally planned because the well was dry. MC60 was originally planned as a co-located well with soil boring SA25. The next closest well (MC61) turned out to be a one-inch-diameter piezometer. Although groundwater was present in MC61, groundwater sampling equipment would not fit in MC61, so no water sample was collected from this location. In lieu of MC60, a groundwater sample was collected from well MC45 (south of Warm Springs Road, near the western boundary of the Site). MC45 was the closest well to SA25 that had groundwater in it that was also accessible to the available groundwater sampling equipment.

  Boring SA25 was drilled at the mouth of the northern drainage ditch in order to assess potential impacts to soil from historical surface runoff that was conveyed through the drainage ditch. Although MC45 is approximately 750 feet south-southeast of boring SA25, MC45 is close to the northern drainage ditch (MC45 is approximately 750 feet upstream from SA25). It is for this reason that well MC45 is considered to be co-located with boring SA25 for the source area investigation. Presumably, the same water-borne constituents (if any) that were conveyed in the northern drainage ditch would result in impacts seen in the groundwater at MC45 as well as the vadose-zone soil at boring SA25. (Although a groundwater grab sample from SA25 would have been preferable over a groundwater sample from MC45, by the time it was discovered that MC60 was dry, soil boring activities had been completed and the drill rig had departed from the Site two weeks earlier.)

- Along the northern Site boundary at well M95, the bladder pump that was used to sample M95 was inadvertently lost down the well after the groundwater sample was collected. Attempts to retrieve the pump were unsuccessful, and the 18-inch long, stainless steel pump with the Teflon™ bladder remains at the bottom of the well. Further attempts to retrieve the pump will be made in the future, although the presence of the pump at the bottom of M95 will not inhibit future sampling activities in this well.

- The Phase A Work Plan called for groundwater samples to be collected and analyzed in an unfiltered state. However it was suspected that analytical results from the unfiltered groundwater grab samples, for both the metals and radionuclides, could be affected by turbidity. Therefore, six additional groundwater grab samples were collected for metals analysis and filtered in the field. Moreover, two additional groundwater grab samples were collected and filtered in the field for radionuclide analysis. The groundwater samples were filtered to remove suspended particulate matter of 0.45 micrometers or larger from the water sample.

4.0 Findings

The Site-specific geology is discussed in this section followed by a summary of the laboratory analytical results of the soil and groundwater samples that were collected and analyzed for in the Phase A investigation.

4.1 Site Geology

A summary of the Site geology including lithology and hydrostratigraphy is present in this section.

4.1.1 Lithologic Interpretation

As described in Section 2.4.2, the sequence of sediments underlying the Site consists predominantly of the following (in order of increasing depth):

1. Quaternary Alluvium (Qal) (Younger)
2. Muddy Creek Formation (MC Fm)
   a. First fine-grained facies (MCfg1)
   b. First coarse-grained facies (MCcg1)
   c. Second fine-grained facies (MCfg2)
   d. Second coarse-grained facies (MCcg2) (Older)

All of the soil borings drilled as part of the Phase A Investigation were drilled into the Qal or into the uppermost soils of the underlying MC Fm. The subsurface geologic interpretation beneath the Site has been updated from the CSM using the lithologic information from the Phase A soil borings, lithologic information obtained during the installation of 12 on-site wells (wells TR-1 through TR-12) that were completed along the western boundary of the Site in 1999 by Tronox, and information from other monitoring wells previously installed both on the Site and on property adjacent to the Site.

The Qal consists of mostly unconsolidated silty sands, gravelly sands, and clayey sands. In places, this unit contains interbeds of sandy gravel and gravel with cobbles. With increasing depth, weakly cemented (calichified) sediments become more common in the Qal. In places, caliche nodules are a common occurrence, and cementation of sediments can continue to the extent that discontinuous layers of hard, well-indurated caliche (more than 6-inches thick) can form. These layers of cohesive, well-cemented caliche can be very hard and impede most drilling methods.

The MCfg1 unit consists of silt and sandy silt that grades to sandy clay farther north (towards Las Vegas Wash). The finer-grained sediments of the MC Fm subunits normally contain varying amounts of sand-size caliche nodules that help in differentiating the MC Fm from the Qal. The MCfg1 pinches out in the southern part of the Site and is not present beneath the southern boundary of the Site.

The MCcg1 unit consists of unconsolidated silty sands, silty clayey sands, and gravelly sands. Locally, MCcg1 contains silty gravel lenses and zones of caliche nodules (up to 1-inch diameter). MCcg1 gravels are predominately pea-gravel size, and do not contain volcanic cobbles and boulders similar in size to those in the overlying Qal. As shown in **Plate 4-1**, the MCcg1 unit directly underlies the Qal along the southern boundary of the Site. At some locations the contact between the Qal and MCcgl is difficult to discern due to the similarity in grain-size and color in both units.

The MCfg2 unit consists predominantly of silt and sandy silt, with silty clay present locally. In general, MCfg2 underlies MCcg1 and occurs at depths ranging from 102 to 126 ft bgs. At well TR9, this unit is 112 ft thick.

The MCcg2 unit consists of gravel and sandy gravel, and has been encountered only in the boreholes for the deepest wells (TR9 and TR7) at depths of 214 to 217 ft bgs.

4.1.2 Hydrostratigraphy

Geologic cross-sections beneath the Site have been generated and are presented herein. **Plate 4-1** depicts a south-to-north cross-section, and a series of west-to-east cross-sections are shown on **Plate 4-2**.

Plate 4-1 shows the relationship between the alternating fine- and coarse-grained facies of the MC Fm and the overlying Qal, and best illustrates the geology across the site. In **Plate 4-1**, MCfg1 is seen to thicken basinward from its pinch-out between SA2 and TR7 to a known maximum thickness of 221 ft at well TR1. From the southern end of the Site, the underlying MCcg1 is 61 ft thick at TR9 and thins towards the north (basinward); at TR5, MCcg1 is only 16 ft thick and progressively thins until it pinches out and is absent in the interval between MW8 and TR11. In this same area, the MCfg2 grades laterally and forms a down-dip into the MCfg1 facies. As shown on **Plate 4-1**, the arbitrary contact between the MCfg1 and MCfg2 is placed at the projection of the base of the MCcg1 unit between MW8 and TR3. Below the MCfg1/MCfg2 units, a second sand and gravel unit (MCcg2) occurs as a laterally continuous sand-body across the Site.

The MC Fm was formed in an alluvial fan/braided stream environment. Beneath the Site, discrete coarse-grained channel deposits interbed and interfinger with fine-grained floodplain deposits. This relationship is seen in both the up-dip MCcg1 channel deposits found at TR5, TR7, and TR9, and the down-dip sediments deposited at TR-11. The deeper MCcg2 channel deposits likely formed as channel sands coalesced to form a blanket-like unit.

4.2 Analytical Results

A list of SRCs and analytical methods is presented in **Table 3-2**. Summary tables of analytical results for soil and groundwater are provided in **Table 4-1** through **Table 4-24**. **Figure 4-1** shows the locations of the soil borings and groundwater sample locations for Phase A.

Soil samples were analyzed for 236 SRCs of which 125 SRCs were not detected in any sample. The SRCs that were not detected are listed on **Table 4-25**. Groundwater samples were analyzed for 210 SRCs of which 125 SRCs were not detected in any sample. **Table 4-26** lists the SRCs not detected in groundwater.

The analytical results are discussed by parameter group in the sections below. Copies of the laboratory reports listing the results of the analysis are provided in **Appendix E.**

4.2.1 General Chemistry Parameters

Analytical results for the general chemistry parameters in soil and groundwater are summarized on **Table 4-1** and **Table 4-2**, respectively.

General chemistry parameters were measured in soil and groundwater samples from the 27 boring locations and groundwater sampling locations.

4.2.2 Dioxins and Dibenzofurans

Analytical results for dioxins and furans in soil are summarized on **Table 4-3**. Copies of the laboratory reports listing the results of the analysis are provided in **Appendix E.**

Soil samples from 27 boring locations were initially screened for 17 polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs/PCDFs) congeners by modified USEPA Method 8290 (referred to in **Table 4-3** as 8290 SCREEN). The modifications used for the high resolution mass spectrometric screen involved small QC requirement changes to reduce the number of samples requiring reanalysis in dilution and the reporting of only USEPA Form 3 data for results. Method modification details were provided to NDEP before the samples were collected and analyzed. The screen method is conservative and usually yields results biased slightly high relative to the full USEPA 8290 method. Seven of the screened soil sample extracts with the highest total toxic equivalent concentration (TEQ) for PCDDs/PCDFs were reanalyzed for the 17 PCDDs/PCDFs plus homolog groups using fully method-compliant USEPA Method 8290 and full Contract Laboratory Program (CLP)-style data packages. A sample from each preparatory batch was included for full USEPA 8290 analysis to provide QC sample data associated with all the screening analysis results. See Section 5. 6.2 and **Table 5-13** for a full discussion of how TEQs were calculated.

The data in **Table 4-3** are presented two ways. Data for each of the 17 PCDDs/PCDFs are presented by sample. In addition, the last page of the table provides the calculation of the TEQs using two methods for handling congeners that were not detected: method (a) assumed a concentration of "0" for congeners not detected, and method (b) assumed a concentration of half the detection limit for congeners not detected. As can be seen from the table, these methods made very little difference in the TEQ results.

Analyses for dioxin/furans were limited to soil; therefore, no groundwater samples were tested for dioxins/furans.

4.2.3 Metals

Analytical results for metals in soil are summarized on **Table 4-4**. Analytical results for total and soluble metals in groundwater samples collect at the Site are summarized in **Table 4-5**.

Soil samples from 27 boring locations were analyzed for 30 metals using USEPA Method 6020, for hexavalent chromium using USEPA Method 7199 (using USEPA sample preparation Method 3060A), and for mercury using USEPA Method 7471A. In the November/December 2006 sampling event, groundwater samples were collected from 21 wells. Groundwater grab samples were collected from six boring locations (SA02, SA09, SA10, SA14, SA15, and M29). Both filtered and unfiltered groundwater grab samples were collected from these locations. Groundwater samples were analyzed for 30 metals using USEPA Method 6020, for hexavalent chromium using USEPA Method 7199, and for mercury using USEPA Method 7470A.

In addition to the soil and groundwater samples, one manganese ore sample and one manganese tailings sample were collected and analyzed for metals using the same methods as above. These results are presented on **Table 4-4.**

Metals are naturally-occurring in geologic materials, and, as expected, metals were detected above the laboratory method detection limit (MDL) in soil at the 27 boring locations and in the 27 groundwater samples. Selenium was the only metal that was not detected in soil.

A review of the November/December 2006 groundwater data indicated that the metals results may have been biased high due to high turbidity levels at the time of sampling. To see how turbidity affects sample results, a second round of groundwater sampling was conducted in May 2007. Groundwater samples for metals were collected using three different methods, low low-flow, low-flow (unfiltered), and low-flow (filtered) (see Section 3.4.4).

In general the May 2007 data, as shown on **Table 4-5**, demonstrated that groundwater samples with low turbidity (<10 nephelometric turbidity units [NTUs]) could be achieved by carefully regulating the low-flow pump rate. Moreover, the analytical results between the unfiltered samples (<10 NTU turbidity levels) were not significantly different than the analytical rates of the water samples that were filtered. Therefore, the low-flow sample data set with the "Z" designator in the sample ID number (e.g., M31A-Z, M92-Z, MC45-Z, etc.) in **Table 4-5** were selected as the data set that best represents the metal concentrations in groundwater beneath the site. The conditions under which the "Z" samples were collected (i.e., low-flow pump rates, low (<10 NTU) turbidity, stable water quality parameters, and stable water levels) also closely match the sampling criteria described in BRC *SOP-5 – Water Sampling and Field Measurements* (BRC 2006). This data set ("Z" samples) along with the filtered results for the groundwater grab samples collected in November/December 2006 were the data set for metals in groundwater used for this report. The complete results for the November/December 2006 and May 2007 samples, various pumping rates, turbidity readings, and evaluation of acceptance criteria are presented in **Table 4-5.**

For the manganese ore sample, 30 of the 32 metals were detected. For the manganese tailings sample, 31 of the 32 metals were detected.

4.2.4 Organochlorine Pesticides

Analytical results for OCPs in soil and groundwater are summarized on **Table 4-6** and **Table 4-7**, respectively.

Surface soil samples from the 27 boring locations (0.5 ft bgs), groundwater samples from 21 wells, and six groundwater grab samples were tested for 22 OCPs using USEPA Method 8081A.

Six OCPs were detected above the laboratory sample quantitation limit (SQL) in the soil samples analyzed. OCPs were not detected above the SQL at 10 boring locations. The frequency of detection is low for all OCPs, with the exception of beta-BHC.

Seven OCPs were detected above the laboratory SQL in groundwater. Frequencies of detection are low. OCPs were not detected at 17 of the groundwater sample locations.

4.2.5 Organophosphorus Pesticides

Analytical results for OPPs in soil and groundwater are summarized on **Table 4-8** and **Table 4-9**, respectively.

Surface soil samples from 27 boring locations (0.5 ft bgs), groundwater samples from 21 wells, and six groundwater grab samples were tested for 28 OPPs using USEPA Method 8141A.

OPPs were detected above the laboratory SQL at three soil boring locations (Dimethoate at SA05 and SA06, and Demeton-O at SA17).

For groundwater samples, OPPs were not detected at concentrations above the laboratory SQL.

4.2.6 Herbicides

Analytical results for herbicides in soil and groundwater are summarized on **Table 4-10** and **Table 4-11**, respectively.

Soil samples from three boring locations and groundwater samples from three wells were tested for one herbicide (Silvex, also known as 2,4,5-TP) using USEPA Method 8151A. Silvex was not detected in the soil or groundwater samples at concentrations above the laboratory SQL.

4.2.7 Polychlorinated Biphenyl Compounds

Analytical results for PCBs in soil and groundwater are summarized on **Table 4-12** and **Table 4-13**, respectively.

Soil samples from the 27 boring locations, groundwater samples from 21 wells, and six groundwater grab samples were tested for seven different commercial mixtures of PCBs using USEPA Method 8082. Aroclor-1260 was detected in one soil sample from boring SA09 at a depth of 20 feet bgs at a concentration of 0.47

milligrams per kilogram (mg/kg). No PCBs were detected in groundwater samples at concentrations above the laboratory SQL.

4.2.8 Perchlorate

Analytical results for perchlorate in soil and groundwater are summarized in **Table 4-14** and **Table 4-15,** respectively.

Soil samples from 27 boring locations, groundwater samples from 21 wells, and six grab water samples were analyzed for perchlorate using USEPA Method 314.0.

Perchlorate was detected above the SQL in the 27 soils borings consistent with the known perchlorate impacts beneath the Site. In 15 of the borings, the highest concentrations of perchlorate in soil were detected at depths that correspond closely to the water table.

For groundwater samples, perchlorate was detected above the laboratory SQL in 26 of the 27 sample locations. The concentrations are consistent with what is known about the location of the perchlorate plume at the Site from the quarterly monitoring activities (ENSR 2007).

4.2.9 Radionuclides

Analytical results for radionuclides in soil and groundwater are summarized on **Table 4-16** and **Table 4-17**, respectively.

In the November/December 2006 sampling event, soil samples from 27 boring locations were tested for Ra-226 and Ra-228 by method EML HASL 300 (gamma). Groundwater samples from 21 wells, and six groundwater grab samples were tested for Ra-226 and Ra-228 by USEPA Methods 903.1 and 904.0, respectively. Of the groundwater samples tested for Ra-226 and Ra-228, two were filtered in the field and analyzed for soluble radionuclides (M29 and GWSA15). Twelve soil samples, one groundwater well sample, and one groundwater grab sample (i.e., 10 percent of the samples, which were randomly chosen) were tested for Th-228, Th-230, Th-232, U-233/234, U-235/236, and U-238 by method EML HASL 300 (alpha). In addition to the soil and groundwater samples, one manganese ore sample and one manganese tailings sample were collected and analyzed for radionuclides.

Like metals, radionuclides are naturally-occurring in geologic materials. Radionuclides were detected above the laboratory SQL in 27 borings and 24 groundwater samples.

For the manganese ore sample, seven of the eight analyzed radionuclides were detected above the laboratory SQL. For the manganese tailings sample, six of the eight analyzed radionuclides were detected above the laboratory SQL.

To evaluate how turbidity affected sample results, a second round of groundwater sampling was conducted in May 2007. Groundwater samples for radionuclides were collected using three different methods, low low-flow, low-flow (unfiltered), and low-flow (filtered) (see Section 3.4.4).

In the May 2007 sampling event, 20 groundwater samples were tested for Ra-226 and Ra-228 by USEPA Methods 903.1 and 904.0, respectively. Four of the groundwater well samples (i.e., 20 percent of the samples, which were randomly chosen) were tested for Th-228, Th-230, Th-232, U-233/234, U-235/236, and U-238 by method EML HASL 300.

In general, the May 2007 data, as shown on **Table 4-17**, demonstrated that groundwater samples with low turbidity (<10 NTUs) could be achieved by carefully regulating the low-flow pump rate. Moreover, the analytical results between the unfiltered samples (<10 NTU turbidity levels) were not significantly different than the analytical rates of the water samples that were filtered. Therefore, the low-flow sample data set with the “Z” designator in the sample ID number (e.g., M31A-Z, M92-Z, MC45-Z, etc.) in **Table 4-17** were selected as the data set that best represents the radionuclide activity in groundwater beneath the site. The conditions under which the “Z” samples were collected (i.e., low-flow pump rates, low (<10 NTU) turbidity, stable water quality parameters, and stable water levels) also closely match the sampling criteria described in BRC *SOP-5 – Water Sampling and Field Measurements* (BRC 2006).

4.2.10 Semi-Volatile Organic Compounds

Analytical results for SVOCs in soil and groundwater are summarized on **Table 4-18** and **Table 4-19**, respectively.

Soil samples from 27 boring locations, groundwater samples from 21 wells, and six grab groundwater samples were analyzed for 28 different SVOCs using USEPA Method 8270C. Naphthalene was also included as an analyte in USEPA Method 8260B, but the results are included in the evaluation of SVOCs. Soil samples from 13 borings and groundwater samples from three wells were analyzed using USEPA Method 8270C with selected ion monitoring (SIM).

SVOCs were detected in seven soil borings. Sixteen of the 28 SVOCs were detected above the laboratory PQL in the soil samples analyzed. Eleven SVOCs were detected above the laboratory SQL in soil samples analyzed by USEPA Method 8270C SIM. Frequencies of detection are low for SVOCs in soil.

For groundwater, of the 28 SVOCs analyzed, only bis(2-ethylhexyl)phthalate, di-N-butyl phthalate, 1,4-dioxane, and naphthalene were detected above the laboratory SQL. No other SVOCs were detected in the groundwater samples. In groundwater samples analyzed by the SIM method, SVOCs were not detected at concentrations above the laboratory SQL.

4.2.11 Total Petroleum Hydrocarbons and Fuel Alcohols

Analytical results for TPH and fuel alcohols in soil and groundwater are summarized in **Table 4-20** and **Table 4-21**, respectively.

Soil samples from 21 boring locations, groundwater samples from one well (M120), and two grab groundwater samples (M29 and GWSA2) were analyzed for TPH (OROs, DROs, and GROs) using USEPA Method 8015B. Soil samples from five borings, groundwater samples from five wells, and one grab groundwater sample were analyzed for fuel alcohols (ethanol, and ethylene glycol, and methanol) using USEPA Method 8015B.

Fuel alcohols were not detected in any soil sample above the laboratory SQL. Fuel alcohols were not detected in the groundwater samples at concentrations above the laboratory SQL, with the exception of ethanol in one groundwater grab sample (GWSA9).

TPH-ORO (C_{28} – C_{38}) were only detected in the near-surface soil samples in borings SA01, SA04, SA07, SA11, SA25, SA26, and SA27. TPH-DRO (C_{11} – C_{28}) were only detected in the near-surface (0.5-ft depth) soil samples in borings SA08 and SA25. TPH-GRO (C_5-C_{10}) were detected at low concentrations in one boring (SA08) in the near surface, and at depths of 40 ft in SA09 and SA14, and at 20 ft in SA25. TPH was not detected at concentrations above the laboratory SQL in the remaining soil samples. TPH was not detected in the groundwater samples at concentrations above the laboratory SQL.

4.2.12 Volatile Organic Compounds

Analytical results for VOCs in soil and groundwater are summarized on **Table 4-22** and **Table 4-23**, respectively.

Soil samples from 27 boring locations, groundwater samples from 21 wells, and six grab groundwater samples were analyzed for 67 VOCs using USEPA Method 8260B.

At least one VOC was detected in every soil sample with the exception of samples at location SA01. In the soil samples, 24 of the 67 VOCs were detected above the laboratory SQL in at least one soil sample. With the exception of chloroform, the frequencies of detection are low for the VOCs in soil.

In the groundwater samples, 24 of the 67 VOCs were detected above the laboratory SQL. At least one VOC was detected in each of the 27 groundwater samples. Chloroform was detected in all but two groundwater sample locations.

4.2.13 Asbestos in Soil

Soil samples from 27 boring locations were tested for asbestos using USEPA Method 540/R-97/028. Soil samples were collected from a depth of 1 inch bgs. The results of these analyses in soil are summarized in **Table 4-24**. Copies of the laboratory reports listing the results of the analysis are provided in **Appendix E.**

4.2.14 Geotechnical Parameter Test Results

The geotechnical parameters that were measured in the two near-surface soil samples (SA08 and SA21) are summarized in **Appendix F**.

5.0 Adequacy of Characterization

The Phase A data were presented in Section 4.0. The purpose of the data evaluation conducted and presented in this section is to determine whether the SRCs and potential source areas investigated during Phase A have been adequately characterized. The Phase A Work Plan (ENSR 2006a) outlines a series of steps for evaluating the adequacy of characterization for each SRC. Based on these, the following are used in this report to determine the adequacy of characterization:

- Determination of whether the SRC is either absent or is rare in frequency;
- Determination of whether the measured SRC concentrations are less than the corresponding risk-based comparison levels;
- Determination of whether the SRC data are consistent with background or upgradient conditions through the application of appropriate statistical tools to compare the SRC concentration to other data populations;
- Determination of whether there is a potential complete pathway for the SRCs detected in soil to leach from soil to groundwater at concentrations of concern; and,
- Determination of whether the probability of occurrence at a specific location or depth is remote based on Site knowledge of historical handling and use.

The Phase A data were compiled and summarized to address each of these evaluations. SRCs are chemicals that either have been shown to be present (or potentially present) at the Site or are associated with historical operations at the Site; they are listed on **Table 3-2**. There were 192 parameters identified as SRCs for the Tronox facility. In addition to these SRCs, 44 additional parameters were analyzed and reported by the laboratory. Therefore, for the Phase A investigation, a total of 236 parameters were analyzed. SRCs determined not to be adequately characterized will be included for analysis in the Phase B Work Plan (**Appendix I**). It is important to note that because the Phase A sampling was conducted in areas believed to be significantly impacted, if SRCs were not detected or detected below the comparison levels it is likely that Phase B sampling would also show that these are not detected or detected at very low concentrations. Therefore, SRCs that are not detected or detected at concentrations below the comparison levels are considered to be adequately characterized, and do not need to be evaluated in Phase B.

To put the determination of adequacy into context, selected portions of the CSM report (ENSR, 2005) related to chemical usage and occurrence in environmental media at the Site are summarized in Section 5.1. Specific aspects of the CSM with respect to exposure potential are also discussed.

As several of the determinants of adequacy are based on an evaluation of the data with respect to risk-based comparison levels, the comparison levels are presented first (Section 5.2). This is followed by a data usability evaluation, to determine which data are appropriate for use in the Phase A data adequacy characterization (Section 5.3). The remainder of Section 5 is organized as follows:

- Section 5.4 addresses the frequency of detection of SRCs.
- Section 5.5 presents the comparison of the Site data to upgradient/background conditions.
- Section 5.6 presents a comparison of soil data to the direct contact comparison levels.
- Section 5.7 presents a comparison of the groundwater data to direct contact comparison levels.

- Section 5.8 presents the comparison of the soil data to the comparison levels for the soil to groundwater migration pathway.
- Section 5.9 presents the comparison of the groundwater data to the comparison levels for the groundwater-to-indoor air migration pathway.
- Section 5.10 discusses considerations of historical use and occurrence.
- Section 5.11 presents a summary of constituents considered not to be adequately characterized.

Based on these evaluations, proposed actions to be taken are presented in Section 6.

The evaluation of adequacy of characterization is also summarized in **Table 5-35** for soil and groundwater.

5.1 Conceptual Site Model

To put the Phase A data and adequacy of characterization into context, this section provides a summary of selected portions of the CSM, as presented in the CSM report (ENSR 2005), of the Tronox Henderson, Nevada facility. The CSM report was based upon data collected on the Site from 1986 to 2005. The CSM is a representation of the environmental system and the physical, chemical, and biological processes that determine the transport of contaminants from the sources through the environmental media to human and ecological receptors. As a “living” model, the CSM continues to be evaluated and refined as new data are developed. Updates to the CSM based on the characterization of the Phase A data are presented in this section.

Based on discussions with NDEP, it was agreed that the additional investigation in Phase B should be risk-based and, therefore, the Phase A data evaluation should also be risk based. It is important to consider both current and potential future uses of the Site for this evaluation. The Site is currently an industrial facility. Portions of the Site may be leased or sold in the future, however, deed restrictions may be used to ensure that Site use remains industrial/commercial. Groundwater in the region is not used as a drinking water supply. The surrounding incorporated areas of the City of Henderson are supplied with municipal water. However, the groundwater at the Site discharges to the Las Vegas Wash and subsequently to Lake Mead, which serves as a municipal water supply.

Therefore, potential exposure pathways to be addressed by this Phase A data evaluation and any additional Phase B data collection include direct contact with surface and subsurface soils, and direct contact with groundwater (via ingestion, dermal contact, and inhalation pathways) both for SRCs already present in groundwater, and those that may migrate there from soil, and inhalation of volatiles that may migrate from groundwater and/or soil to indoor air.

These pathways are summarized on **Figure 5-1**, which presents a generalized conceptual diagram that identifies source areas, potential migration pathways for constituents from source areas to environmental media where exposure can occur, potential routes of exposure to the environmental media, and potential human receptors.

Exposure pathways are determined based on environmental conditions (e.g., location of surface waters, groundwater, vegetative cover, prevailing wind direction, meteorological factors), the potential for chemical migration from one environmental medium (e.g., soil, water, or air) to another, and the general activities of the potential exposed populations (e.g., time spent inside or outside, level of work activity). Each pathway describes a unique mechanism by which a population or an individual receptor may be exposed to a chemical. Although several potential pathways may exist, not all are usually complete or significant. For a pathway to be complete, the following conditions must exist (USEPA 1989):

- A source and mechanism of chemical release to the environment;
- An environmental transport medium (e.g., air, water, soil);
- A point of potential receptor contact with the medium; and
- A human exposure route at the contact point (e.g., inhalation, ingestion, dermal contact).

The components of a complete exposure pathway for the Site are discussed below.

5.1.1 Potential Sources

Identification of potential sources is fundamental to the understanding of a potential complete exposure pathway. Analysis of Site data indicates that chemicals used on Site have impacted primarily soil and groundwater. Potential source areas at the Site were identified in the CSM report (ENSR 2005), and in the Letter of Understanding (NDEP 1994).

<u>Phase A Sample Collection to Address Source Areas</u>

The objective of the Phase A Source Area Investigation was to characterize the identified SRCs at 27 locations representing one or more suspected source areas on the Site. Potential source areas and the sample locations are identified on **Plate 1-1**, and sample locations are shown on **Figure 4-1**.

5.1.2 Release Mechanisms and Transport Pathways

Chemicals used or produced at the Site could have been released via leaks or spills and could be transported to soil and groundwater via infiltration and percolation.

Vadose zone transport of SRCs within the vadose zone to groundwater requires a sufficiently large release, followed by the necessary gas chemical environment (so that not all of the release is attenuated) and sufficient infiltration to transport the chemical through the unsaturated zone to reach the groundwater. Portions of the Site are paved or covered which prevents infiltration of rain water. Considering the arid climate and site physical condition, there are only a few specific occurrences that can generate sufficient infiltrations to mobilize the SRCs that are present in the subsurface vadose zone. These can include a rainstorm or an aqueous release of sufficient quantity and duration to saturate the soil beyond its field capacity throughout the soil column; a water supply pipeline break that discharges water to a specific area which provides enough head to mobilize SRCs or developing a leak in, or beneath, a synthetically lined pond that releases sufficient water to reach the water table. As discussed in the CSM report, adductive groundwater transport of SRCs in the alluvium takes place primarily within alluvial paleochannels incised within the Muddy Creek Formation.

In addition to transport within groundwater, volatile SRCs present in the subsurface, either in soil or groundwater, may migrate as vapors into the indoor air of overlying buildings. Finally, SRCs present at the soil surface may either volatilize into outdoor air or be entrained as wind-blown dust.

Of the potential transport pathways at the Site, the groundwater pathway is the predominant one for transporting constituents from the Site. Other less significant transport pathways can occur via air and surface water. Due to the occasional high winds and the exposed on-Site soil, a potential air transport pathway is via entrainment of constituents on dust particles. In addition, VOCs can volatilize into air. Surface water transport of SRCs is minimized by the lack of on-Site surface water. Stormwater and water from leaking supply lines occasionally flow in the Beta Ditch and other ditches constructed for water control or conveyance. Historic transport of selected SRCs via surface water also occurred when impacted groundwater discharged in a spring close to the Las Vegas Wash. Las Vegas Wash transports surface water to Lake Mead.

Phase A Sample Collection to Address Release Mechanisms and Transport Pathways

To address these transport pathways, the Phase A investigation consisted of the collection of soil and groundwater samples at locations identified as potential source areas. Soil samples were collected throughout the soil column. While sediment samples were not collected per se, three of the Phase A soil borings were located within the Beta Ditch (SA14, SA16, and SA17) and two Phase A soil borings were located in the currently accessible portions of the North Ditch (SA 24 and SA25). Surface water sampling was not included as part of the Phase A activities, because of the general lack of water in the ditches.

5.1.3 Potential Receptors and Exposure Routes

To identify potential receptors and exposure routes, it is important to consider both current and potential future uses of the Site. The Site is currently an industrial facility. Portions of the Site may be leased or sold in the future, however, deed restrictions may be used to ensure that Site use remains industrial/commercial. Therefore, comparison levels for soil based on an industrial exposure scenario are appropriate for use here. Groundwater in the region is not used as a drinking water supply. The surrounding incorporated areas of the City of Henderson are supplied with municipal water. However, the groundwater at the Site discharges to the Las Vegas Wash and subsequently to Lake Mead, which serves as a municipal water supply. While attenuation is expected to occur between the Site and Lake Mead, to be conservative, comparison levels for groundwater are based on a drinking water use scenario.

Therefore, potential receptors include on-Site outdoor workers, on-Site indoor workers, on-Site construction workers, off-Site residents, Site visitors, land plants and animals, and aquatic plants and animals. General exposure routes include inhalation, ingestion and dermal contact with constituents in groundwater and soil.

Phase A Sample Collection to Address Potential Receptors and Exposure Routes

Phase A sampling of soil and groundwater has been guided in part by the potential on-Site exposure to soil and groundwater by these receptors.

For soils, outdoor industrial workers may be exposed to SRCs in surface soil (generally evaluated as the 0-0.5 ft bgs depth); and construction/utility workers may be exposed to soils up to 15 ft bgs depending on the nature of the excavation. Phase A soil samples were collected at the ground surface (0-1 inch) for asbestos analysis, at the 0-0.5 ft bgs interval for all other SRCs; these samples will be used to evaluate direct contact by on-Site outdoor workers as well as construction workers, and may be used as source terms for transport modeling (soil to air and soil to groundwater). Soil samples were collected at the 10 ft bgs level at all boring locations and will also be used to address direct contact with soils by the construction/utility worker receptors and to address constituent transport pathways. Soils collected at depths greater than 15 ft bgs are not available for direct contact, but can be used to evaluate constituent transport pathways.

Currently, there is no direct exposure to on-Site groundwater as it is not used as a source of drinking water. Groundwater samples were collected from wells screened at the water table. This interval is most appropriate for the evaluation of direct contact by a construction worker should the water table occur within the excavation depth (note, the water table at the Site is generally greater than 15 ft bgs, with the exception of the area in the vicinity of soil boring SA26). In addition, the water table is the most appropriate interval for the evaluation of the groundwater to indoor air migration pathway.

5.1.4 Evaluation Areas for Direct Contact with Soil Pathway

One objective of the Phase A data evaluation is to determine if there are sufficient data to conduct risk assessments for the Site, and if not, Phase B of the source area investigation will be designed to collect this information. The risk assessments will be used as the basis for decision-making for the Site. The identification of these additional data needs is based on the adequacy of characterization of the Site based on the Phase A data.

To understand whether the current data are sufficient, and what future data needs will be, it is important to understand the current and reasonably foreseeable future use of the Site. As it is likely that future industrial/commercial development will occur at the Site, the Site has been subdivided into evaluation areas (EAs) for the direct contact with soil pathway assessment. The EA boundaries have been developed in consultation with Tronox facility staff and the BRC, and are based on anticipated future uses. In general, these boundaries have been identified based on areas that may be leased or sold as separate parcels in the future. It is important to note here that other pathways (soil-to-groundwater migration, groundwater-to-indoor air migration, and direct contact with groundwater) are evaluated on a Site-wide basis; the EAs only address the direct contact with soil pathway.

The Site is divided into separate EAs based on historical and potential future use. The eleven EAs are shown on **Figure 5-2**. Also shown on this figure are the Phase A soil boring locations. **Table 5-1** lists the EAs for the Site, Phase A soil and groundwater samples collected from each EA, historical uses for each EA, and the present and proposed future use of each EA.

As shown in **Table 5-1**, the planned use for most of the EAs is commercial and light industrial. Some of the EAs are in the process of having buildings decommissioned, and are likely to remain inactive in the near future. The area is zoned industrial, and there are no plans to develop the Site for residential use. Deed restrictions may be used, as necessary, to ensure that Site use remains industrial/commercial.

In addition to the EAs, **Figure 5-2** identifies parcels that are currently identified for sale (Parcels A, B, C, D, E, F, G, H, I, and J). BRC is taking the lead on the sale of these parcels. Parcels A, B, C, D, F, G, and H are designated for immediate sale, and the investigation of soil for the direct contact pathways is being lead by BRC. However, Tronox remains responsible for any additional investigation to address the soil to groundwater migration pathway and the groundwater to indoor air migration pathway. The remaining parcels will, until further notice, be included, as appropriate, for consideration in the Phase B investigation. As a parcel sale becomes imminent, the responsibility for the direct contact pathway soil investigation will be transferred to BRC.

5.2 Selection of Comparison Levels

One of the determinants of adequate characterization is whether the SRC concentrations are less than the corresponding comparison level. As defined in the Phase A Work Plan (ENSR 2006a), if there is no potential for unacceptable risk associated with an SRC, then no further evaluation in Phase B is needed. **Table 5-2** provides a complete list of SRCs. The soil and groundwater samples collected during Phase A were analyzed for these SRCs.

To determine the potential for risk, the Phase A data are compared to risk-based comparison levels.

Based on the summary of the CSM (Section 5.1), the following are potential pathways to be addressed in evaluating these data:

- Direct contact with SRCs in soils (ingestion, dermal, inhalation);
- Direct contact with SRCs in groundwater (ingestion, dermal, inhalation);

- Migration of SRCs from soil to groundwater; and
- Migration of volatile SRCs from groundwater to indoor air.

Tronox worked closely with NDEP staff to identify the risk-based comparison levels used in this Phase A data evaluation. The comparison levels are conservative risk-based values based on both federal and state published regulatory sources. To ensure that the comparison levels selected are adequately protective, they have been selected to address the potential exposure pathways identified above. The following subsections describe the risk-based comparison level selection process.

5.2.1 Comparison Levels for Direct Contact Pathways

Comparison levels for direct contact pathways have been developed for soil and groundwater.

5.2.1.1 Direct Contact Comparison Levels for Soil

The comparison levels for soil and the basis for their derivation are presented in **Table 5-2**. USEPA Region 9 Preliminary Remediation Goals (PRGs; USEPA 2004a) were used as the primary basis for the comparison levels for soil. The industrial PRGs represent conservative comparison levels for soil, since they consider daily contact by an industrial worker through incidental ingestion, dermal contact and inhalation of airborne chemicals. The industrial soil PRGs are calculated based on a target risk level of 1×10^{-6} for potential carcinogens and a target hazard quotient of 1 for noncarcinogens. In order to account for potential cumulative effects, NDEP requested that the PRGs be divided by 10 for both potential carcinogenic and noncarcinogenic chemicals. Note that the PRG table uses an arbitrary maximum of 100,000 mg/kg for all PRGs. In addition, the PRG can be set at the chemical-specific saturation limit. In these cases, to ensure that the comparisons made here were risk-based, the risk-based levels provided in the electronic backup to the PRG table were used (USEPA 2004a). These instances are footnoted in **Table 5-2**.

For certain SRCs, non-PRG sources were used as the basis for the soil comparison levels. These are discussed below.

- For PCBs, the Toxic Substances Control Act (TSCA) action level for high occupancy (>6.7 hours per week) unrestricted use scenarios of 10 mg/kg (USEPA 1998a) was used as the basis for the comparison level.
- For dioxins/furans, the mid-point of USEPA's recommended range for dioxins for commercial/industrial exposure scenarios of 5 to 20 ug/kg or parts per billion (ppb) (USEPA 1998b), i.e., 10 ug/kg, was used as the basis for the comparison levels for dioxin and furan congener results expressed as 2,3,7,8-TCDD TEQ (van den Berg et al. 2006, as recommended by USEPA). Note that dividing this value by 10 results in a comparison level of 1 ug/kg, which is consistent with the NDEP's, and USEPA's (1998b) residential comparison level of 1 ug/kg.
- For petroleum hydrocarbon ranges, the Nevada value of 100 mg/kg was used as the basis for the comparison level (NAC 445A.2272.1.b.).
- For radionuclides, the USEPA Radionuclide PRGs (RPRGs) (USEPA 2004b) were used as the basis for the comparison levels. For radionuclides with decay chains, the RPRG for the decay chain was used.

These values were also divided by 10 for use as comparison levels.

For SRCs lacking PRGs, structural surrogates were selected where appropriate (listed in the footnotes to **Table 5-2**). For some SRCs, it was not possible to identify an appropriate structural surrogate. For asbestos in soil, a separate evaluation was conducted, which is presented in **Appendix J**.

5.2.1.2 Direct Contact Comparison Levels for Groundwater

The comparison levels for groundwater and the bases for their derivation are presented in **Table 5-2**. The following hierarchy was used to select the comparison levels:

- USEPA maximum contaminant levels (MCLs) (USEPA 2006); the MCLs were used, as published, as the comparison level. The Nevada Administrative Code (NAC 445A.4525) incorporates the National Primary Drinking Water Standards by reference.

- If no MCL was available, the Nevada Secondary MCL (NAC 445A.455) was used, as published, as the comparison level.

- If no MCL or Secondary MCL was available, the USEPA Region PRG for tap water (USEPA 2004a) was used as the basis for the comparison level. The PRG-based comparison levels are the tap water PRGs divided by 10.

- For certain SRCs, other sources were used as the basis for the groundwater comparison level. These are discussed below.

    - Federal Secondary MCLs were used for the following: aluminum (Al), chloride, manganese (Mn), silver (Ag), sulfate, and zinc (Zn) (USEPA 2006).

    - Federal Treatment Technology Action Levels (TTALs) were used for the following: copper and lead (USEPA 2006).

    - The NDEP provisional action level was used for perchlorate (NDEP 2007a).

    - For TDS, the value for the Upper Las Vegas Wash, Requirements to maintain existing higher quality, cited in NAC.445A.201, was used.

    - For radionuclides that do not have MCLs, the USEPA RPRGs were used as the basis for the comparison levels (USEPA 2004b). For radionuclides with decay chains, the RPRG for the decay chain was used.

    - For methyl-tert-butyl ether (MTBE), the value from the NDEP's Oxygenated Fuel Corrective Action Guidance was used (NDEP 1998b).

For chemicals lacking MCLs and PRGs, structural surrogates were selected where available (listed in the footnotes to **Table 5-2**). For some chemicals, it was not possible to identify an appropriate structural surrogate.

5.2.2 Comparison Levels for the Soil to Groundwater Migration Pathway

As an additional criterion for the characterization of SRCs, an evaluation of analytes detected in the soil was performed to determine their potential to migrate to underlying groundwater at concentrations of concern. The maximum concentration reported for each SRC in soil was compared to published and Site-specific estimates of leachability to determine if a potential exists to affect groundwater quality and thus, require further characterization. In general, the analytes evaluated were the organic and inorganic SRCs detected in the

Phase A sampling. The comparison levels for the soil to groundwater pathway are presented in **Table 5-3**; their development is discussed below.

5.2.2.1 Site Conditions and Potential for Leaching to Groundwater

The actual net infiltration of rainwater through the unsaturated zone at the Site is believed to be very small given the amount of precipitation for the Las Vegas Basin (averages about 4 inches per year [in/yr] or about 101.6 millimeters per year [mm/yr]) and the reported evapotranspiration rate of up to 86 in/yr (Zikmund 1996). Low moisture content in the Site soils, generally averaging about 3%, suggests that much of the moisture that infiltrates into the unsaturated zone does percolate and recharge the water table as precipitation events tend to be infrequent and somewhat episodic in nature. A review of literature indicates that most of the water recharged to the shallow aquifer is from irrigation or other forms of water application and from upward leakage from underlying artesian aquifers (ENSR 2005).

Additionally, Hevesi et al. (2003) in their infiltration model of the Death Valley region predicted an average net infiltration rate of 2.8 mm/yr, which was about 1.6% of simulated average annual precipitation rate of 171.3 mm/yr. Their simulations revealed a balance between the average runoff-generation rate and the average run-on infiltration rate, suggesting the most of the runoff infiltrates back into the soil. Their analysis compares favorably to the literature reviewed for the CSM that indicated most of the recharge to the shallow aquifer beneath the site is likely not from precipitation.

Given the absence of significant percolation as a result of precipitation events, most of the chemicals present in soil would not be expected to be transported through the unsaturated zone by rainfall to the water table. This would be especially true of those analytes that have a very low solubility or those that are not soluble under normal pH conditions, such as many of the metals. However, intermittent or even rare events such as leaking pipelines or severe pipeline “breaks” could provide sufficient water to support migration to the water table. Further, a rising water table could saturate soils previously located above the water table and thus provide a mechanism for leaching to groundwater. Although there is a limited possibility for pipeline breaks, and water levels have remained relatively stable, a screening level assessment for the potential of each SRC detected in soil to leach to the groundwater was conducted.

5.2.2.2 Soil Screening Levels

The potential for a SRC to leach and percolate into groundwater was evaluated through a comparison of its maximum reported concentration in Site soils to both PRG soil screening levels (PRG-SSLs) developed by USEPA (2004a) and to calculated Site-specific soil screening levels (ssSSLs). **Table 5-3** presents the PRG-SSLs based on a dilution and attenuation factor (DAF) of 1 and 20. The NDEP has requested that a DAF of 1 be used for this evaluation. A discussion of the conservative nature of this DAF is provided at the end of this subsection.

<u>SSL Equation</u>

Both the published PRG-SSLs and the ssSSLs use the following equation (USEPA 1996a) to estimate the potential for leaching and migration to the groundwater.

Soil Screening Level (mg/kg) = $(C_w * DAF)[K_d + (O_w + O_a*H)/p_b)]$

Where:

C_w = target groundwater concentration (mg/L) (typically MCL)
DAF = dilution attenuation factor (dimensionless)l assumed to be 1 and 20
K_d = soil-water partitioning coefficient (L/kg)

Θ_w = water filled porosity (dimensionless)
Θ_a = air-filled porosity (dimensionless)
H = Henry's constant (dimensionless)
ρ_b = dry bulk density (kg/L)

And where (employed for some organic SRCs):

$$K_d = K_{oc} \times f_{oc}$$

K_{oc} = soil-organic carbon partitioning coefficient (L/kg)
f_{oc} = Fraction organic carbon (g/g)

Conservative Nature of the SSL Calculation

The SSL equation is a simple linear equation to estimate whether a contaminant concentration in soil might have the potential to threaten water quality (USEPA 1996a, pg 28). The analytical method provides some simplifying assumptions which lend to the conservative nature of the analysis as follows:

- Infinite source in the unsaturated zone;
- Uniformly distributed source from the surface to the top of the aquifer;
- No attenuation in the unsaturated zone;
- Instantaneous and linear equilibrium soil/water partitioning;
- Unconfined aquifer and homogeneous and isotropic hydrologic conditions; and
- No chemical attenuation in the aquifer, and no non-aqueous phase liquids.

For the evaluation of the Phase A data, the target groundwater concentration (C_w) was established as the risk-based comparison levels for groundwater (see **Table 5-2**). These are conservative risk-based values that assume drinking water use of the groundwater, and are based on MCLs (USEPA 2006), other federal and state regulatory values, and one-tenth the tap water PRGs where regulatory values are not available.

Site-Specific SSL Calculation

USEPA Region 9 provides PRG-SSLs for the migration to groundwater pathway (USEPA 2004a). In the development of these values, the default values provided in the 1996 guidance were used. For SRCs without PRG-SSLs, ssSSLs were calculated. In the calculation of the ssSSLs, some of the default variables, such as water- and air-filled porosity and dry bulk density were replaced with Site-specific data. The input variables for each screening level are provided below.

Variable	USEPA (2004a)	Site-Specific Values
C_w (mg/L)	Chemical-specific comparison level	Chemical-specific comparison level (see **Table 5-2** and **Table 5-3**)
DAF (unitless)	1 and 20	1 and 20 (default)
K_d (L/kg)	Chemical-specific soil-water partitioning coefficient	Chemical-specific soil-water partitioning coefficient (see **Table 5-3**)

Variable	USEPA (2004a)	Site-Specific Values
K_{oc} (L/kg)	Chemical-specific soil-organic carbon-water partitioning coefficient	Chemical-specific soil-organic carbon partitioning coefficient (see **Table 5-3**)
f_{oc} (g/g)	0.002	0.0014
O_w (unitless)	0.3	0.178
O_a (unitless)	1.2	0.21
H (unitless)	Chemical-specific (see Table 5-14)	Chemical–specific (see **Table 5-3**)
p_b (kg/L)	1.5	1.64

The risk-based comparison levels for groundwater (C_w) are provided in **Table 5-2**. For some SRCs, soil-water partitioning coefficients (K_d) and Henry's low constants (H) provided in USEPA (2004a) guidance was used; for others, organic carbon (f_{oc}), soil-organic carbon partitioning coefficients (K_{ow}) and H values provided in USEPA (1996a) guidance were used. Information for chemicals not included in USEPA (1996a) guidance for either the K_d, K_{oc} or f_{oc} were taken from published references (PADEP 2007; Baes and Sharp 1983; USEPA 1996b). Organic carbon data (f_{oc}), air- and water-filled porosity and bulk density from soil samples collected at the Site was used in the ssSSL calculations. The data used in the Site-specific calculations were an average from the soil samples collected from borings SA8 and SA21. Laboratory reports for the water- and air-filled porosity, f_{oc} and dry bulk density are provided in **Appendix F**.

The DAF for each ssSSL was conservatively set at 1 per discussions with NDEP, though calculations were also performed for a DAF of 20. The DAF is an approximation of the dilution that takes place when infiltration water mixes with the underlying groundwater flow from the point of release to the receptor (USEPA 1996a). One is the lower of the two default values published by USEPA (2004a) and assumes no attenuation of the chemical through physical and chemical processes from the point of release to the receptor. Although a DAF of 1 was selected, it is likely overly conservative since there is significant conservatism built into the analytical model (i.e., infinite source, no attenuation, uniformly distributed source), and there is a general absence of a Site-specific transport mechanism due to the limited percolation from precipitation and there is a rarity of "catastrophic" events. However, because the nature and timing of these catastrophic events cannot be measured, the conservative DAF of 1 was used. Site-specific DAFs, especially for the alluvial aquifer, are likely to be significantly greater than 20. The calculated ssSSLs are presented on **Table 5-3**.

5.2.2.3 SSL Comparison Level

Table 5-3 provides the following (where available) for each SRC evaluated: the PRG-SSL (DAF = 1 and 20); for SRCs without PRG-SSLs, the groundwater comparison level, the chemical-specific input values identified above, the ssSSL (DAF = 1 and 20); and the SSL comparison level for each SRC (PRG-SSL or ssSSL for DAF = 1 and 20). Note that for some of the REG-SSLs, the difference between the values using a DAF of 1 and 20 is not exactly 20, nonetheless, these are the values provided on the Region 9 Req. Table.

5.2.3 Comparison Levels for the Groundwater to Indoor Air Migration Pathway

The comparison levels for the groundwater to indoor air or vapor intrusion (VI) migration pathway were obtained directly from USEPA guidance (USEPA 2002). They are provided in **Table 5-4**. USEPA (2002) identifies which constituents are considered to be volatile enough for evaluation in the vapor intrusion pathway. The VI comparison levels are concentrations in groundwater that are protective of indoor air inhalation exposures based on a target risk level of 1×10^{-6} for potential carcinogens and a target hazard quotient of 0.1 for noncarcinogens. USEPA (2002) uses the MCL as the default VI comparison level for constituents that have MCLs. **Table 5-4** lists only those SRCs considered by USEPA to be appropriate for consideration for evaluation of the VI pathway.

It should be noted that the VI comparison levels are very conservative for use in this evaluation. The assumed exposure scenario is residential, whereas at the Site, use is and will remain industrial, and buildings present are mainly warehouses or other industrial use buildings, though some offices are present.

5.3 Data Usability Evaluation

This section describes the procedures used to evaluate the acceptability of the Phase A data for use in decision making. Based on the review of the data usability criteria (listed below), the Phase A investigation achieved the objective of gathering soil and groundwater chemistry data that can be used to refine the conceptual site model, to initially characterize Site conditions, to provide data for future risk assessments and most importantly to determine the Scope for the Phase B investigation. This conclusion is based on the evaluation of the following:

- Data sources – A summary of the Phase A data sources is provided; all valid data from these investigations were included in the Phase A data evaluation.

- Documentation - The documentation of the investigation activities, including maps, analytical methods, chain-of-custody forms, sampling procedures and a complete electronic data set were considered complete and adequate.

- Analytical methods and detection limits – Analytical methods were selected prior to the field activities to meet the objectives of the program, including to achieve detection limits that would allow the comparison with the risk-based comparison levels. A Data Validation Summary Report (DVSR) is provided with this report (Appendix G) that evaluates in detail whether the analytical methods were properly employed, and whether the analytical results are acceptable.

- Data quality indicators, including precision, accuracy, representativeness, comparability, and completeness – These are addressed in detail in the DVSR.

- Data review – A detailed data review and data validation was conducted; results were either accepted, rejected, or accepted with qualification. The small percentage of data that were rejected were identified as such and were excluded from further data evaluation activities.

- Data adequacy – The data were considered to be adequate for use in decision-making for the Site. Section 6 and **Appendix I** indicate where additional data are to be collected for the purpose of further Site evaluation.

Tables 5-5 and 5-6 provide a summary of the data usability evaluation, and the details are provided in the sections below. Based on the results of the data validation and evaluation presented here, the data collected in Phase A are considered to be adequate for use in decision making.

The Phase A investigation focused on soil and groundwater conditions associated with areas that were suspected to be impacted or comprised of potential contaminant source areas. The Phase A results will be used to evaluate which of the SRCs are adequately characterized for future risk assessments and which SRCs require further study. Overall quality of sample results is a function of proper sample management. Management of samples began at the time of collection and continued throughout the analysis process. Established industry standards for sample collection were followed throughout the investigation.

The primary objective of the data usability evaluation is to determine that appropriate data are used in the evaluation of the Phase A investigation results. The objective of Phase A was to evaluate which SRCs are adequately characterized for future risk assessment and which SRCs require additional investigation. Even though a risk assessment was not conducted in Phase A, the data requirements for a risk assessment were considered. The analytical data were reviewed for applicability and usability following procedures in the

Guidance for Data Usability in Risk Assessment (Parts A and B; USEPA 1992a,b) and Risk Assessment Guidance for Superfund (USEPA 1989). A quality assurance/quality control (QA/QC) review of the analytical results was conducted following the sampling events. According to USEPA (1992a), there are six principal evaluation criteria by which data are judged for usability in risk assessment. The six criteria are:

- Data sources;
- Documentation;
- Analytical methods and detection limits;
- Data quality indicators, including precision, accuracy, representativeness, comparability, and completeness.
- Data review; and
- Data adequacy.

In USEPA (1992a), the final criterion is listed as 'report to risk assessor'. However, since the purpose of the Phase A investigation was to determine whether adequate data were available for risk assessment, this criterion has been revised to 'data adequacy'.

These six criteria are discussed in relation to the Phase A investigation data evaluation. In addition, the Phase A data are summarized below. **Table 5-5** presents a Data Usability Worksheet from the Risk Assessment Guidance for Superfund Part D (USEPA 2001a), which summarizes the criteria used to identify data usability.

5.3.1 Phase A Data

For the Phase A investigation, the following scope of work was conducted in accordance with the Phase A Work Plan (ENSR 2006a) between November 1 and December 8, 2006.

- Soil borings were drilled at 27 locations using sonic drilling techniques at locations selected in consultation with the NDEP to characterize specific areas of past or current operations at the Site.
- Each soil boring location was sampled at a depth of 0.5-ft, and thereafter, at 10-foot intervals until groundwater was first encountered. The only exception to this was soil boring SA01, a 10-foot-deep boring where soil samples were collected at 5-foot (0.5, 5, and 10-ft bgs) intervals as specified in the Phase A Work Plan (ENSR 2006a).
- Soil samples from the 27 locations were analyzed for asbestos (surface soil sample), metals, wet chemistry constituents, TPH including fuel oxygenates, OCPs, PCBs, dioxins and furans, radionuclides, OPPs, OCHs, VOCs, and SVOCs.
- One manganese ore and one manganese tailing sample were collected for analysis of metals and radionuclides.
- Two near surface (1.5- and 3-ft bgs) soil samples (SA08 and SA21) were collected for physical and geotechnical analyses to provide data that can be used for future risk assessment purposes.

- Groundwater samples were collected from 20 existing monitoring wells and one existing interceptor well (I-AR). Sampled wells were chosen for their proximity to one of the soil boring locations and because the well was screened at the water table.

- Groundwater wells were sampled using micro-purge methods with low-flow pumping rates ranging from 100 ml/min to about 480 ml/min. Water quality parameters were measured during purging using a water quality instrument fitted with a flow-through cell. Water was purged until water quality parameters had stabilized to a fluctuation on 10 percent or less for three consecutive readings.

- Six groundwater grab samples were collected from open boreholes where nearby wells either did not exist, or were not functional. A second set of groundwater grab samples were collected from each open borehole and filtered in the field for metals analysis. In addition, two filtered samples (M29 and GWSA15) were collected from the open boreholes for radionuclide analyses. To collect groundwater grab samples, the boreholes were advanced at least four feet into the water table. The water level in each borehole was allowed to stabilize and depth-to-water was measured. Groundwater grab samples were collected using a new disposable bailer.

- Both groundwater and groundwater grab samples were analyzed for metals, wet chemistry constituents, fuel alcohols, OCPs, PCBs, radionuclides, OPPs, OCHs, VOCs, and SVOCs.

The following scope of work was conducted in May 2007, in accordance with the Phase A Source Area Investigation Work Plan Addendum (ENSR 2007):

- Groundwater samples were collected from 19 existing monitoring wells and one existing interceptor well (I-AR). Wells sampled were as subset of the same wells sampled during the November/December 2006 sampling event.

- Groundwater wells were sampled using micro-purge methods with low low-flow (100 ml/min) and low-flow pumping rates (150 ml/min to 480 ml/min). Water quality parameters (pH, temperature, specific conductance, dissolved oxygen, oxygen-reduction potential) were measured during purging using a water quality instrument fitted with an in-line flow-through cell. Another water quality parameter (turbidity) was measured with a stand-alone turbidity meter (nephelometer). Water was purged from each well until water quality parameters had stabilized to the acceptance criteria for three consecutive readings. One set of unfiltered groundwater samples was collected from the wells using low low-flow pumping rates. A second set of unfiltered samples was collected using low-flow pump rates. A third set of groundwater samples was collected using the same low-flow pumping rates and was also filtered in the field to remove suspended particulate matter.

- All three sets of groundwater samples were analyzed for metals and radionuclides.

The sampling locations are presented on **Figure 4-1**. All valid data from these investigations were included in this Phase A data evaluation. Data Validation Summary Reports (DVSRs), including qualified data table summaries, data validation memoranda, and an Access® database for all of the datasets that were used in the risk assessment have been submitted to NDEP. These documents are provided in **Appendices E** and **G** of this report.

5.3.2 Criterion I – Data Sources

The review of data sources is performed to determine whether the laboratory analytical techniques used in the Site characterization process are appropriate to identify which chemicals have been adequately characterized, and which require further characterization for future risk assessments. The Site data collection activities (Section 3.0) were developed to characterize a broad spectrum of chemicals potentially present on the Site, including VOCs, SVOCs, metals and other inorganics, radionuclides, dioxins/furans, asbestos, PCBs, PAHs, and pesticides. Site data collection activities have included analyses for soil and groundwater, and appropriately reflect potential exposure to these media.

The State of Nevada has either certified or is in the process of certifying the laboratories used to generate the analytical data. As such, standards of practice in these laboratories follow the quality program developed by the Nevada Revised Statutes (NRS) and are within the guidelines of the analytical methodologies established by the USEPA. Based on the review of the available information, the data sources for chemical and physical parameter measurements are adequate for use in the Phase A investigation results evaluation.

The figure, table, and appendices associated with the Phase A report and data collection efforts are listed below:

- A Site description provided in Sections 1.0, 2.0 and 5.1 of this report identifies the location and features of the Site, and the characteristics of the Site vicinity.
- A Site map with sample locations is provided in **Figure 4-1**.
- Sampling design, protocols and results are discussed in Sections 3.0 and 4.0.
- Analytical methods are provided in **Table 3-2** of this report and as part of **Appendix E** and **Appendix G**.
- A complete dataset in Access database format is provided in **Appendix E**.
- A narrative of data qualified due to QC criteria is provided with each analytical data package by the laboratories in **Appendix E**.
- QC results are provided by the laboratory, including blanks, replicates, and spikes. The laboratory QC results are summarized as part of each of the DVSR and Data Validation Memoranda in **Appendix G**.
- Electronic files containing the raw data made available by the laboratory are provided in **Appendix E**.

5.3.3 Criterion II – Documentation Review

The objective of the documentation review is to confirm that the analytical results provided are associated with a specific sample location and collection procedure. For the purposes of this data usability evaluation, the chain-of-custody forms prepared in the field were reviewed and compared to the analytical data results provided by the laboratory to ensure completeness of the dataset. All samples analyzed by the laboratory were included on the chain-of-custody forms and were correlated to the correct geographic location at the Site. Field procedures included documentation of sample times, dates and locations, and other sample-specific information such as depth. Information recorded in field forms was imported into the project database.

All laboratory reports, except for asbestos, provided the documentation required by USEPA's Contract Laboratory Program (USEPA 2003b, 2004) which includes chain-of-custody records, calibration data, QC results for blanks, duplicates, and spike samples from the field and laboratory, and all supporting raw data generated during sample analysis. Reported sample analysis results were imported into the project database.

The recommended method for providing asbestos data which are useful for risk assessment purposes was performed by EMSL Laboratory in Weston, New Jersey. This laboratory is not currently certified in the State of Nevada but has requested certification. EMSL has National Environmental Laboratory Accreditation Program (NELAP) accreditation for asbestos analysis but certification for the Modified Elutriator Method (USEPA 2003a) in particular is not available.

To conduct a risk assessment of asbestos in soils, it is necessary to establish the relationship between the asbestos concentrations observed in soils and concentrations that will occur in air when such soil is disturbed; for example, during excavation. This is because asbestos is considered to be a hazard only through the inhalation route (Berman and Crump 2001; USEPA 2003a). In fact, the Modified Elutriator Method (Berman and Kolk 2000), which was the method employed to perform the analyses presented in this report, was designed specifically to predict airborne asbestos exposures based on bulk measurements (Berman and Chatfield 1990).

The Modified Elutriator Method involves collecting soil samples that are re-suspended and then forced through an airway and filter. Asbestos structures are isolated and concentrated as part of the respirable dust fraction of a sample and analytical measurements are reported as the number of asbestos structures per mass of respirable dust (particulate matter of 10 microns (um) in diameter or less, or PM10) in the sample. The fiber counting and characterization rules comply with ISO Method 10312. However, an essential criterion for counting rules is that only those amphibole or chrysotile fibers that are longer than 10 um and thinner than 0.4 um are included in the tallies. Fibers of these dimensions were combined with published dust emission and dispersion models to estimate potential inhalation risks from asbestos.

5.3.4 Criterion III – Analytical Methods and Detection Limits

It is necessary to evaluate whether the analytical methods used appropriately identify which chemicals have been adequately characterized, and whether the detection limits are low enough to allow adequate comparison with comparison levels. At a minimum, this data usability criterion can be met through the determination that routine USEPA and U.S. Department of Energy (DOE) reference analytical methods were used in analyzing samples collected from the Site. **Table 3-2** identifies the USEPA and DOE methods that were used in conducting the laboratory analyses of soil and groundwater samples from the Phase A investigation. Methods used are included in **Appendix E**, and each of the DVSRs (**Appendix G**). Laboratory reporting limits were based on those outlined in the reference method and the QAPP. In accordance with respective laboratory SOPs, the analytical processes included performing instrument calibration, laboratory method blanks, and other verification standards used to ensure quality control during the analyses of collected samples.

The range of detection limits achieved in field samples was compared to various comparison levels described in Section 5.2. The comparison levels are based on potential exposure to soil and groundwater through direct contact, and groundwater to indoor air migration. As the soil to groundwater pathway focuses only on detected SRCs, and as many of the comparison levels for this pathway were developed specifically for this data evaluation, an evaluation of detection limits for the soil to groundwater pathway is not included here. **Appendix K** shows the results of these comparisons.

For asbestos, there is no regulatory limit to compare the detection limits of chrysotile and amphibole fibers for this method. For asbestos, the appropriate measure of adequate characterization is not a detection limit, but the analytical sensitivity. The risk calculations for asbestos showed that the presence of even one long amphibole fiber resulted in potential risks greater than 10^{-6}. The presence of one long chrysotile fiber resulted in risk levels less than 10^{-6} but greater than 10^{-7}.

5.3.5 Criterion IV – Data Quality Indicators

Data quality indicators (DQIs) are identified during the development of data quality objectives (DQOs), to provide quantitative measures of the achievement of quality objectives. The DQIs include precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). The project QAPP provides the definitions and specific criteria for assessing DQIs using field and laboratory QC samples and is the basis for determining the overall quality of the dataset. Data validation activities included the evaluation of PARCCS parameters. Details of the evaluation are provided in the data validation memoranda for each laboratory sample delivery group (SDG). A complete set of the memoranda are included in **Appendix E**. A complete quantitative summary of DQI results for the Phase A dataset is provided in Section 4 of the DVSR (which is also included in **Appendix G**).

5.3.6 Criterion V – Data Review

The data review portion of the data usability process focuses primarily of the quality on the analytical data received from the laboratory. All Site data that are used in the risk assessment must be evaluated on the basis of precision (based on duplicates), accuracy (based on laboratory spikes), representativeness, completeness, comparability, and sensitivity.

5.3.6.1 Data Validation

Soil and groundwater sample results were subject to data validation using the principles of USEPA National Functional Guidelines (USEPA 1999, 2001b, 2002, 2004) and were designed to ensure completeness and adequacy of the dataset. Any analytical errors and/or limitations in the data have been addressed and an explanation for data qualification provided in the respective data tables.

For some analytical results, quality criteria were not met and various data qualifiers were added to indicate limitations and/or bias in the data. The definitions for the data qualifiers, or data validation flags, used during validation are those defined in USEPA guidelines (USEPA 1999, 2001b, 2002, 2004). Data validation flags indicate when results were qualified based on validation criteria. Sample results qualified as estimated were deemed likely to be quantitatively biased to some degree. Data validation qualifiers used for the Phase A data are defined in the notes at the end of each of the Section 4.0 data tables.

5.3.6.2 Data Validation Results Summary

Details regarding the data validation, including the DVSR, summary tables of all results qualified during data validation, and individual data validation memoranda (grouped by laboratory sample delivery group (SDG) and analytical fraction, are included in **Appendix G**. The laboratory data reports are provided in **Appendix E.**

5.3.6.3 Evaluation of Rejected Data

Table E-17 of **Appendix E** summarizes the analytical results rejected during validation. For the most part, the frequency of rejection was low (164 of 38701 sample data points were rejected as unusable during validation), with the following exceptions.

<u>Ammonia</u>

Ammonia was detected in only 10 Phase A soil samples. The highest concentrations were in the former ammonium perchlorate production area (borings SA15 and SA16), as shown on **Figure 5-3**. The remaining results in soil were not detected. However, 15 soil results were rejected in validation. These samples were all in one analytical batch, and the MS/MSD for that batch had poor enough recovery that the sample results had to be rejected. This was therefore a "one-time" occurrence. All of the soil sample results from SA14 and SA10 and the sample results from SA9 at depths greater than 10 ft bgs were rejected, however ammonia was not detected at the collocated groundwater samples. While one result was rejected at SA15 (SA15-10), the duplicate result was not rejected. Therefore, these data are considered to be adequate for characterization, and additional sampling is not proposed to replace the rejected data.

Cyanide

Cyanide was not detected in soil (or groundwater) at the Site. However, approximately half of the soil results were rejected and three quarters of the groundwater data were rejected due to laboratory instrumentation issues (see **Tables 4-22** and **4-23**). The cyanide data are presented on **Figure 5-4**. NDEP indicated that there is anecdotal evidence of a release of cyanide at the former State Industries operations (LOU 62), near Phase A sample location SA02, of approximately 9,000 gallons of liquid waste containing cyanide. State Industries operated two surface impoundments between 1974 and 1988. Cyanide results at boring location SA02 for both soil and groundwater are not rejected, and all of the results are not detected. Discussions with NDEP (meeting of 7/25/07) indicated that the cyanide would likely no longer be present on Site due to degradation. Therefore, these data are considered to be adequate for characterization, and additional sampling is not proposed to replace the rejected cyanide data.

Iron

Groundwater samples were analyzed for iron in November/December 2006 (totals analyses) and in May 2007 (total and soluble analyses). Of the 94 groundwater samples analyzed for iron, roughly half of the sample results were rejected. This was due to poor matrix spike recoveries in these samples; therefore, while the laboratory reported most of these results as not detected, it cannot be determined whether iron may have been present in the samples or not. This issue occurred with samples from both of the groundwater sampling events, but notably, was not an issue with the soil samples, none of which were rejected. The poor iron spike recovery in groundwater at the Site appears to be a reproducible matrix effect (see Section 3.13 of the DVSR in **Appendix G**), and is also more common in the filtered samples. This issue may be common to the BMI complex in general, and it is unlikely that additional sampling would resolve this problem.

5.3.6.4 Field Quality Control Sample Results Summary

Field QC samples consisting of field blanks, pump blanks, equipment blanks, trip blanks, and MS/MSD samples were collected during the Phase A field activities. The laboratory results from these samples are discussed in the following subsections.

Field Duplicates

During the Phase A sampling activities, 18 field duplicate soils samples and 3 field duplicate groundwater samples were collected as specified in the Work Plan and analyzed for the same suite of parameters as the parent samples. These soil and groundwater field duplicates represent 11% and 10%, respectively, of the total number of soil and groundwater samples collected, which meets the Work Plan- and QAPP-specified requirement for collecting one field duplicate per 10 samples submitted for chemical analysis. Evaluation of the field duplicate results is discussed in Section 3.11 of the DVSR in **Appendix G** and data qualified during validation based on nonconformances in the field duplicate dataset are displayed in **Table E-15**. In general, the field duplicate precision met the QAPP-established acceptance limits of 30% maximum relative percent difference (RPD) for aqueous sample results and 50% maximum RPD for soil sample results. A total of 45 results, representing 1.3% of the field duplicate result dataset, are outside the acceptance limits. Less than 1% of the field sample results dataset for this project was qualified as estimated based on field duplicate nonconformances. No data were rejected based on field duplicate precision problems.

Equipment Blank Samples

Twenty-one equipment blanks and one pump blank were collected during the Phase A field sampling activities as specified in the Work Plan. These equipment blanks were analyzed for the same parameters, where appropriate, as the associated field samples. Evaluation of the equipment and pump blank results in relation to the associated field sample results is discussed in Section 3.5 of the DVSR in **Appendix G**. The data qualified during validation based on detected target analytes in the equipment blanks are displayed in **Table E-9**. In general the equipment blank results did not reveal significant levels of equipment-associated contamination during sampling. Less than 1% of the field sample results were negated based on equipment blank contamination.

Field Blank Samples

Three field blank samples were collected during the Phase A field sampling event to monitor the quality of the water used to rinse equipment for the equipment blank samples. Evaluation of the field blank results in relation to the associated field QC samples results is discussed in Section 3.5 of the DVSR in **Appendix G**. The data qualified during validation based on detected target analytes in the equipment blanks are displayed in **Table E-9**. In general, the field blank results did not reveal significant levels of contamination in the source water for the equipment blanks. Less than 1% of the equipment blank results were negated based on detected field blank contamination.

Trip Blank Samples

Eighteen trip blank samples were used during the Phase A field sampling event to monitor possible contamination during transport of the samples in VOA vials collected for VOC analysis as described in the Work Plan. Evaluation of the trip blank results in relation to the associated field samples is discussed in Section 3.5 of the DVSR in **Appendix G**. The data qualified during validation based on detected VOC target analytes in the trip blanks are displayed in **Table E-9**. In general, the trip blanks did not reveal significant levels of contamination for any VOC analytes during shipping or storage before analysis. Many detections of common laboratory contaminants, such as toluene and methylene chloride, in the trip blanks were negated based on the laboratory method blank results. Only one low level detection each for methylene chloride and chloromethane in the trip blanks resulted in field sample result qualification in 13 associated samples.

Matrix Spike and Matrix Spike Duplicate Samples

Twelve samples from the full set of water and soil samples collected were designated and analyzed by the laboratory as MS/MSD QC samples for the full set of analytical parameters specified for the parent samples. This MS/MSD set represents more than 7% of the total unique field samples collected during the Phase A sampling and meets the Work Plan goal of 5% frequency for MS analysis. Additional project samples that were not designated on the chain-of-custody records MS/MSD samples were also analyzed by the laboratories to fulfill batch QC requirements for some analyses.

Evaluation of the MS/MSD results in relation to the associated field samples is discussed in Section 3.8 of the DVSR in **Appendix G**. The data qualified during validation based on the spike recovery results are displayed in **Table E-11**. Data qualified on the basis of precision criteria in the MS/MSD data are discussed in Section 3.10 of the DVSR and displayed in **Table E-14**. In general, MS/MSD recoveries met the QC acceptance criteria for the majority of the laboratory analyses. Only 0.2% of the total dataset for all samples and all analyses was rejected based on low MS recovery; and about 9% of the sample results were qualified as estimated based on MS recovery results.

5.3.6.5 Review of Field Data

A review of the field records suggested that elevated turbidity may have affected the laboratory results for groundwater for the November/December 2006 sampling. Therefore, an additional set of groundwater samples were collected in May 2007 and analyzed for inorganics and metals.

5.3.7 Data Adequacy

The purpose of the Phase A investigation data evaluation is to determine whether or not the data collected are sufficient for characterization and for conducting future risk assessments. For those SRCs or areas determined not to be sufficiently characterized, the objective of Phase B of the source area investigation is to collect sufficient data to conduct risk assessments for the Site. The risk assessments will be used as the basis for decision-making for the Site.

Table 5-6 provides the data usability evaluation summary. Based on the results of the data validation and evaluation presented here, the data collected in Phase A are considered to be adequate for use in decision making.

5.4 Evaluation of Frequency of Detection

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the following:

- Determination of whether the SRC is either absent or is rare in frequency.

This section provides an evaluation of the frequency of detection of SRCs for both soil and groundwater. SRCs not detected in any sample within a medium and SRCs detected at a low frequency (e.g., 5-10%) are discussed.

The Phase A sampling plan was designed to collect samples of soil and groundwater in areas where releases are known or most likely to have occurred. Soil and groundwater samples collected in Phase A were analyzed for the complete list of SRCs, approximately 236 chemicals and parameters. SRCs are chemicals that either have been shown to be present (or potentially present) at the Site or are associated with historical operations at the Site; they are listed on **Table 3-2**.

The Phase A results show that many of the SRCs were not detected in any of the samples. These results indicate that these SRCs were likely not released into environmental media, or if released, have degraded over time. The frequency of detection for soil and groundwater are discussed below.

5.4.1 Frequency of Detection for Soil

Table 4-25 lists the SCRs not detected in soil. **Table 5-7** provides the frequency of detection (FOD) and the percent detected for each SRC detected at least once in the Phase A soil samples. A detailed evaluation of the constituents not detected in Phase A soil samples is provided in **Appendix K**; this includes the constituents listed on **Table 4-25**, as well as the "not detected" results for constituents that were detected in at least one Phase A soil sample. Overall, the methods and detection limits are considered to be adequate for characterization. **Table 5-35** identifies SRCs never detected in soil.

5.4.1.1 General Chemistry

The general chemistry parameters were detected from a low of 10% of the samples (ammonia) to a high of 100% of the samples (sulfate).

5.4.1.2 Dioxins

At least one dioxin and/or furan congener was detected in each sample analyzed. The data are evaluated as TEQs; therefore, the FOD is 100%.

5.4.1.3 Metals

With the exception of selenium which was not detected in any sample, most metals have FODs that are near 100%. Mercury was detected the least frequently at 23%, and boron and thallium were detected in approximately 40% of the samples.

5.4.1.4 Pesticides and Herbicides

The herbicide Silvex was not detected in any soil sample. Of the 28 OPPs analyzed, only 2 were detected in any soil sample. The FOD for demeton-O is 4%, and the FOD for dimethoate is 7%. Of the 22 OCPs analyzed, only 6 were detected in soil samples. With the exception of beta-BHC, the FODs are less than 27%. Beta-BHC was detected in almost 50% of the samples. While there is no record of the use or manufacture of beta-BHC at the Site, beta-BHC was a major product of the facility adjacent to the Site on the western border, and in fact is still stored there in a covered surface pile.

5.4.1.5 PCBs

Of the seven Aroclors analyzed in each sample, only one soil sample (SA09-20) of 116 total had a detectable concentration of PCBs (Aroclor 1260). This FOD is 1%.

5.4.1.6 Perchlorate

Perchlorate was detected in almost all of the soil samples analyzed. The highest concentrations generally were associated with samples collected at depths greater than 10 ft bgs.

5.4.1.7 Radionuclides

Radionulcides were detected in all samples analyzed.

5.4.1.8 SVOCs

SVOCs were detected infrequently at the Site; the FODs were 5% or less. OF the 28 SVOCs analyzed, 16 were detected. PAHs were detected in less than 2% of the samples, the majority at SA09, with only a few detections at SA08, and with one detected result at SA03. Hexachlorobenzene and bis(2-ethylhexyl)phthalate were detected at an FOD of 5%.

5.4.1.9 TPH and Fuel Alcohols

TPH-DRO and TPH-GRO were detected in less than 5% of the samples, and TPH-ORO was detected in less than 7% of the samples at the Site. Fuel alcohols were not detected in any soil samples.

5.4.1.10 VOCs

Of the 67 VOCs analyzed, 24 were detected at least once in Site soil samples. Chloroform was detected the most frequently, at 45%. The next most frequently detected VOCs are 1,4-dichlorobenzene and acetone at 25% and 20%, respectively. The remaining VOCs were detected in less than 13% of the samples.

5.4.2 Frequency of Detection for Groundwater

Table 4-26 lists the SRCs not detected in groundwater. **Table 5-8** provides the FOD and the percent detected for each SRC detected at least once in the Phase A groundwater samples. A detailed evaluation of the constituents not detected in Phase A groundwater samples is provided in **Appendix K**; this includes the constituents listed on **Table 4-26**, as well as the "not detected" results for constituents that were detected in at least one Phase A groundwater sample. Overall, the methods and detection limits are considered to be adequate for characterization. **Table 5-35** identifies SRCs never detected in groundwater.

5.4.2.1 General Chemistry

The FOD ranged from 22% to 100% for the general chemistry parameters.

5.4.2.2 Metals

FODs for metals in groundwater are generally greater than 50%. Calcium, magnesium, potassium, sodium, strontium, and uranium were detected in all samples, total and soluble. Metals detected in less than approximately one quarter of the samples (for both total and soluble) are: aluminum, cadmium, cobalt, selenium, and mercury.

It can be noted from **Table 5-8** that the FODs for the soluble fractions are generally higher than for the totals fractions. This is counter-intuitive; however, upon closer inspection of the data (see **Table 4-2**), the detected soluble concentrations are generally at or near the detection limit reported for the totals concentrations. It is likely that the filtering of the samples has removed some interferences, allowing for greater sensitivity in the soluble analyses, and thus, lower detection limits.

5.4.2.3 Pesticides and Herbicides

OPPs and OCHs were not detected in groundwater samples. Six of the 22 OCPs were detected in at least one of the 27 groundwater samples. The FODs were less than or equal to 11% for five of the OCPs (beta-BHC, gamma-BHC, gamma-chlordane, heptachlor, and methoxychlor). The FOD was 30% for alpha-BHC and 20% for delta-BHC.

5.4.2.4 PCBs

PCBs were not detected in any groundwater samples.

5.4.2.5 Perchlorate

Perchlorate was detected in all but one groundwater sample.

5.4.2.6 Radionuclides

Radionuclides were detected in approximately 50% or more of the samples analyzed. The frequencies of detection are essentially the same for total and soluble fractions.

5.4.2.7 SVOCs

Only four of 28 SVOCs were detected in groundwater. Three were detected in only one sample (1,4-dioxane, di-N-butyl phthalate, and naphthalene). Bis(2-ethylhexyl)phthalate was detected in approximately 25% of the 27 groundwater samples.

5.4.2.8 TPH and Fuel Alcohols

TPH was not detected in the groundwater samples. Ethanol was the only fuel alcohol detected, and only in one of six samples analyzed

5.4.2.9 VOCs

In the 27 groundwater samples analyzed for VOCs, 24 of 67 VOCs analyzed were detected in at least one sample. Chloroform was detected in almost all of the samples. 1,2-Dichlorobenzene and 1,4-dichlorobenzene were detected in approximately 40% of the samples. Carbon tetrachloride, tetrachloroethene and trichloroethene were detected in approximately 30% of the samples. The remaining VOCs were detected in less than 20% of the samples.

5.5 Comparison to Upgradient/Background Concentrations

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the following:

- Determination of whether the SRC data are consistent with background or upgradient conditions through the application of appropriate statistical tools to compare the SRC concentration to other data populations;

This section describes the data used in the evaluation, the statistical evaluations conducted and their results, and the resulting conclusions on the adequacy of characterization. Where concentrations in Phase A samples are consistent with background, the characterization will be considered adequate, per Section 5.3 of the Phase A Work Plan. Where concentrations in Phase A samples significantly exceed background levels, the characterization may be considered inadequate, depending on the evaluation of the remaining criteria, per Section 5.4 of the Phase A Work Plan.

5.5.1 Data Used and Data Handling

Because organic constituents were generally not detected in upgradient and background samples, the formal statistical evaluation was limited only to inorganic constituents, specifically metals, radionuclides, and general chemical parameters (such as nitrate and chloride). In addition, the comparisons were performed for soils only, not groundwater, due to the lack of sufficient background water quality data.

The following datasets were used for various comparisons:

- The NDEP-approved background dataset (including BRC/Timet (BRC; Tetra Tech 2006) and City of Henderson (COH) data (Environ 2003)) was used as the primary background reference dataset. This dataset was compared to the full Phase A dataset, as well as selected subsets as noted below.

- For selected parameters (aluminum (Al), arsenic (As), boron (B), chromium (Cr), magnesium (Mg), uranium (U)), the Tronox upgradient dataset (ENSR 2006b) for deeper soils (greater than 20 ft) was used as the reference dataset to compare to the Phase A soil samples from the Muddy Creek formation. The geology and lithology of the deeper soils, including the lower portions of the alluvium and the Muddy Creek formation, are different than the shallower soils. For example, the clay content is generally higher in the Muddy Creek formation. Therefore, the natural concentrations of metals would also be expected to be different, and this has been observed both in the Tronox upgradient dataset and in other areas in the BMI Complex. As described in the Upgradient Report (ENSR, 2006b), a distinct chemical change takes place between samples that are 20 feet deep or less, and those from depths greater than 20 ft. Because deeper samples were not collected by COH or BRC, only data from the Tronox upgradient dataset were used.

- For these selected parameters (Al, As, B, Cr, Mg, U), the Phase A alluvial samples were compared to the BRC/COH dataset.

- To support the risk-based decision-making approach, a subset of the Phase A soil samples was also generated for comparison purposes. This subset consisted of those soils from depths that have a potential for direct contact with receptors, that is, soils up to a depth of 15 ft. This data subset was compared to the BRC/COH background dataset.

The following rules were used in the treatment of the Phase A data prior to performing statistical calculations:

- Field duplicates were not averaged, but were treated as two separate samples. This approach was taken due to NDEP comments on the Upgradient Investigation Results report (ENSR 2006b), questioning the advisability of averaging duplicates. For this evaluation, averaging of duplicates does not make a significant impact on the results of the analysis. Therefore, they were treated as separate samples.

- Where the frequency of detection was below 90%, the Wilcoxon Rank Sum test was run using Gehran's approximation, which assigns surrogate values for the non-detect results.

- For other tests, non-detect results were assigned a surrogate value equal to the reported detection limit (not one-half the detection limit). For this particular evaluation, the parameters evaluated are naturally occurring inorganics, and generally they were detected in most or all of the samples. Therefore, the interpretation of the results is not generally sensitive to the surrogate values used.

5.5.2 Statistical Evaluations Performed

Statistical evaluations were used to compare the results of the Phase A sampling to appropriate reference data sets. The specific evaluations performed are listed below:

- Histograms were generated to provide a visual comparison between the concentrations and showing the distributions of the data in the two data sets. In addition to histograms comparing the BRC/COH background data to the full Phase A dataset, histograms were also prepared based on geology for selected parameters. The BRC/COH dataset was compared to the Phase A alluvial samples; the Tronox upgradient deep data were compared to the Phase A Muddy Creek samples.

- Selected summary statistics were calculated for each dataset, including the number of results, the frequency of detection, and the minimum, maximum, and median values. The Shapiro-Wilk statistic was calculated for each dataset to evaluate whether it was normally distributed or not.

- A non-parametric 95^{th} percentile of the BRC/COH data was calculated. The non-parametric method was selected as very few of these datasets are normally distributed. The 95^{th} percentile was used as a comparison level for certain evaluations of the Phase A data.

- The 95^{th} percentile of the deep samples (>20 ft. logs) from the Tronox Upgradient dataset was also calculated for the six parameters (Al, As, B, Cr, Mg, U) being compared based on geology.

- Silver (Ag), cadmium (Cd), hexavalent chromium (Cr^{+6}), platinum (Pt), tin (Sb), uranium-235 (U-235), and NO_2 were typically not detected in upgradient/background samples or detected at low frequency (less than 50%). Most results detected in the Phase A sampling are therefore not consistent with background (assuming detection limits are equivalent), or they cannot be shown to be similar or different. In addition, Se was not detected in any Phase A samples. Alkalinity was not analyzed in the background dataset. Therefore, no additional statistical tests were conducted for these parameters.

- The slippage and quantile tests were used to compare the upper ranges of the two datasets (Phase A vs. reference). The slippage test compares the maximum values. The quantile test was used to compare the 75th and 90th percentiles of the data. These tests were run using the on-line programs GISDT (Neptune and Company 2007).

- The quantile test was also run at the 50th percentile to compare the centers of the datasets.
- A t-test and the Wilcoxon Rank-Sum test were used to compare the centers of the datasets. The t-test was used for normally-distributed data only. The Wilcoxon Rank Sum is a non-parametric method; it was used for all datasets. Both tests were performed using Stata® software (Stata Corporation 1984-2003).
- Where the FOD was less than 90% in the Phase A data, the Wilcoxon Rank-Sum test with Gehran's approximation was also performed. The tests were run using the on-line programs GISDT (Neptune and Company 2007).
- Each of these statistical tests was performed, as appropriate, to compare the following datasets:
  - The full Phase A dataset for soils to the BRC/COH background dataset
  - The Phase A soil samples from depths up to 15 ft (representing potential direct contact) to the BRC/COH background dataset, for those inorganics present at concentrations above the risk-based comparison levels for soil for direct contact (As, Cr, Pb, manganese (Mn), Ra-226, Ra-228, Thorium-228 (Th-228), Th-230, U-238, and perchlorate) (see Section 5.6)
  - The Phase A alluvial samples to the BRC/COH dataset for selected parameters (Al, As, B, Cr, Mg, U)
  - The Phase A Muddy Creek samples to the Tronox upgradient dataset for deeper soils (greater than 20 ft) for selected parameters (Al, As, B, Cr, Mg, U)

5.5.3 Results of Statistical Evaluations

Summary statistics for inorganics in soil are presented on **Table 5-9**; histograms are provided in **Appendix H**. The results of the statistical comparisons between Phase A and background/upgradient data for inorganics in soil are presented on **Table 5-10**.

The comparisons between the Phase A data and background data are based on a weight of evidence approach. No single statistic is used to compare the two data sets. Instead, a number of statistical evaluations were performed. All the results together with the histograms were used in the evaluations.

To aid in evaluating the statistical results, the tables of results (**Table 5-10**) include a description of the null and alternative hypotheses for the tests performed. For all tests, when the reported probability (p) is less than the significance level (alpha), the null hypothesis is rejected and the alternate hypothesis is accepted. The lower the value of p, the more statistically significant is the outcome. For this effort, a significance level of 5% (alpha=0.05) was used. However, because of the weight-of-evidence approach, this is not used as an absolute threshold. The probability values from all the tests are considered together as the basis for interpretation.

5.5.3.1 Background Comparison of Phase A Soils (0-15 ft bgs) for Use in the Direct Contact Risk Evaluation

The results of these comparisons are shown on **Table 5-10** and are summarized for select analytes below:

Arsenic – The results of all tests except the slippage test suggest there are not statistically significant differences between the Phase A shallow soils (up to 15 ft) and the background dataset. The results of the slippage test indicate there are some Phase A soil samples that have elevated concentrations relative to background. Examination of the data and histograms indicate the following samples have elevated concentrations of As: SA9-0.5, SA4-0.5, SA4-10, SA17-0.5 (see **Table 5-15** for concentrations).

Chromium – The results of the slippage test indicate there are one or more Phase A soil samples that are elevated relative to background. The results of the quantile test (at 50%) and the Wilcoxon Rank Sum also suggest the Phase A dataset may be greater than background. Examination of the histograms and data indicates the following samples were elevated relative to background: SA7-0.5, SA11-10, SA17-0.5, and SA17-10 (see **Table 5-15** for concentrations).

Lead - The results of all tests except the slippage test suggest there are not statistically significant differences between the Phase A shallow soils (up to 15 ft) and the background dataset. The results of the slippage test indicate there are some Phase A soil samples that have elevated concentrations relative to background. Examination of the data and histograms indicate the following samples have elevated concentrations of Pb: SA2-0.5, SA5-0.5, SA7-0.5, SA9-0.5, and SA17-0.5 (see **Table 5-15** for concentrations).

Manganese - The results of all tests except the slippage test suggest there are not statistically significant differences between the Phase A shallow soils and the background dataset. The results of the slippage test indicate there are some Phase A soil samples that have elevated concentrations relative to background. Examination of the data and histograms indicate the following samples have elevated concentrations of Mn: SA7-0.5, SA9-0.5, and SA13-0.5 (see **Table 5-15** for concentrations).

Radionuclides – The results of all the statistical tests indicate that the activities of the radionuclides Ra-226, Ra-228, Th-228, Th-230, and U-238 are consistent with (not greater than) background.

Perchlorate – With the exception of a few samples, concentrations of perchlorate in Phase A soil samples are elevated relative to background.

5.5.3.2 Comparison of Entire Phase A Dataset

Based on the results of the statistical comparisons (**Table 5-10**) and the histograms (**Appendix H**), 14 of the 30 metals appear to be consistent with (not greater than) background, including all radionuclides except Ra-226. Metals not consistent with background include Ba, Be, Ca, Co, Cu, Fe, Pb, Mn, Ni, Sr, Tl, Sn, Ti, W, V, and Zn. The following inorganics may be elevated relative to the background dataset:

Molybdenum	Potassium	Sodium	Radium-226
Chloride	NO_3	SO_4	ClO_4

Several parameters (Al, As, B, Cr, Mg, U) may appear elevated due simply to differences in natural geology between the Phase A and background datasets. This is examined in more detail using geology-specific comparisons discussed below.

The nitrate and sulfate datasets for both Phase A and background show a wide variability and range in concentrations. For sulfate, the statistical comparisons show significant results for all tests, indicating there are Phase A samples that are greater than background. However, for nitrate, the only statistically significant results are for those tests which evaluate the median of the datasets. Therefore, the elevated Phase A concentrations may be consistent with background.

5.5.3.3 Comparison of Phase A Soils Based on Geology

The geology and lithology of the shallow alluvium at the site are different than the deeper soils, including the lower portions of the alluvium and the Muddy Creek Formation. For example, the clay content is generally higher in the Muddy Creek formation. Therefore, the natural concentrations of metals would also be expected to be different, and this has been observed both in the Tronox upgradient dataset and in other areas in Henderson.

For selected parameters (Al, As, B, Cr, Mg, U), there are distinctly higher background concentrations in deep soils relative to shallow soils. Therefore, for these constituents, statistical comparisons were also performed on the basis of geology. This comparison was performed to aid in evaluating the potential soil to groundwater pathway, and potential leaching from soils to groundwater. For this pathway, constituent concentrations that may be elevated above background in the alluvial soils, but are consistent with background concentrations in Muddy Creek soils, would not have the potential to leach at concentrations above background levels.

The Phase A soil samples that were identified as alluvial samples were compared to the shallow background dataset (BRC and COH data). The Phase A soil samples identified as the Muddy Creek formation were compared to the Tronox upgradient deep (greater than 20 ft) dataset. As described in the Upgradient Report (ENSR, 2006b), a distinct chemical change takes place between samples that are 20 ft deep or less, and those from depths greater than 20 ft. Because deeper samples were not collected by COH or BRC, only data from the Tronox upgradient dataset were used.

For this evaluation, all statistical tests were performed, with the results provided on **Table 5-10**. However, for the purposes of evaluating the soil to groundwater pathway, the primary tests of interest are the slippage test and the quantile test at 90%. These tests identify whether there are specific samples with concentrations that tend to be greater than the reference concentrations. These represent soils that may have the potential to leach to groundwater at concentrations above background.

Alluvial Samples – Based on the results of the slippage test, the quantile test at 90%, and the histograms for alluvial soils, the following metals are present in selected samples at concentrations above background levels: As, B, Cr, U. In contrast, Al and Mg in alluvial soils are consistent with background.

Based on the results of the slippage test, the quantile test at 90%, and the histograms for Muddy Creek soils, the following metals are present in selected samples at concentrations above background levels: As, B, and Mg. Cr and U in Muddy Creek samples are not elevated with respect to upgradient concentrations. The slippage test suggests there may be samples with Al concentrations above background, but examination of the actual sample results shows they are not significantly greater and are most likely to represent background concentrations. It should be noted that the Phase A sampling included samples of the upper fine-grained unit of the Muddy Creek formation (MCfg1), which was not encountered in any of the previous background or upgradient sampling. This unit has a higher concentration of fines (silt and clay) and could be expected to have related higher concentrations of certain metals. Therefore, it is likely that some of the elevated concentrations in Muddy Creek samples do represent background conditions, but this cannot be evaluated statistically/quantitatively at this time. **Table 5-35** summarizes the background evaluation for each SRC.

5.6 Comparison of Soil Data to Direct Contact Comparison Levels

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the following:

- Determination of whether the measured SRC concentrations are less than the corresponding risk-based comparison levels.

This section evaluates the soil data with respect to the comparison levels for the direct contact with soil pathway; the next section addresses groundwater. Comparison levels for the soil direct contact pathway are provided on **Table 5-2**. The results are summarized in **Table 5-35**.

Phase A results for soil have been evaluated with respect to the comparison levels identified in **Table 5-2** for direct contact exposure pathways. **Table 5-11** lists the SRCs detected in at least one Phase A soil sample. The SRCs are grouped by analytical method, so that it can be determined whether a particular analytical method will be required in future analyses. For each SRC, **Table 5-11** presents the frequency of detection, the minimum and maximum detected concentrations, the arithmetic mean concentration, the location of the maximum detected concentration, the soil direct contact comparison level, and identifies whether the maximum detected concentration exceeds the comparison level.

There are 119 SRCs listed on **Table 5-11**. The following sections discuss the results by parameter group. A summary of the SRCs that have maximum detected concentrations greater than the comparison levels is provided in **Table 5-12**.

5.6.1 General Chemistry

There are no risk-based comparison levels for the general chemistry parameters in soil.

5.6.2 Dioxins and Furans

While dioxin and furan analytical results are reported for individual congeners, as noted in Section 4.22 and Table 4-3, dioxins and furans are evaluated on a total TEQ basis. The TEQs are calculated by multiplying the congener concentration by its congener-specific Toxic Equivalent Factor (TEF). The total TEQ concentration for a sample is calculated by summing the congener-specific TEQs for each sample.

The laboratory provided TEQ calculations in their data packages. The laboratory calculated the TEQs using the 1998 TEFs (Van den Berg, et al. 1998) and assumed a concentration of 0 for congeners not detected. Note that as almost all congeners for which there are TEFs were detected, the latter assumption did not have a significant effect on the TEQ calculation. However, the TEFs were updated in 2006 (van den Berg, et al. 2006). **Table 5-13** provides both sets of TEFs for comparison purposes.

As discussed in Section 4.2.2, laboratory analyses for dioxins and furans were conducted using two methods. Where the results of the modified screen method indicated that the total TEQ concentration was greater than 100 ng/kg (100 ppt), with one exception, the laboratory reanalyzed that sample using the full scan Method 8290.

The screen and full scan method TEQ results provided by the laboratory are shown on **Table 5-14**. The laboratory data were recalculated using the 2006 TEFs (van den Berg, et al. 2006), and assuming ½ the detection limit as a surrogate for congeners not detected; this is also presented on **Table 5-14**. The ENSR calculated TEQs (using the 2006 TEFs and ½ the detection limit as a surrogate for congeners not detected) are the more appropriate for evaluation, therefore, the following discussion focuses on these results.

As shown in **Table 5-14**, the full scan results are lower in TEQ concentration than the screen results, indicating that the screen results are conservative in that they are biased high. The concentration of only one recalculated screen result (SA16-0.5) is greater than the comparison level of 1 ppb (or 1,000 ppt). However, the TEQ concentration for the full scan result for this sample is 0.894 ppb (or 894 ppt). Therefore, it can be concluded that the dioxin/furan results for the Phase A sampling do not exceed the comparison levels.

Based on these results, characterization of dioxins and furans is considered to be adequate for the direct contact with soil pathway, and no further sampling is proposed for Phase B.

5.6.3 Metals

Phase A soil samples were analyzed for 32 metals. Of these, the following have maximum detected concentrations that are greater than the comparison level.

- Arsenic – Arsenic was detected in all 116 soil samples, and all concentrations are above the comparison level. **Figure 5-5** presents the arsenic concentrations in soil with respect to the direct contact comparison level. Therefore, the concentrations of arsenic in all of the samples within the direct contact soil interval of 0-15 ft bgs are greater than the direct contact comparison level; however, all but four samples (SA4-0.5, SA4-10, SA9-0.5, SA17-0.5) within this interval were determined to be consistent with background. Therefore, only these four locations warrant further consideration for characterization for arsenic in Phase B.

- Chromium – Chromium was detected in all 116 soil samples; however, only one result was greater than the comparison level (SA17-0.5). **Figure 5-6** presents the chromium concentrations in soil with respect to the direct contact comparison level. The chromium concentration in this sample was also determined not to be consistent with background. Therefore, only this location warrants consideration for further characterization for chromium in Phase B.

- Lead – Lead was detected in all 116 soil samples; however, only two results were greater than the comparison level (SA2-0.5 and SA9-0.5). **Figure 5-7** presents the lead concentrations in soil with respect to the direct contact comparison level. The lead concentrations in these samples were also determined not to be consistent with background. Therefore, only these locations warrant consideration for further characterization for lead in Phase B.

- Manganese – Manganese was detected in all 116 soil samples; however, only two results were greater than the comparison level (SA9-0.5 and SA13-0.5D). **Figure 5-8** presents the manganese concentrations in soil with respect to the direct contact comparison level. The manganese concentrations in these samples were also determined not to be consistent with background. Therefore, only these locations warrant consideration for further characterization for manganese in Phase B.

- Hexavalent chromium – Hexavalent chromium was detected in 40 of 116 soil samples; only four results were greater than the comparison level (SA5-30, SA11-10, SA16-30, and SA19-10). **Figure 5-9** presents the hexavalent chromium concentrations in soil with respect to the direct contact comparison level. Background comparisons could not be made for hexavalent chromium, therefore, only these locations warrant consideration for further characterization for hexavalent chromium in Phase B.

Table 5-15 provides an evaluation of sample concentration and direct contact comparison levels for the metals samples located within the 0-15 ft bgs direct contact soil interval, and determined not to be consistent with background.

5.6.4 Pesticides and Herbicides

The surface soil sample (0.5 feet bgs) at each boring location was analyzed for three suites of pesticides:

- OCPs using USEPA Method 8081A. Of the 22 OCPs analyzed, only six were detected. All maximum detected concentrations are less than the comparison level, with the exception of beta-BHC, which is approximately 10-fold higher than the comparison level. The frequency of detection for beta-BHC is 14:30. Only one sample, SA9-0.5, has a concentration greater than the comparison level. **Figure 5-10** presents the beta-BHC concentrations in soil with respect to the direct contact comparison level. Based on these results, further characterization of beta-BHC in this area is proposed for Phase B for the direct contact with soil pathway.

- OPPs using USEPA Method 8141A. Of the 28 OPPs analyzed, only two were detected (demeton-O and dimethoate). The detection frequency was 1:28 and 2:28, respectively, and the maximum detected concentrations are both less than the respective comparison level.

- One herbicide (Silvex or 1,2,5-TP) was analyzed in three samples using USEPA Method 8151 (OCH). Silvex was not detected in any sample.

Based on these results, with the exception of beta-BHC, characterization of OCP, OPP and OCH pesticides is considered to be adequate for the direct contact with soil pathway.

5.6.5 PCBs

There was only one detected concentration of PCBs (Aroclor 1260) in all 116 soil samples analyzed for PCBs; this occurred at location SA09 at a depth of 20 feet bgs. The concentration was less than the comparison level. Based on these results, characterization of PCBs is considered to be adequate for the direct contact with soil pathway.

5.6.6 Perchlorate

Perchlorate was detected in almost all samples analyzed (111 of 116 samples analyzed). Concentrations were greater than the comparison level in 39 samples. Of these, only 19 are within the direct contact soil interval of 0-15 ft bgs. **Figure 5-11** presents the perchlorate concentrations in soil with respect to the direct contact comparison level. Additional characterization of perchlorate in soil will be conducted in Phase B to address the direct contact with soil pathway.

5.6.7 Radionuclides

Radium as Ra-226 and Ra-228 were analyzed in all soil samples collected. As shown in **Table 5-11**, the detection frequency was high, and all of the concentrations of both SRCs exceed the comparison levels. **Figure 5-12** presents the Ra-226 and **Figure 5-13** presents the Ra-228 concentrations in soil with respect to the direct contact comparison levels. However, all of the results within the 0-15 ft bgs direct contact soil interval are consistent with background.

Thorium and uranium isotopes were analyzed in a subset of samples. Th-232 concentrations were all below the comparison level. Th-228 concentrations were all above the comparison level. There is only one sample where the Th-230 concentration was above the comparison level (SA5-30). **Figure 5-14** presents the Th-228 and **Figure 5-15** presents the Th-230 concentrations in soil with respect to the direct contact comparison levels. However, all of the results within the 0-15 ft bgs direct contact soil interval are consistent with background.

U-233/234 concentrations were all below the comparison level. There is only one sample in which the U-235/236 concentration is above the comparison level (SA5-30). All but two sample concentrations of U-238 are above the comparison level. **Figure 5-16** presents the U-235/236 and **Figure 5-17** presents the U-238 concentrations in soil with respect to the direct contact comparison levels. However, all of the results within the 0-15 ft bgs direct contact soil interval are consistent with background.

Based on these results, characterization of radionuclides is considered to be adequate for the direct contact with soil pathway.

5.6.8 Semi-Volatile Organic Compounds and Polycyclic Aromatic Hydrocarbons

As shown on **Table 5-11**, very few SVOCs were detected in the Phase A soil samples, and the frequency of detection was also very low, ranging from 1:116 to 6:116 – less than 6% of the samples. Only two of the SRCs have maximum detected concentrations that are greater than the comparison level: benzo(a)pyrene (a polycyclic aromatic hydrocarbon - PAH) and hexachlorobenzene (SVOC).

Benzo(a)pyrene was detected in only three samples. Only one sample (SA9-10D) is located within the 0-15 ft bgs direct contact soil interval, and has a concentration greater than the comparison level. The concentration is only two-fold higher than the comparison level. [See **Appendix K** for a discussion of the detection limits.] **Figure 5-18** presents the benzo(a)pyrene concentrations in soil with respect to the direct contact comparison levels. Based on these results, characterization of PAHs is considered to be adequate for the direct contact with soil pathway.

Hexachlorobenzene was detected above comparison levels in three samples at two locations (SA11 and SA15). All three samples are within the 0-15 ft bgs direct contact soil interval. **Figure 5-19** presents the hexachlorobenzene concentrations in soil with respect to the direct contact comparison levels. Based on these results, further characterization in Phase B of hexachlorobenzene for direct contact in soil is proposed.

5.6.9 Total Petroleum Hydrocarbons and Fuel Alcohols

TPH and fuel alcohols were analyzed only in samples from areas historically used for vehicle and vehicle parts storage and maintenance. Fuel alcohols were not detected in any soil sample.

TPH-GRO was detected in 4 of 87 samples, but all at concentrations below the comparison level.

TPH-DRO was detected in only 2 of 87 samples, and only one sample, SA8-0.5, had a concentration (3600 mg/kg) above the comparison level (10 mg/kg) and the NDEP action level of 100 mg/kg. **Figure 5-20** presents the TPH-DRO concentrations in soil with respect to the direct contact comparison levels. It should be noted that this sample was collected from beneath pavement, so direct contact cannot currently occur. Moreover, other hydrocarbon indicator compounds (PAHs, or benzene, toluene, ethylbenzene, and xylenes – BTEX) were not detected above comparison levels in this sample.

TPH-ORO was detected in only 8 of 87 samples, and 6 of these have concentrations greater than the comparison level. **Figure 5-21** presents the TPH-ORO concentrations in soil with respect to the direct contact comparison levels. Only one sample, SA26-0.5, has a concentration (150 mg/kg) above the NDEP action level (100 mg/kg). Moreover, other hydrocarbon indicator compounds (PAHs, BTEX) were not detected above comparison levels in this sample.

Based on these results, characterization of these SRCs is considered to be adequate for the direct contact with soil pathway.

5.6.10 Volatile Organic Compounds

As can be seen from **Table 5-11**, VOCs were detected only infrequently in the Phase A soil samples, and all at maximum detected concentrations less than the comparison levels, with the exception of benzene and chloroform. Benzene was detected in 12 of 116 samples. Only three of these had concentrations greater than the comparison level of 0.14 mg/kg; however, none of them are within the 0-15 ft bgs direct contact soil interval. **Figure 5-22** presents the benzene concentrations in soil with respect to the direct contact comparison levels. Based on these results, no further characterization of benzene in soil in Phase B is proposed.

Chloroform was detected in 52 of 116 samples. Twelve of these samples had concentrations greater than the comparison level, however, only two are located within the 0-15 ft bgs direct contact soil interval (SA11-0.5 and -0.5D). **Figure 5-23** presents the chloroform concentrations in soil with respect to the direct contact comparison levels. Based on these results, further characterization in Phase B of chloroform in soil is proposed.

5.6.11 Asbestos

Asbestos was analyzed in composited surface soil samples (see Section 3.3.1) using the Modified Elutriator Method (Berman and Kolk 2000). This method was designed specifically to facilitate prediction of airborne asbestos exposures based on bulk measurements. Briefly, the Modified Elutriator Method incorporates a procedure for isolating and concentrating asbestos structures as part of the respirable dust fraction of a sample and analytical measurements are reported as the number of asbestos structures per mass of respirable dust in the sample. These measurements are combined with dust emission factors to develop airborne asbestos concentrations. There are no default comparison levels to use for the analytical measurements for asbestos in soil. Therefore, a conservative risk-based approach was used to evaluate asbestos measurements in soil based on a conservative construction worker scenario (discussed in **Appendix J**). **Table 5-16** provides a summary of the results of the evaluation of potential asbestos exposures for the construction worker scenario. The screening level risk assessment discussed in **Appendix J** demonstrates that asbestos measurements from some soil samples result in potential cancer risk estimates above $1x10^{-7}$. Based on the potential risk results, surface soil sampling for asbestos is recommended in the Phase B for EA-5, EA-6, EA-7, EA-8, and EA-9.

5.6.12 Soil Results for the Direct Contact Pathway Summarized by Evaluation Area

Table 5-12 presents a summary of the SRCs that have at least one result greater than a comparison level. An evaluation of the results for the direct contact pathway only has been conducted by evaluation area (EA). Data for the Site were grouped by EA, and a sample-by-sample evaluation of the comparison levels for direct contact with soil was made for each EA. **Table 5-17** lists the EAs and the boring locations that are within each EA. The sample by sample comparison for each EA (EA01 through EA10) is presented in **Tables 5-18** through **5-27**, respectively.

The evaluation of the EAs in the future risk assessment will be risk-based, and it is assumed that receptors evaluated for each EA will have consistent potential for exposure to environmental media in each EA. The media for which data will be used evaluate these exposure pathways include surface soil (0-0.5 ft bgs), subsurface soil (up to a depth of 15 ft bgs), and shallow groundwater (water table).

Based on the results presented in **Table 5-12**, two additional evaluations of these SRCs have been conducted: an evaluation of exposure potential and an evaluation of background.

<u>Exposure potential</u> – Based on the receptors identified above, direct contact is not expected for soils greater than 15 ft bgs. Therefore, no further characterization is needed for soils at depths greater than 15 ft bgs for the purposes of evaluating the direct contact pathway for all SRCs.

<u>Background</u> **-** An evaluation of background was conducted for inorganic SRCs, as discussed in Section 5.5, and a per sample evaluation is presented in **Table 5-15**, which identifies specific locations in soil where arsenic, chromium, lead and manganese have and have not been adequately characterized, based on a comparison to background.

These two evaluations have been used to refine the information presented in **Table 5-12**, and to develop **Table 5-28**, which identifies the SRCs to be further characterized in Phase B for the direct contact to soil pathway. Each of the EAs is discussed in the sections below.

<u>EA01</u> – As shown in **Table 5-18**, 7 SRCs were identified to be present above direct contact comparison levels. Only a subset of samples is located within the 0-15 ft bgs direct contact soil interval. Perchlorate and benzene are not present within this soil interval. The arsenic, Ra-226 and Ra-228 results are all consistent with background. Table **5-16** indicates that asbestos requires no further characterization in this area. While TPH-ORO is greater than the comparison level, it is below the NDEP action level. Therefore, no further characterization is proposed for EA01 in Phase B. EA01 and Parcel A (see Section 5.1.4) have the same boundaries, and Parcel A is designated for immediate sale. Therefore, additional surface soil sampling (0 to

10 feet bgs) will be conducted by Basic Environmental Company during the Phase II environmental conditions assessment as part of the property transfer.

EA02 – As shown in **Table 5-19**, 6 SRCs were identified to be present above direct contact comparison levels. The arsenic, Ra-226 and Ra-228 results are all consistent with background. **Table 5-16** indicates that asbestos requires no further characterization in this area. While TPH-ORO is greater than the comparison level, it is essentially equal to the NDEP action level. Perchlorate is present at boring location SA26 at concentrations above the comparison level and within the 0-15 ft bgs direct contact soil interval. Therefore, further characterization of perchlorate is proposed for EA02 in Phase B. Parcel B (see Section 5.1.4) is located within EA02 and is designated for immediate sale. Therefore, additional surface soil sampling (0 to 10 feet bgs) will be conducted within this parcel by Basic Environmental Company during the Phase II environmental conditions assessment as part of the property transfer.

EA03 – As shown in **Table 5-20**, 5 SRCs were identified to be present above direct contact comparison levels. Perchlorate is not present within this soil interval. The arsenic, Ra-226 and Ra-228 results are all consistent with background. **Table 5-16** indicates that asbestos requires no further characterization in this area. Therefore, no further characterization is proposed for EA03 in Phase B. Parcels C and D (see Section 5.1.4) are located within EA03 and are designated for immediate sale. Therefore, additional surface soil sampling (0 to 10 feet bgs) will be conducted within this parcel by Basic Environmental Company during the Phase II environmental conditions assessment as part of the property transfer.

EA04 – As shown in **Table 5-21**, 6 SRCs were identified to be present above direct contact comparison levels. The arsenic, Ra-226, Ra-228, Th-228, and U-238 results are all consistent with background. **Table 5-16** indicates that asbestos requires no further characterization in this area. Therefore, no further characterization is proposed for EA04 in Phase B.

EA05 – As shown in **Table 5-22**, 8 SRCs were identified to be present above direct contact comparison levels. Perchlorate is present within this soil interval at concentrations greater than the comparison level. Hexavalent chromium is present within the 0-15 ft bgs direct contact soil interval at a concentration slightly above the direct contact comparison level. The arsenic, Ra-226, Ra-228, Th-228, and U-238 results are all consistent with background. **Table 5-16** indicates that further characterization for asbestos in this area is appropriate for Phase B. Therefore, further characterization is proposed for perchlorate, hexavalent chromium, and asbestos in EA05 in Phase B.

EA06 – As shown in **Table 5-23**, 11 SRCs were identified to be present above direct contact comparison levels. Perchlorate is present within this soil interval at concentrations greater than the comparison level. Hexavalent chromium, hexachlorobenzene, and chloroform are present within the 0-15 ft bgs direct contact soil interval at concentrations slightly above their direct contact comparison levels. The arsenic, Ra-226, Ra-228, Th-228, and U-238 results are all consistent with background. **Table 5-16** indicates that further characterization for asbestos in this area is appropriate for Phase B. Therefore, further characterization is proposed for perchlorate, hexavalent chromium, hexachlorobenzene, chloroform, and asbestos in EA06 in Phase B.

EA07 – As shown in **Table 5-24**, 11 SRCs were identified to be present above direct contact comparison levels. Lead, manganese, perchlorate, and beta-BHC are present within this soil interval at concentrations greater than the comparison level, and these lead and manganese sample results are not consistent with background. The Ra-226, Ra-228, Th-228, and U-238 results are all consistent with background. Arsenic concentrations in all samples but one are consistent with background. Benzo(a)pyrene was detected above the comparison level in one sample within the 0-15 ft bgs direct contact soil interval, at a depth of 10 ft bgs. The concentration is only 2-fold higher than the comparison level. The comparison level is based on daily soil contact by an industrial worker, but this soil depth could only be accessible to a construction worker. Therefore, no further characterization for benzo(a)pyrene is proposed for direct contact for Phase B. **Table 5-16** indicates that further characterization for asbestos in this area is appropriate for Phase B. Therefore, further characterization is proposed for arsenic, lead, manganese, perchlorate, beta-BHC, and asbestos in EA07 in Phase B. Parcel F (see Section 5.1.4) is located within EA07 and is designated for immediate sale. Therefore, additional surface soil sampling (0 to 10 feet bgs) will be conducted within this parcel by Basic Environmental Company during the Phase II environmental conditions assessment as part of the property transfer.

EA08 – As shown in **Table 5-25**, 10 SRCs were identified to be present above direct contact comparison levels. Perchlorate and manganese are present within this soil interval at concentrations greater than the comparison level, and not consistent with background. Chromium is present in one sample at a concentration slightly above the comparison level, and at a concentration that is not consistent with background. As one environmental issue at the Site is the presence of hexavalent chromium in groundwater, samples of soil from this EA will be analyzed for hexavalent chromium as part of the source characterization in Phase B (see Section 6.0). Therefore, no additional sampling for total chromium will be proposed for Phase B for this EA. The Ra-226, Ra-228, Th-228, and U-238 results are all consistent with background. Arsenic concentrations with the exception of SA17-0.5 are consistent with background. **Table 5-16** indicates that further characterization for asbestos in this area is appropriate for Phase B. Therefore, further characterization is proposed for arsenic, manganese, perchlorate, and asbestos in EA08 in Phase B.

EA09 – As shown in **Table 5-26**, 11 SRCs were identified to be present above direct contact comparison levels. Perchlorate is present within this soil interval at concentrations greater than the comparison level. The Ra-226, Ra-228, Th-228, Th-230, U-235/236, and U-238 results are all consistent with background. Arsenic concentrations in all samples but two are consistent with background. While TPH-ORO is greater than the comparison level, it is less than the NDEP action level. **Table 5-16** indicates that further characterization for asbestos in this area is appropriate for Phase B. Therefore, further characterization is proposed for arsenic, perchlorate, and asbestos in EA09 in Phase B.

EA10 – As shown in **Table 5-27**, 7 SRCs were identified to be present above direct contact comparison levels. The arsenic, Ra-226, Ra-228, Th-228, and U-238 results are all consistent with background. Lead is present above the comparison level in one sample; the results for that sample are not consistent with background. **Table 5-16** indicates that asbestos requires no further characterization in this area. Therefore, further characterization is proposed for lead for EA10 in Phase B. Parcel G (see Section 5.1.4) is located within EA10 and is designated for immediate sale. Therefore, additional surface soil sampling (0 to 10 feet bgs) will be conducted within this parcel by Basic Environmental Company during the Phase II environmental conditions assessment as part of the property transfer.

EA11 – There were no LOUs or potential source areas identified within EA11, thus no Phase A samples were collected from within this area, nor is additional sampling proposed for Phase B. EA11 and Parcel H (see Section 5.1.4) have the same boundaries, and Parcel A is designated for immediate sale. Therefore, additional surface soil sampling (0 to 10 feet bgs) will be conducted within this parcel by Basic Environmental Company during the Phase II environmental conditions assessment as part of the property transfer.

Direct Contact with Soil Results Summary by EA – **Table 5-28** provides a summary of the SRCs selected for further characterization in Phase B and the basis for their selection. These data are also posted on **Figure 5-24**. No Phase B sampling for direct contact evaluation is proposed for EA01, EA03, EA04, and EA11. The following SRCs are proposed for Phase B sampling:

SRCs Proposed for Phase B Sampling	
Arsenic	EA07, EA08, EA09
Hexavalent Chromium	EA05, EA06
Lead	EA07, EA10
Manganese	EA07, EA08
Perchlorate	EA02, EA05, EA06, EA07, EA08, EA09
Beta-BHC	EA07
Hexachlorobenzene	EA06
Chloroform	EA06
Asbestos	EA05, EA06, EA07, EA08, EA09
Note: This table provides a summary of SRCs for further investigation in Phase B only for the direct contact with soils pathway; the proposed source area investigation is discussed in Section 6.	

The evaluation of the Phase A data for the direct contact pathway for soil has been risk-based, and has included a thorough evaluation of the data. Therefore, Phase B sampling for direct contact will be proposed on a per-EA basis, and only those constituents identified in the text above and on **Table 5-28** will be analyzed for in each EA. For example, Phase B sampling for arsenic for direct contact will only occur in EA07, EA08, and EA09. In all other EAs, the concentrations of arsenic is consistent with background.

5.7 Comparison of Site-Wide Groundwater Data to Direct Contact Comparison Levels

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the following:

- Determination of whether the measured SRC concentrations are less than the corresponding risk-based comparison levels.

The previous section addressed the soil data. this section evaluates the groundwater data with respect to the comparison levels for the direct contact with groundwater pathway. Comparison levels for the groundwater direct contact pathway are provided on **Table 5-2**. The results are summarized in **Table 5-35**.

While the EA concept is appropriate for the evaluation of potential exposure to Site soils, groundwater will be evaluated on a Site-wide basis. As noted above, groundwater in the region is not used as a drinking water supply. The surrounding incorporated areas of the City of Henderson are supplied with municipal water. However, the groundwater at the Site discharges to the Las Vegas Wash and subsequently to Lake Mead, which serves as a municipal water supply. To be conservative, groundwater has been evaluated via the use of comparison levels based on a direct contact drinking water exposure pathway.

In order to determine the adequacy of characterization for the SRCs in groundwater, Phase A groundwater samples were analyzed for the entire suite of SRCs at shown in **Table 3-2**. A majority of the SRCs were never detected, as summarized in **Table 4-26**, and are being eliminated from further consideration.

Table 5-29 lists the SRCs detected in at least one Phase A groundwater sample. The SRCs are grouped by analytical method, so that it can be decided whether conclusions can be make about particular analyte suites.

For each SRC, **Table 5-29** presents the frequency of detection, the minimum and maximum detected concentrations, the arithmetic mean concentration, the location of the maximum detected concentration, the groundwater comparison level, and identifies whether the maximum detected concentration exceeds the comparison level.

As discussed in Sections 3.0 and 4.0, groundwater samples were collected during two field events: November/December 2006 and May 2007. The samples collected in 2006 for metals and radionuclide analyses consisted of unfiltered samples that were collected from all 21 monitoring wells and unfiltered grab samples from all six open boreholes. The 2006 samples also included a subset of samples that were filtered in the field and analyzed for metals and radionuclides. An evaluation of the November/December 2006 results indicated that elevated turbidity levels in the unfiltered water samples resulted in analytical results that were potentially biased high for metals and/or radionuclides. As a result, another round of groundwater samples was collected in May 2007 to evaluate the effect of turbidity on the results for metals and radionuclides. Unfiltered samples were collected from the same 21 monitoring wells (one of these wells was dry) for metals and radionuclide analyses using two different low-flow rates to evaluate the effect of pump rates on turbidity levels in water samples; and a third set of samples were collected and field filtered to provide a baseline from which comparisons could be made between the filtered and unfiltered analytical results. All of the groundwater data from the 2006 and 2007 sampling events are presented in the data tables in Section 4.0. In total, for most wells included in the Phase A sampling program, four sets of analytical data are available for metals and radionuclides.

Review of the data indicates that the unfiltered low-flow samples (sample IDs appended with a "-Z") from the 21 monitoring wells in the May 2007 sampling event and the 2006 filtered grab sample data from the six open boreholes were the most appropriate for evaluation of metals and radionuclides in the groundwater as the affect of turbidity in these samples was minimized. Where May 2007 data are not available, the November/December 2006 data were used. Note that for hexavalent chromium, for which the analytical method is essentially a filtered method, all data from November/December 2006 and May 2007 were included for evaluation. These are the data that are summarized on **Table 5-29**. While the soluble results from the filtered samples are useful for understanding the effects of turbidity on the sample results, and provide a more accurate representation of soluble constituents for the purposes of characterization of metals and radionuclides, for the purposes of the future risk assessment, the totals (unfiltered) data will be the focus of the conservative evaluation of the groundwater ingestion pathway.

There are 121 SRCs listed on **Table 5-29**, including chemistry parameters and total and soluble results for metals. The following sections discuss the results by parameter group. A summary of the SRCs that have maximum detected concentrations greater than the comparison levels is provided in **Table 5-30**. There are 50 SRCs listed on **Table 5-30**.

5.7.1 General Chemistry

Total dissolved solids (TDS) were detected in all samples, and concentrations were above the comparison level in all but 5 samples (**Figure 5-25**). Chloride (**Figure 5-26**), nitrate (**Figure 5-27**), nitrite (**Figure 5-28**), and sulfate (**Figure 5-29**) were all detected at concentrations in some samples above the comparison levels.

The groundwater data collected in November and December 2006 from borings (i.e., grab samples) and wells was evaluated to assess data quality through a comparison of cation and anion balance (**Appendix M**). An evaluation of this data showed that the anion sum ranged from a high of 249 milliequivalents per liter (meq/L) to a low of 24.1 meq/L, with an average of 113 meq/L (median value of 119 meq/L). The major cations are calcium, sodium and to a lesser extent magnesium and the major anions are sulfate and chloride, and in some cases chlorate and perchlorate.

A comparison of unfiltered samples collected from monitor wells showed that 14 of the 24 samples collected contained cation and anion ratios that were less than equal to +/- 5%. In addition, some of the ratios were very close to +/- 5% suggesting that inclusion of minor cations, such as boron, chromium, manganese and strontium may have produced more acceptable results. In contrast nine of the twelve grab samples collected either filtered or unfiltered, contained ratios that were greater than +/- 5% difference. Those grab samples that contained acceptable ratios were all filtered, suggesting that turbidity may have affected the sample chemistry. The monitor well data set did not reveal a significant trend, though as discussed in Section 4.2.3, additional sampling was conducted in May 2007 to evaluate the affect of turbidity on the soluble metals concentrations.

The majority of the TDS in groundwater beneath the Site is generally comprised of cations of calcium and sodium, and to a lesser extent magnesium and anions of chloride, chlorate and sulfate. A review of regional TDS data show an area of high concentration on the Site upgradient from the interceptor well field and barrier wall, and sources to the west and east of the Site. The distribution of high TDS in groundwater suggests that water upgradient of the interceptor well field is captured on-Site and off-Site plumes to the west and east migrate to the north, merging in an area north of the recharge trenches. The TDS concentration in groundwater south of the recharge trenches is influenced by the injection of Lake Mead water.

Since it is currently included in the quarterly groundwater monitoring program for the Site, no further characterization of TDS is proposed for Phase B. Similarly, no additional sampling is proposed for wells on the Site or to the north off the Site for the significant cations and anions, because:

- Their distribution has been adequately delineated by the Phase A sampling,

- Their distribution can be adequately characterized by the on-going quarterly sampling program for TDS,

- The majority of their mass is located upgradient of the interceptor well field and barrier and Athens Road well field, and

- There are high concentration TDS plumes located to the west and east of the Site, the confluence of which are located downgradient of the interceptor well field off-Site to the north.

Though no additional Site sampling is proposed in Phase B for the general chemistry SRCs, additional groundwater sampling is proposed off-Site to better understand their background concentrations.

5.7.2 Metals

As metals are naturally occurring and most metals were detected at least once in groundwater. The exceptions are beryllium, lead and silver. As shown on **Table 5-29**, the following metals were detected at concentrations above comparison levels for the unfiltered (total) and/or filtered (soluble) results (followed by the number of the figure that presents both the total and soluble results for that metal):

- Aluminum (**Figure 5-30**) – Aluminum was detected infrequently in samples with appropriate turbidity levels (<10 NTUs), therefore, further characterization is not proposed for aluminum for Phase B.

- Arsenic (**Figure 5-31**) – Arsenic was detected in all groundwater samples analyzed. Additional characterization is proposed for arsenic for Phase B.

- Boron (**Figure 5-32**) – Boron was detected in all groundwater samples analyzed, and is associated with Site operations. Additional characterization is proposed for boron for Phase B.

- Chromium (**Figure 5-33**) – Chromium was detected in the majority of groundwater samples analyzed, and is associated with Site operations. Additional characterization is proposed for chromium for Phase B.

- Iron (**Figure 5-34**) – There are a significant number of iron results that were rejected during validation. These results were discussed in Section 5.3.6.3. Additional characterization for iron is proposed for Phase B, though the matrix interferences may recur.

- Magnesium (**Figure 5-35**) – While magnesium was detected in all groundwater samples, it is generally considered as an essential nutrient in human health risk assessments. Therefore, further characterization is not proposed for magnesium for Phase B.

- Manganese (**Figure 5-36**) – Manganese was detected in the majority of groundwater samples analyzed, and is associated with Site operations. Some of the concentrations were several orders of magnitude greater than the comparison level. Additional characterization is proposed for manganese for Phase B.

- Molybdenum (**Figure 5-37**) – Molybdenum was detected in the majority of the groundwater samples analyzed with some concentrations above the comparison level. Therefore, further characterization is proposed for molybdenum for Phase B.

- Strontium (**Figure 5-38**) – Strontium was detected in all groundwater samples analyzed with some concentrations above the comparison level. Additional characterization is proposed for strontium for Phase B.

- Thallium (**Figure 5-39**) – Thallium was detected infrequently, and not above the comparison level, therefore, further characterization is not proposed for thallium for Phase B.

- Uranium (**Figure 5-40**) – No background levels for uranium are available. Uranium was detected in the many of the groundwater samples analyzed. Therefore, further characterization is proposed for uranium for Phase B.

- Vanadium (**Figure 5-41**) – Vanadium was detected in the majority of the groundwater samples analyzed with some concentrations above the comparison level. Therefore, further characterization is proposed for vanadium for Phase B.

- Hexavalent chromium (**Figure 5-42**) – Hexavalent chromium was detected above the comparison level in the majority of groundwater samples analyzed, and is associated with Site operations. Additional characterization is proposed for hexavalent chromium for Phase B.

Chromium and perchlorate have been the focus of investigations at the Site, and sufficient characterization was achieved that allowed the design and installation of three redundant components of the groundwater recovery system that is currently operating at the Site. As shown on **Figure 5-70**, the components of the recovery system include:

- Interceptor Well Field, Barrier Wall, and Recharge Trenches on-Site

- Athens Road Well Field

- Seep Well Field

In addition, groundwater is being sampled for perchlorate, chromium and TDS on a regular basis and is being reported to the NDEP on a semi-annual basis for chromium and quarterly basis for perchlorate. The operation and capture of these SRCs by the existing extraction systems in place is being monitored frequently, and has been shown to remove significant mass of the constituents from the subsurface and reduce the downgradient transport and discharge to Las Vegas Wash.

5.7.3 Pesticides and Herbicides

As shown on **Table 5-29**, of the OCPs, OPPs, and OCHs analyzed in groundwater samples, only seven of the OCPs were detected in groundwater, all at low detection frequencies. Of these, five had maximum detected concentrations greater than the comparison levels. The OPPs and OCHs were not detected in any of the 27 groundwater samples analyzed.

- Alpha-BHC – Because of the very low comparison level, all eight locations where alpha-BHC was detected had concentrations above the comparison level (**Figure 5-43**). Many of these locations are along the western property boundary.
- Beta-BHC – Because of the very low comparison level, both locations where beta-BHC was detected (SA14, and MC45, along the western property boundary) had concentrations above the comparison level (**Figure 5-44**).
- Delta-BHC – Because of the very low comparison level, all five locations (three of them along the western property boundary) where delta-BHC was detected had concentrations above the comparison level (**Figure 5-45**).
- Gamma-BHC (Lindane) – Only one of the three detected concentrations of gamma-BHC had a concentration above the comparison level (PC40) (**Figure 5-46**).
- Heptachlor – Heptachlor was detected in only three of 27 samples, and in only one of these (M5A) was the concentration just slightly above the comparison level (**Figure 5-47**). Therefore, further characterization is not proposed.

The occurrences of pesticides in groundwater at concentrations greater than the comparison levels have been summarized are illustrated on **Figure 5-71**. The pattern of pesticide occurrence confirms that the highest concentrations of pesticides are localized on the Site's western and northeastern boundaries. This configuration of the groundwater pesticide plume strongly supports the conclusion that pesticides are migrating onto the Site from off-site sources to the west, a conclusion consistent with the north to north-east direction of groundwater flow. In light of a potential off-Site source, further characterization of the OCPs in groundwater is proposed for Phase B (see Section 6).

5.7.4 Perchlorate

As shown on **Table 5-29**, perchlorate was detected in 26 of 27 groundwater samples, all at concentrations that were above the comparison level (**Figure 5-48**). As noted above, perchlorate is the subject of the quarterly groundwater monitoring program at the Site; that and hexavalent chromium are the targets of the groundwater remediation system that is in place on, and downgradient, of the Site. Further characterization of perchlorate in groundwater is proposed for Phase B.

5.7.5 Radionuclides

The comparison level for radium is based on the total Ra-226 and Ra-228 concentration. Radionuclide results are noted on the following figures:

- Ra-226 and Ra-228 (**Figure 5-49**)
- Th-228 (**Figure 5-50**)
- Th-230 (**Figure 5-51**)
- Th-232 (**Figure 5-52**)

- U-233/234 (**Figure 5-53**)
- U-235/236 (**Figure 5-54**)
- U-238 (**Figure 5-55**)

U-233/234, U-235/236, and U-238 each had concentrations that were above the comparison level in both samples. Three of the summed radium results are above the comparison level (GWSA2, GWSA14, and GWSA15).

Radionuclides in groundwater are illustrated on **Figure 5-72**. The existing pattern of Phase A radionuclide detections demonstrates that the few radionuclides observed to be migrating downgradient from the Site are being effectively captured by the onsite barrier wall and extraction wells. Additionally, similar to the occurrences of VOCs, and pesticides in groundwater discussed above, elevated concentrations of radionuclides are found localized on the Site's western boundary within the Beta Ditch. This configuration of radionuclide occurrence in groundwater strongly supports the conclusion that along with radionuclides suspected to be sourced by the Site, which are being intercepted at the barrier wall, other radionuclides are migrating onto the Site from off-site sources to the west, a conclusion consistent with the north to north-east direction of groundwater flow.

Further characterization of U-233/234 is proposed for Phase B as an indicator for the radionuclides.

5.7.6 TPH and Fuel Alcohols

TPH-GRO, -DRO, and -ORO were not detected in any groundwater samples. The fuel alcohol, ethanol, was detected in one sample, but there is not comparison level for ethanol.

5.7.7 Semi-Volatile Organic Compounds and Polycyclic Aromatic Hydrocarbons

Only four SVOCs were detected in groundwater samples, all at low detection frequency, and only three have a maximum detected concentration that exceeds the comparison level. 1,4-Dioxane (**Figure 5-56**) and naphthalene (**Figure 5-57**) were detected in only one of 27 samples each (M13 and GWSA14, respectively), both at concentrations above the comparison level. Bis(2-ethylhexyl)phthalate was detected in 6 of 27 samples; only one of these samples, GWSA2, had a concentration that exceeded the comparison level (**Figure 5-58**). Based on the low frequency of detection, no further characterization for SVOCs in groundwater is proposed for Phase B.

5.7.8 Volatile Organic Compounds

VOCs were analyzed in all groundwater samples collected. Of the 24 VOCs detected in groundwater, 11 had at least one detected concentration greater than a comparison level. Of these, two were detected infrequently (only once in 27 samples):

- Bromomethane (IAR) – was detected at a concentration only slightly above the comparison level (**Figure 5-59**).
- Trichlorofluoromethane (SA09) – was detected at a concentration only slightly above the comparison level (**Figure 5-60**).

The six SRCs exhibiting the highest concentrations with relatively high detection frequencies are:

- 1,2-Dichlorobenzene – detected in 10 of 27 samples, only 1 concentration was slightly above the comparison level, at SA09 (**Figure 5-61**).

- 1,4-Dichlorobenzene – detected in 12 of 27 samples, only 1 concentration was above the comparison level, at SA09 (**Figure 5-62**).
- Benzene – detected in 5 of 27 samples, 2 concentrations were above the comparison level, the highest at SA09 and SA14 (**Figure 5-63**).
- Carbon tetrachloride – detected in 8 of 27 samples, 4 concentrations were above the comparison level, the highest at SA09 (**Figure 5-64**).
- Chlorobenzene – detected in 4 of 27 samples, 2 concentrations were above the comparison level (SA09, SA14) (**Figure 5-65**).
- Chloroform – detected in 25 of 27 samples, 16 concentrations were above the comparison level, with the highest at SA09 and SA14 (**Figure 5-66**).

The remaining three VOCs had intermediate detection frequencies and concentrations:

- 1,1-Dichloroethene – detected in 4 of 27 samples, only 1 concentration was above the comparison level, at M92 (**Figure 5-67**).
- Tetrachloroethene – detected in 8 of 27 samples, only 2 concentrations were above the comparison level, at SA09 and PC40 (**Figure 5-68**).
- Trichloroethene – detected in 8 of 27 samples, 5 concentrations were above the comparison level (**Figure 5-69**).

A summary of VOCs concentrations in groundwater greater than the comparison levels is illustrated on **Figure 5-73**. The existing pattern of Phase A VOC detections demonstrates that VOCs migrating downgradient within the Site are being effectively captured by the on-Site barrier wall and extraction wells. Additionally, as with the occurrences of pesticides in groundwater discussed above, elevated concentrations of VOCs are also localized on the Site's western boundary. This configuration of VOC occurrence in groundwater strongly supports the conclusion that along with VOCs sourced from the Site, other VOCs are migrating onto the Site from off-Site sources to the west, a conclusion consistent with the north to north-east direction of groundwater flow. In light of both potential on-Site and off-Site sources, further characterization of the VOCs in groundwater is proposed for Phase B.

5.7.9 Summary

Table 5-30 provides a summary of the SRCs that have at least one result greater than a comparison level.

The key SRCs proposed for further characterization in groundwater for the direct contact pathway for Phase B are the following:

- Metals:
  - Arsenic
  - Boron
  - Chromium
  - Hexavalent chromium
  - Iron
  - Manganese
  - Molybdenum
  - Strontium

  - Uranium
  - Vanadium

- OCPs
- Perchlorate
- Radionuclides
- VOCs

5.8 Evaluation of the Soil to Water Migration Pathway

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the following:

- Determination of whether there is a potential complete pathway for the SRCs detected in soil to leach from soil to groundwater at concentrations of concern.

The comparison levels for the soil to groundwater migration pathway are provided on **Table 5-3**. The results are summarized in **Table 5-35**.

Table 5-31 lists the SRCs detected in at least one Phase A soil sample. The SRCs are grouped by analytical method, so that conclusions can be made about particular analytical suites. For each SRC, **Table 5-31** presents the frequency of detection, the minimum and maximum detected concentrations, the arithmetic mean concentration, the location of the maximum detected concentration, the comparison level based on a DAF of 1, and identifies whether the maximum detected concentration exceeds the comparison level. The comparison was made to the maximum soil concentration for an SRC regardless of the sample's location in the unsaturated zone. Additionally, those SRCs that are general minerals such as calcium and chloride were not included in the comparison analysis. It was assumed given their significant solubility, that if present above background concentrations in the soil, they could potentially migrate to underlying groundwater at concentrations of concern. However, SRCs with high solubility such as perchlorate and boron (soluble as borate) were included in the analysis. The results are discussed below.

5.8.1 General Chemistry

All of the detected general chemistry parameters were included for further evaluation with the exception of MBAS, bromide and total organic carbon. As noted in Section 5.7.1, calcium, sodium and magnesium and chloride, chlorate and sulfate make up the majority of the cations and anions comprising the TDS in groundwater. **Figures 5-74** through **Figure 5-77** show the extent of TDS in groundwater and compared to the distribution of calcium, sodium, chloride and chlorate in soil samples collected during Phase A. An examination of these figures shows that:

- Very few samples contained calcium above the background concentration, and those that did were found in samples that were distributed to suggest a release **(Figure 5-74)**. Additionally, some of the high concentration samples in the alluvium were found at the contact with the Muddy Creek suggesting an Effect of reworking of higher concentration material from the Muddy Creek into the lower alluvium.

- The high concentrations of sodium above the comparison level were found in samples from borings around the Unit buildings upgradient of the interceptor well field and barrier wall, though the concentrations reported in these samples were not significantly (i.e., an order of magnitude or more) above the comparison level **(Figure 5-75)**. Additionally, some of the higher concentration data were found in samples from the capillary fringe and may have been affected by sodium in the groundwater. Samples from SA14 were the most consistently above the comparison level, though, again, none of the values were significantly above background.

- Very few samples contained chloride above background, and for some that did, samples were collected in the capillary fringe and thus, may have been influenced by chloride in the groundwater **(Figure 5-76)**. Similarly, though no comparison level was developed, high chlorate concentrations are generally found in samples from borings drilled above the interceptor well field and barrier wall and in the area of the Unit buildings **(Figure 5-77)**.

No further sampling is proposed in Phase B, for the general chemistry parameters, since very few samples contained concentrations above background, most of the high concentrations are localized in areas upgradient of the interceptor well field and barrier wall, and there is not a significant mass for any individual constituent that would threaten underlying groundwater quality. The results of the Phase A sampling program have adequately delineated the extent of these localized areas to evaluate remedial alternative.

5.8.2 Dioxins and Furans

Dioxins are not included in the soil to groundwater migration pathway analysis because of their chemical properties they are not expected to leach to groundwater. In addition, as agreed in the NDEP-approved Work Plan, dioxin analyses were not included for groundwater samples.

5.8.3 Metals

Table 5-32 lists the metals for which the maximum detected concentration is greater than the soil to groundwater pathway comparison level. To further evaluate these SRCs, the following were considered: whether the SRC concentrations are consistent with background, and whether the SRC is present in groundwater in concentrations that are greater than the direct contact comparison level for groundwater. The following are proposed for further characterization in Phase B:

- Arsenic
- Boron
- Iron
- Manganese
- Molybdenum
- Strontium
- Uranium
- Hexavalent chromium

5.8.4 Pesticides and Herbicides

Two OPPs were detected in soil at a concentration greater than the soil to groundwater comparison level. These are dementon-O which was detected in only one of 27 samples, and dimethoate, which was detected in only two samples. Based on these very low detection frequencies, no further characterization is proposed for Phase B.

Of the six OCPs detected in soil, beta-BHC is the only one with a maximum detected concentration greater than the soil to groundwater pathway comparison level. It was detected in roughly half of the samples analyzed (though all of which were surface soil samples). Beta-BHC was detected in groundwater twice, and only one concentration was greater than the groundwater direct contact pathway comparison level. However, based on the potential impact of off-Site sources, further characterization in Phase B is proposed for beta-BHC.

5.8.5 PCBs

Of the PCBs analyzed, only Aroclor 1260 was detected, and in only one sample at a depth of 20 ft bgs. PCBs were not detected in groundwater. Although the concentration detected in soil is greater than the soil to groundwater pathway comparison level, because of the low frequency of detection, no further characterization is proposed for Phase B.

5.8.6 Perchlorate

Perchlorate was detected in almost all soil samples analyzed. Because of its high solubility, and because of the site history of manufacture of perchlorate, further characterization is proposed for Phase B.

5.8.7 Radionuclides

While the radionuclides have concentrations greater than the soil to groundwater pathway comparison level, their concentrations in soil (with the exception of RA-226 at some locations – see Section 5.5) are consistent with background. For Ra-226, there was no known use or handling at the site, and concentrations in groundwater are below risk-based screening levels. It is likely that the elevated concentration of Ra-226 in certain deeper samples are due to natural background conditions, although this cannot be demonstrated quantitatively. Therefore, no further characterization of radionuclides is proposed for Phase B for this pathway.

5.8.8 SVOCs

Only two SVOCs have maximum detected concentrations greater than the soil to groundwater pathway comparison level.

Benzo(a)anthracene was detected in only two samples of the 116 analyzed, and was not detected at concentrations above the comparison level by SIM analysis. Therefore, no further characterization is proposed for Phase B.

Hexachlorobenzene was detected in six of 116 samples; only two results are greater than the soil to groundwater pathway comparison level.

5.8.9 TPH and Fuel Alcohols

Fuel alcohols were not detected in soil. As a complex mixture that is addressed on a constituent specific basis by the SVOC and VOC analyses, TPH is not included for evaluation of the soil to groundwater migration pathway.

5.8.10 VOCs

Several VOCs have maximum detected concentrations that are greater than the soil to groundwater pathway comparison levels. The majority of these also have concentrations in groundwater that are greater than the direct contact comparison levels (see **Table 5-31**). Therefore, further characterization is proposed for Phase B based on the soil to groundwater pathway.

5.8.11 Summary

In summary, the key SRCs under consideration for further characterization in soil for the soil to groundwater migration pathway for Phase B are the following:

- Metals
  - Arsenic
  - Boron
  - Iron
  - Manganese
  - Molybdenum
  - Strontium
  - Uranium
  - Hexavalent chromium
- Beta-BHC
- Perchlorate
- Hexachlorobenzene
- VOCs

It should be noted that although not an indication of the future possibility of impacts to groundwater, an SRCs occurrence or absence in groundwater samples, both from this investigation and historically, provides insight into the potential for migration that could have been induced from past practices which have since been retired. Analytes not present in groundwater above comparison levels would indicate that:

- Historic practices or pipeline leaks or breaks, or water level fluctuations did not provide a sufficient transport mechanism to introduce them at significant concentrations in the groundwater; and/or,
- There is not significant mass present in the soil which under historic conditions of infiltration or pipeline leaks/breaks or water level fluctuations provided significant concentrations in the groundwater.

It should also be re-emphasized that the evaluation of potential leaching presented here is a simplified, screening level evaluation that is highly conservative as summarized below:

- The maximum concentration in soil was used for the evaluation. For an SRC to migrate to groundwater at concentrations of concern, a significant mass of contaminated soil is needed.
- This site is in an arid desert environment, there is very little natural infiltration of water that could facilitate transport SRCs from soil to groundwater.
- The current groundwater impacts are due in great part to the release of aqueous solutions. Only in the event of some localized, hypothetical occurrence, such as leaking utilities, will the transport mechanism exist, and in those circumstances, only for a very short period of time such that only the SRCs that are highly soluble will be entrained.
- As enumerated in Section 5.2.2, the mathematical equations used in the development of the SSLs are based on conservative assumptions that are not possible, such as an infinite source, a

continuous source from the surface to the top of the aquifer and an absence of attenuation in the unsaturated zone.

These points serve to underscore the conservative nature of the soil to groundwater migration pathway evaluation.

5.9 Evaluation of the Vapor Intrusion Pathway

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the potential migration of SRCs from soil to groundwater. While not identified in the Work Plan, in addition to the evaluation of potential migration of SRCs from soil to groundwater, the potential for migration of volatile SRCs from groundwater to indoor air (vapor intrusion) was also assessed. This evaluation was conducted following USEPA guidance (USEPA 2002, USEPA 2004c). The comparison levels for this pathway are presented in **Table 5-4**. The results are summarized in **Table 5-35**.

Table 5-33 provides a comparison of the maximum detected concentration of each potential volatile SRC to its VI comparison level. The following SRCs have maximum detected groundwater concentrations that are greater than the VI comparison level:

- Pesticides:
  - Alpha-BHC
  - Heptachlor
- VOCs
  - 1,2-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - Benzene
  - Bromodichloromethane
  - Bromoform
  - Carbon tetrachloride
  - Chlorobenzene
  - Chloroform
  - Chloromethane
  - Dibromochloromethane
  - Tetrachlorothene
  - Trichloroethene
  - Trichlorofluoromethane

Based on discussions with the NDEP, a closer evaluation of the pesticide concentrations in groundwater was conducted. As shown in **Table 5-34**, while the groundwater concentrations of the pesticides are above the comparison level (which is 10-fold lower than the source levels; see Section 5.2.3), the concentrations are at or below the source level, i.e., the USEPA target groundwater concentrations for the groundwater to indoor air migration pathway (USEPA 2002). Therefore further characterization of OCPs is not required and is not proposed for Phase B.

However, due to their much greater volatility, further characterization of VOCs for the groundwater to indoor air migration pathway is proposed for Phase B. As soil gas is a better indicator of a source term for this pathway, soil gas sample collection will be proposed for Phase B.

5.10 Considerations of Historical Use and Occurrence

As described in the Phase A Source Area Investigation Work Plan (ENSR 2006a), one of the determinants of the adequacy of the Phase A characterization is the following:

- Determination of whether the probability of occurrence at a specific location or depth is remote based on Site knowledge of historical handling and use.

The selection of the sample locations for the Phase A investigation were based on areas that were potentially impacted or identified as being impacted by constituents associated with past activities on the Tronox property including the 69 LOUs identified on the Site. For each LOU, the historical Site usage has been compiled along with the associated known historical chemical usage as part of the Conceptual Site Model report (ENSR 2005).

This information on historical use and occurrence is also used in Section 6 to guide the sampling that is proposed for Phase B of the source area investigation.

5.11 Conclusions/Data Gaps

The adequacy of characterization is used as the basis for the development of the scope of the Phase B investigation. The adequacy of characterization has been presented in this section for each of the SRCs based on an evaluation of the frequency of detection, comparison to conservative risk-based comparison levels, comparison to upgradient/background concentrations where appropriate, an evaluation of leaching potential, and finally a consideration of historical use and occurrence. The results of these evaluations are summarized below, and in **Table 5-35**.

Because the Phase A sampling program was a comprehensive investigation targeted at the source areas at the Site, it is concluded that the SRCs never detected in soil or groundwater are considered adequately characterized, and further sampling for these SRCs in Phase B is not necessary. These SRCs are listed in **Table 4-25** for soil and **Table 4-26** for groundwater.

5.11.1 Soils

An evaluation of the soils data with respect to the comparison levels further focused the list of SRCs to include in the Phase B investigation. Based on the results of the evaluation of the comparison levels for soils for direct contact and for the soil to groundwater pathway, the following SRCs are proposed for further characterization in Phase B.

5.11.1.1 Direct Contact Pathway for Soil

Additional characterization for the direct contact with soil pathway is proposed by EA, as summarized below:

Arsenic	EA07, EA08, EA09
Hexavalent Chromium	EA05, EA06
Lead	EA07, EA10
Manganese	EA07, EA08
Perchlorate	EA02, EA05, EA06, EA07, EA08, EA09

Beta-BHC	EA07
Hexachlorobenzene	EA06
Chloroform	EA06
Asbestos	EA05, EA06, EA07, EA08, EA09, EA10

5.11.1.2 Soil to Groundwater Migration Pathway

The following are proposed for additional characterization in soil for the soil to groundwater migration pathway:

- Metals
  - Arsenic
  - Boron
  - Iron
  - Manganese
  - Molybdenum
  - Strontium
  - Uranium
  - Hexavalent chromium
- Beta-BHC
- Perchlorate
- Hexachlorobenzene
- VOCs

5.11.2 Groundwater

An evaluation of the groundwater data with respect to the comparison levels further focused the list of SRCs to include in the Phase B investigation. Based on the results of the evaluation of the comparison levels for groundwater for direct contact and for the groundwater to indoor air migration pathway, the following SRCs are proposed for further characterization in Phase B.

5.11.2.1 Direct Contact Pathway for Groundwater

Additional characterization for the direct contact with groundwater pathway is summarized below:

- Metals:
  - Arsenic
  - Boron
  - Chromium
  - Hexavalent chromium
  - Iron

  - Manganese
  - Molybdenum
  - Strontium
  - Uranium
  - Vanadium

- OCPs
- Perchlorate
- Radionuclides
- VOCs

5.11.2.2 Groundwater to Indoor Air Migration Pathway

VOCs were identified for further characterization of the groundwater to indoor air migration pathway.

6.0 Recommendations for Additional Investigation

The objective of the Phase A Source Area Investigation was to initially characterize the soil and groundwater conditions at the Tronox Henderson, Nevada facility. This document has described the activities that were conducted as part of Phase A activities. The data generated in Phase A are used to determine the scope of Phase B of the source area investigation.

The Phase A Source Area Investigation included the collection of approximately 120 soil and approximately 27 groundwater samples from 27 suspected source area locations on the Site. The selection of these locations was guided by information from past Site investigations (ENSR 2005), information on chemical use at the Site, and LOU study areas as identified by NDEP (1994).

The Phase A environmental samples were analyzed by NDEP-approved laboratories for a comprehensive list of SRCs. To ensure that the Phase A data were of sufficient quality, the laboratory data were subjected to a detailed data validation process, and reviewed for usability in this assessment. This review indicated that, with minor exceptions, the Phase A data are of sufficient quality for decision-making purposes (i.e., for determination of the scope of Phase B and for future risk assessments).

The data have been evaluated with respect to the adequacy of characterization, as identified in the NDEP-approved Phase A Work Plan (ENSR 2006a). The determinants of adequacy of characterization are:

- Determination of whether the SRC is either absent or is rare in frequency;
- Determination of whether the measured SRC concentrations are less than the corresponding risk-based comparison levels (see Section 5.2 for definition);
- Determination of whether the SRC data are consistent with background or upgradient conditions/ application of appropriate statistical tools to verify the comparability of the SRC with other data populations;
- Determination of whether there is a potential complete pathway for the SRCs detected in soil to leach from soil to groundwater at concentrations of concern; and,
- Determination of whether the probability of occurrence at a specific location or depth is remote based on knowledge of historical occurrence and Site use.

The Phase A data were compiled and summarized to address each of these evaluations. Conservative comparison levels were developed in cooperation with NDEP to address the following potential exposure and migration pathways:

- Direct contact with soil;
- Direct contact with groundwater;
- Migration of SRCs from soil to groundwater at levels of potential concern; and
- Migration of SRCs from groundwater to indoor air at levels of potential concern.

The majority of the 236 SRCs analyzed in Phase A were either not detected or determined to be adequately characterized. SRCs determined not to be adequately characterized, as summarized in Section 5.11, will be included for analysis in the Phase B Work Plan (**Appendix I**).

The purpose of this section of the report is to provide the basis and rationale for the sampling proposed to be conducted under Phase B of the source area investigation. The objectives of Phase B are presented in Section 6.1. A review and update of the CSM based on the Phase A data are provided in Section 6.2, as this updated CSM is used to inform the Phase B sampling program. The rationale for the proposed sampling program for Phase B is presented in Sections 6.3 (to address direct contact with shallow soils), 6.4 (to address vapor intrusion) and 6.5 (to address source areas), and summarized on **Table 6-1**.

6.1 Objectives for Phase B

The objective of Phase B of the source area investigation is to collect sufficient data to conduct risk assessments for the Site, and to characterize the general extent of SRCs present in environmental media at concentrations above the conservative comparison levels. The risk assessments will be used as the basis for decision-making for the Site. The identification of these additional data needs is based on the adequacy of characterization of the Site based on the Phase A data, as discussed in Section 5.

Based on discussions with NDEP, it was agreed that the additional investigation should be risk-based. As noted in Section 5, it is important to consider both current and potential future uses of the Site. The Site is currently an industrial facility. Portions of the Site may be leased or sold in the future, however, deed restrictions may be used to ensure that Site use remains industrial/commercial. Groundwater is used to meet approximately 15 percent of the annual water needs for the Las Vegas Valley (ENSR 2005). During the hot summer months, groundwater extracted from 6,800 wells within the Las Vegas Valley can account for 39 percent of the valley's water supply. The surrounding incorporated areas of the City of Henderson are supplied with municipal water. The groundwater at the Site discharges to the Las Vegas Wash and subsequently to Lake Mead, which serves as a municipal water supply. Therefore, potential exposure pathways to be addressed by additional data collection in Phase B include direct contact with surface and subsurface soils, and direct contact with groundwater (via ingestion, dermal contact, and inhalation pathways) both for SRCs already present in groundwater, and those that may migrate there from soil, and inhalation of volatiles that may migrate from groundwater and/or soil to indoor air.

6.2 Conceptual Site Model

A comprehensive CSM for the Site was prepared in 2005. That report detailed the geology and hydrogeology of the Site. The additional hydrogeologic information collected during Phase A served to confirm the CSM for the Site geology. **Figure 6-1** provides a schematic diagram of the geologic units at the Site.

The Phase A data on the approximately 236 SRCs has been used to refine the CSM for the nature and extent of SRCs at the Site. In general, the Phase A data support the model that environmental impacts at the Site are generally associated with groundwater. While there are SRCs present in soils at concentrations above comparison levels and/or background, these instances are focused on a short list of SRCs. Evaluation of the Phase A data with respect to the determinants of adequacy of characterization indicates that the following parameter groups are detected either infrequently or at low concentrations such that further characterization in Phase B is not warranted: dioxins and furans, OPPs, OCHs, PCBs and SVOCs (see below).

A preliminary CSM of the presence of the remaining SRCs is discussed below.

6.2.1 Perchlorate and Hexavalent Chromium

The groundwater remediation system that has been in place since 1998 has had significant impact on the reduction of hexavalent chromium and perchlorate in groundwater at the Site, and both constituents were included in the Phase A evaluation. As Site-related chemicals that are the subject of active remediation in groundwater, perchlorate and hexavalent chromium will be included in further Phase B characterization to identify the extent of the potential source areas.

6.2.2 Metals

Metals were identified in soils present at concentrations above comparison levels for both direct contact and the soil to groundwater migration pathways. The majority of these are present at concentrations consistent with background/upgradient conditions, although there are some exceptions that result in their identification for further characterization in Phase B. Metals are also present in groundwater at concentrations greater than comparison levels. It is suspected that many of these concentrations are the result of local geochemistry, however, there are not sufficient background/upgradient data to support or refute this. Therefore, additional groundwater characterization in Phase B will also be conducted for a focused list of metals, both on-Site and in background/upgradient locations.

6.2.3 Pesticides and Herbicides

Of the OCP, OPP and OCH pesticides analyzed in Site samples, beta-BHC, an OCP, is present in Site soil at concentrations above comparison levels for both direct contact and the soil to groundwater migration pathway. While beta-BHC was not known to be used or manufactured at the Site, it was a major manufacturing product of the facility on the western border of the Site, and covered stockpiles of beta-BHC are known to currently exist there. Further characterization of beta-BHC will be conducted in Phase B to better define potential sources. The full list of OCPs (EPA Method 8081A) will be included in Phase B where sampling for beta-BHC is proposed.

While beta-BHC is the main interest in soils, alpha-BHC occurs at a higher frequency in groundwater samples collected during Phase A (30% of the samples versus 10% of the samples for beta-BHC). The distribution of the pesticides in groundwater also suggests an off-Site source (see Section 5). However, the entire suite of OCPs will be analyzed.

6.2.4 Radionuclides

Radionuclides, as natural components of soils, are present on-Site and in background/upgradient soils. The on-Site radionuclides were shown to be consistent with background/upgradient conditions with the exception of several Ra-226 Phase A results at depth. Activities of radionuclides in groundwater are generally above comparison levels for direct contact, although the Site groundwater is not used a source of drinking water. These activities may well be consistent with background/upgradient conditions, however, there are not enough upgradient groundwater data to confirm or refute this. Therefore, radionuclides in groundwater will be further investigated in Phase B, both on-Site and in background/upgradient locations, using U-233/234 as an indicator isotope.

6.2.5 SVOCs

SVOCs were detected in Site soils, in less than 1% of the samples. Hexachlorobenzene is one SVOC detected at a slightly higher frequency, in approximately 5% of the samples. It is present in Site soils at concentrations above comparison levels for both direct contact and the soil to groundwater migration pathway in focused locations. There are also historical data indicating elevated concentrations of hexachlorobenzene in some locations at the Site. Further characterization of hexachlorobenzene will be conducted in Phase B to better define potential source areas. While hexachlorobenzene was analyzed in Phase A using EPA Method 8270, it can also be analyzed as part of the OCP list (EPA Method 8081A). As OCPs are already identified for analysis in Phase B, further characterization of hexachlorobenzene in soil will use EPA Method 8081A.

6.2.6 TPH and Fuel Alcohols

While from a comparison level perspective TPH does not warrant further investigation, TPH will be included in Phase B to confirm historical data on occurrence. As the comparison level for TPH is an NDEP action level of

100 mg/kg, which is not a risk-based value, the indicator compounds BTEX and PAHs will be analyzed in the same samples that are analyzed for TPH.

6.2.7 VOCs

VOCs were detected infrequently in Phase A soil samples. Chloroform was the most frequently detected (50% of the samples) and generally at depths below 15-20 ft bgs. These soil results are consistent with the presence and distribution of VOCs in groundwater. There appears to be a plume of chloroform, and to a lesser extent trichloroethene (TCE), down the center of the Site that may be emanating from the Units 3 and 4 buildings. The plume is intercepted by the groundwater remediation system, which also includes granulated activated carbon pre-filters as part of the treatment system. While there are no known Site sources for the chloroform or TCE, these VOCs will be investigated in soil and groundwater in Phase B. In addition to this plume, the groundwater data also suggest a plume of high concentrations of chlorinated VOCs and benzene located along the western property boundary (see **Figure 6-2**). Additional characterization of VOCs along the western property boundary in both soil and groundwater is proposed for Phase B.

6.2.8 Asbestos

Asbestos has been detected in surface soil in the midsection of the Site at concentrations that warrant further investigation, as indicated by the evaluation presented in Section 5. It is likely that the asbestos is associated with the current and former buildings on the Site that were constructed prior to the 1976 Asbestos Hazardous Emergency Response Act. It should be noted that risks greater than a screening level of 10^{-7} result from any detection of asbestos; ENSR is working with the laboratory to increase the sensitivity of analysis, to the extent practical, for the proposed Phase B assessment.

6.2.9 CSM Summary and Phase B Investigation Approach

In summary, this preliminary CSM for the SRC distribution at the Site indicates that groundwater is the major impacted medium, and that soils are impacted to a much lesser extent. While a short list of metals has been identified for further characterization, for the majority, the investigation is focused on those few locations where metals concentrations in soil are not consistent with background. Unfortunately, the background/upgradient data are not available to make this determination for groundwater, but this has been identified as a data gap to address in Phase B. In addition to metals, VOCs in groundwater, and to a lesser extent soil, present an issue at the Site, and it appears that there are generally two source areas, one on-Site and one off-Site.

Based on this preliminary CSM for the SRC distribution at the Site, the investigation proposed for Phase B will be tailored to address: direct contact with constituents in soils by Site-related receptors, vapor migration from the subsurface, and source area characterization for metals, pesticides, radionuclides, TPH, VOCs, and asbestos.

The sampling programs for direct contact with soils, vapor intrusion, and source area investigation are discussed separately below. The sampling program for shallow soils (0-15 ft bgs) for direct contact has been developed on a per-EA basis, as this most accurately reflects potential exposures (Section 6.3). The sampling program for soil gas will be conducted on a Site-wide basis, and based on the occurrence of VOCs in soil and groundwater (Section 6.4). The source area investigation is a Site-wide sampling program for deep soil (0 ft to the water table) and groundwater that has been developed on a per-SRC basis, as described in Section 6.5).

6.3 Proposed Phase B Sampling for Shallow Soils by Evaluation Area

Additional investigations at the Site will be undertaken with the goal of collecting sufficient and suitable data for risk assessments. Therefore, data necessary to determine potential exposure to SRCs by selected receptors will be collected. As it is likely that future industrial/commercial development will occur at the Site, the Site has been subdivided into evaluation areas (EAs). The EA boundaries have been developed in consultation with Tronox facility staff and the BRC, and are based on anticipated future uses.

The eleven EAs are shown on **Figure 6-3**. **Table 5-1** lists the EAs for the Site, Phase A soil and groundwater samples collected from each EA, historical uses for each EA, and the present and proposed future use of each EA. As shown on that table, the planned use for most of the EAs is commercial and light industrial. Some of the EAs are in the process of having buildings decommissioned, and are likely to remain inactive in the near future. The area is zoned industrial, and there are no plans to develop the Site for residential use. Deed restrictions may be used to ensure that Site use remains industrial/commercial.

The evaluation of the EAs will be risk-based, and it is assumed that receptors evaluated for each EA will have consistent potential for exposure to environmental media in each EA. Therefore, the Phase B sampling program for soils for direct contact has been designed to provide wide and even coverage of soils in each EA to the extent allowed by Site features. The collection of a minimum of a total of 10 samples for each soil interval (ground surface samples for asbestos, 0-0.5 ft bgs for surface soil and 0-15 bgs for subsurface soil) has been identified as an objective for the Phase B program, such that the total of Phase A and Phase B sample numbers for direct contact for each specific EA equals at a minimum, 10.

Table 5-28 provides a summary of the SRCs to be investigated in Phase B based on the evaluation of the direct contact with soil exposure pathway described in Section 5. These SRCs and the EAs within which they will be investigated are summarized below:

Arsenic	EA07, EA08, EA09
Hexavalent Chromium	EA05, EA06
Lead	EA07, EA10
Manganese	EA07, EA08
Perchlorate	EA02, EA05, EA06, EA07, EA08, EA09
Beta-BHC (OCP analysis)	EA07
Hexachlorobenzene (OCP analysis)	EA06
Chloroform (VOC analysis)	EA06
Asbestos	EA05, EA06, EA07, EA08, EA09, EA10

Figure 6-3 presents the locations of the Phase A soil borings and the proposed Phase B direct contact soil borings. The Phase B Work Plan (**Appendix I**) provides the specific details of the sampling and analysis program.

6.4 Proposed Phase B Vapor Intrusion Pathway Investigation

The migration of volatile constituents from the subsurface (groundwater and/or soil) to indoor air is also a potential exposure pathway for Site receptors. The evaluation of the Phase A data in Section 5 indicated that this pathway may be complete for a subset of VOCs. Based on the inherent conservatism and uncertainties in predicting indoor air concentrations from groundwater concentrations, and as soil gas data can provide more accurate estimates of volatilization to indoor air from both groundwater and soil sources, a soil gas sampling plan is included in the Phase B Work Plan (**Appendix I**) to address the locations and SRCs identified in **Figure 5-73**.

Figure 6-4 identifies the proposed soil gas sampling locations for Phase B. Soil gas samples have been identified first for Phase A groundwater sample locations where groundwater concentrations of VOC(s) were greater than the groundwater to indoor air migration pathway comparison levels. Additional soil gas sample locations were placed based on approximations of where the VOC plumes may be located, and to address buildings that are or may be occupied. Soil gas samples are proposed to be collected at a depth of 15 ft bgs per discussions with the NDEP. Samples will be collected at low air flow rates into Summa™ canisters to be analyzed by EPA Method TO-15. The details of the soil gas sampling program are presented in the Phase B Work Plan (**Appendix I**).

6.5 Proposed Phase B Sampling for Evaluation of Potential Source Areas

In addition to an evaluation of direct contact and vapor intrusion pathways as described in Sections 6.3 and 6.4, additional investigation is proposed to further characterize suspected source areas for those SRCs retained under the Phase B program. The objectives of this aspect of the Phase B investigation will be to:

- Close the data gaps in the delineation of SRCs in soil and groundwater, and,
- Further characterize the soil to groundwater pathway in suspected source areas for each of the Phase B SRCs;

The rationale for the proposed investigation program for each Phase B SRC is summarized in **Table 6-1** as related to their suspected source areas identified in the CSM (ENSR 2005) and the Phase A results. In addition to the suspected source areas identified in the CSM and the Phase A results, historic Site data from prior investigations were considered in the design of the Phase B investigation. The proposed soil borings and wells that will be sampled during the proposed Phase B program for all the SRCs are shown on **Figure 6-5** and **Figure 6-6,** respectively. It is important to emphasize that these soil borings are not “unique” to each Phase B SRC and that at several locations soil samples will be collected for analysis of a range of Phase B SRCs. The rationale for the investigation program for both soil and groundwater for each of the Phase B SRCs is provided below. Details regarding the investigation procedures, including sampling protocols, sample depths and analytical methodology that will be used in the investigation are provided in the Phase B Work Plan in **Appendix I**. The proposed Phase B source area investigation scope for each SRC is presented below.

6.5.1 Ammonia

Though not reported at significant concentrations in the Phase A investigation, additional soil sampling is proposed in phase B to further investigate potential sources of ammonia at the Site. The Phase A sample suite did not provide sufficient coverage, and as such additional investigation of ammonia at its source areas on the Site is proposed. The source areas for ammonia include ammonium perchlorate production and waste storage areas **(Table 6-1)**. Eleven (11) soil borings are proposed largely in the area of the former ammonium perchlorate ponds to further evaluate that lateral and vertical extent of ammonia in these source areas **(Figure 6-7)**. The proposed soil boring locations were selected to directly evaluate potential source areas and their surroundings for the soil to groundwater pathway.

Additional groundwater sampling for ammonia is proposed in the Phase B source area investigation. As shown on **Figure 6-7**, the lateral extent of ammonia has not been adequately delineated in source areas located upgradient of the interceptor well field and barrier wall on the Site. As such, 18 locations have been proposed to collect groundwater samples for further characterization.

6.5.2 Arsenic

Arsenic was identified as a Phase B SRC for both the direct contact and soil to groundwater pathways. Potential source areas for arsenic identified in the CSM are shown on **Figure 6-8** and are summarized on **Table 6-1**. Based on the results of the Phase A samples, soil samples will be collected from seven borings as part of the Phase B Investigation. Soil borings are were located to further evaluate areas where Phase A data was elevated above background (SA-09) and in suspected source areas not investigated during Phase A (i.e., Hardesty Chemicals). Additional soil boring locations have also been proposed to evaluate impacts from potential off-Site sources to the west.

Figure 6-8 also shows the 14 proposed groundwater sample locations. Some of these groundwater sampling locations were selected to evaluate those areas of the Site that exhibited relatively elevated concentrations of arsenic in Phase A. Additional sampling locations were selected to further evaluate general site groundwater conditions for arsenic where it has been identified as being present at elevated concentrations.

6.5.3 Boron

Boron was identified as a Phase B SRC along the soil to groundwater pathway and was found in groundwater at concentrations above its comparison level **(Figure 6-9)**. The potential source areas for boron consist of on-Site production in areas near Units 4 and 5 and waste storage areas at Ponds C-1 and Mn-1 **(Table 6-1)**. Based on the results of the Phase A samples, further evaluation of the Site is proposed for boron as part of the Phase B investigation in these handling areas and waste storage sites. Soil samples will be collected from seven soil borings located around the unit buildings and ponds **(Figure 6-9)**.

Figure 6-9 also shows the 20 proposed Phase B groundwater sample locations. Some of these locations were selected to evaluate those areas of the site that exhibited relatively elevated concentrations of boron in Phase A. Additional sampling locations were selected to further evaluate groundwater conditions in the eastern portion of the Site where boron has been identified at relatively high concentrations.

6.5.4 Hexavalent Chromium

Hexavalent chromium was identified as a Phase B SRC for both the direct contact and soil to groundwater pathways. Potential source areas for hexavalent chromium identified in the CSM are shown on **Figure 6-10** and are summarized on **Table 6-1**. Based on the results of the Phase A investigation, as well as numerous previous investigations and long-term monitoring, further evaluation of hexavalent chromium is proposed as part of the Phase B investigation. Soil samples will be collected from 18 soil borings at the known and suspected source areas as shown on **Figure 6-10**. These borings are largely situated in consideration of historic data and the Phase A results, and have also been located to evaluate source areas that have not been previously investigated.

Figure 6-10 also shows the 32 proposed Phase B groundwater sample locations. These locations were selected to further evaluate Site groundwater conditions as a supplement to the on-going groundwater monitoring program for hexavalent chromium. This supplemental groundwater sampling is designed to evaluate data gaps along the eastern and upgradient portion of the Site as identified by the regional NDEP-identified 0.5 mg/L concentration **(Figure 6-10)**.

6.5.5 Iron

Iron was identified as a Phase B SRC for the soil to groundwater pathway and was found in groundwater at concentrations above its comparison level **(Figure 6-11).** The Phase A data showed, however, that the iron concentrations that were above the soil to groundwater pathway comparison level were very limited in extent and occurrence. As such, additional sampling for these areas is not proposed, rather investigation of areas where the elevated groundwater concentrations were found in Phase A will be the focus of the Phase B program.

Potential source areas for iron have not been identified based on previous assessments and anecdotal information **(Table 6-1)**. However, relatively elevated concentrations of iron were detected in the groundwater during Phase A. Soil samples from four borings will be collected within and upgradient of impacted groundwater areas as shown on **Figure 6-11**. The soil boring locations are designed to identify potential source areas as well as the soil to groundwater migration pathway for iron to supplement the Phase A results.

Figure 6-11 also shows the 17 proposed Phase B groundwater sample locations. These locations were selected to supplement the groundwater results of Phase A and close the data gaps in the delineation of iron above its comparison level. The proposed groundwater sampling locations are also designed to further evaluate on-Site areas exhibiting elevated iron in the groundwater and located on-Site during Phase A.

6.5.6 Lead

Lead was only identified as a Phase B SRC for the direct contact pathway. Potential source areas for lead have been identified on-Site based on historical and anecdotal information **(Table 6-1)**. Based on the results of Phase A and discussions with NDEP (July 25, 2007), further evaluation of the site is proposed for lead as part of the Phase B investigation. Soil samples will be collected from three borings at suspected source areas as agreed to with the NDEP. The planned soil borings are located as shown on **Figure 6-12** and the rationale for their location respective of the source areas are presented in **Table 6-1**. These soil borings are also planned to evaluate lead for the soil to groundwater migration pathway to supplement the Phase A results.

Figure 6-12 shows that additional groundwater sampling is not proposed for lead as part of the Phase B investigation. This is because none of the groundwater samples analyzed during Phase A exhibited detectible concentrations of lead in on-Site groundwater. Further evaluation for lead in groundwater does not appear to be justified.

6.5.7 Manganese

Manganese was identified as a Phase B SRC for both the direct contact and soil to groundwater pathways. Potential source areas for manganese identified in the CSM are shown on **Figure 6-13** and are summarized on **Table 6-1**. Based on historic data, areas of known use and handling and the results of the Phase A samples, further evaluation of the Site is proposed for manganese as part of the Phase B investigation. Soil samples will be collected from 12 borings at the known or suspected source areas on the eastern part of the Site **(Figure 6-13)**.

Figure 6-13 also shows the eight proposed Phase B groundwater sample locations. The groundwater sampling locations were selected to evaluate those areas of the site that exhibited relatively elevated concentrations of manganese in Phase A, and to close data gaps in the delineation of manganese above its comparison level on the eastern site of the Site. Additional sampling is proposed in areas on the western portion of the site to further evaluate an offsite plume in that area.

6.5.8 Molybdenum

One potential source area of molybdenum, a former waste pond area located in the southern portion of the site, was identified from research of historical site operations. Based on the results of the historical evaluations and the Phase A sampling, further evaluation of the source area is proposed as part of the Phase B investigation **(Table 6-1)**. Soil samples will be collected from one boring located in the catch basin at the State Industries site as shown on **Figure 6-14**.

Figure 6-14 also shows the 31 proposed Phase B groundwater sample locations. The groundwater sampling locations were selected to evaluate those areas of the Site that exhibited relatively elevated concentrations of molybdenum in Phase A. In addition, sampling locations were selected to close data gaps in the delineation of molybdenum in groundwater on the Site and further evaluate site groundwater conditions in upgradient areas.

6.5.9 Strontium

Strontium was identified as a Phase B SRC for the soil to groundwater pathway and was found in groundwater at concentrations above its comparison level **(Figure 6-15).** Potential source areas for strontium based on historical and anecdotal information have not been identified at the Site. However, based on the Phase A results, further evaluation of possible source areas is proposed for strontium as part of the Phase B investigation **(Table 6-1)**. Soil samples will be collected from 10 borings based on the distribution of Phase A soil data and to investigate possible upgradient sources as shown on **Figure 6-15**. Soil borings have been located to evaluate strontium for the soil to groundwater migration pathway to supplement the Phase A results, and to evaluate possible off-Site sources to the west of the Site.

Figure 6-15 also shows the 22 proposed Phase B groundwater sample locations. The groundwater sampling locations are designed to evaluate those areas of the Site that exhibited relatively elevated concentrations of strontium in Phase A. Additional sampling locations were selected to further delineate the lateral extent of strontium along the western and eastern property boundaries and investigate potential upgradient sources.

6.5.10 Uranium

Uranium was identified as a Phase B SRC for the soil to groundwater pathway and was found in groundwater at concentrations above its comparison level along the eastern property boundary in what appears to be a plume from an off-Site source **(Figure 6-16).** Potential sources for elemental uranium have not been identified for the Site by historical and anecdotal sources. However, based on the Phase A results and regional groundwater information provided by the NDEP, further evaluation of the Site is proposed for uranium as part of the Phase B investigation **(Table 6-1)**. Soil samples will be collected from three borings near Unit 6 in the southeastern portion of the Site **(Figure 6-16)**.

Figure 6-16 also shows the 10 proposed Phase B groundwater sample locations. The groundwater sampling locations are designed to further delineate the lateral extent of uranium in groundwater above its comparison level along the eastern property boundary.

6.5.11 Vanadium

Vanadium was not identified as a Phase B SRC for either the direct contact or soil to groundwater pathways. Phase A soil data did not show that vanadium was present at concentrations above background **(Figure 6-17)**. However, U.S. Vanadium was identified as a potential source and vanadium was found in several Phase A groundwater samples at concentrations above its comparison level. As such, it will be evaluated further as part of the Phase B sampling program **(Table 6-1)**. Two soil borings are proposed for vanadium as a part of the Phase B investigation.

Additional, the Phase A results identified relatively elevated concentrations of vanadium in onsite groundwater in several areas of the Site as shown on **Figure 6-17**. **Figure 6-17** also shows the 25 proposed groundwater sampling locations for Phase B. The groundwater sampling locations shown were selected to evaluate those areas of the Site that exhibited relatively elevated concentrations of vanadium in Phase A. Additional sampling locations were selected to further evaluate possible upgradient sources for vanadium.

6.5.12 Beta-BHC

Beta-BHC was identified as a Phase B SRC for both the direct contact and soil to groundwater pathways. Additionally, beta-BHC was found in one Phase A groundwater sample above its comparison level. One potential source area for beta-BHC was identified by research of historic site operations **(Table 6-1)**. Based on the results of the Phase A samples, further evaluation of the Site is proposed for beta-BHC as part of the Phase B investigation. Soil samples will be collected from five borings located at the known on-Site source area (i.e., Hardesty Chemical) and a known prospective source area located west of the Site as shown on **Figure 6-18**. Further soil sampling throughout the remainder of the Site is not justified due to the low concentrations of beta-BHC identified in Phase A.

Figure 6-18 also shows the four proposed Phase B groundwater sample locations. The well locations to collect groundwater samples were selected to further evaluate the Phase A sample results along the west end of the Beta Ditch and a possible source to the west of the Site.

6.5.13 Perchlorate

Perchlorate was identified as a Phase B SRC for both the direct contact and soil to groundwater pathways. Potential source areas for perchlorate identified in the CSM are shown on **Figure 6-19** and are summarized on **Table 6-1**. Numerous known and potential source areas for perchlorate have been identified by historical and anecdotal sources as well as numerous previous assessments. Based on the results of the Phase A samples and existing assessment information, further evaluation of the Site is proposed as part of the Phase B investigation to supplement the mass of existing perchlorate information regarding the Site. Soil samples will be collected from 36 borings at the known and suspected source areas and to supplement existing information as shown on **Figure 6-19**.

Figure 6-19 also shows the 24 proposed Phase B groundwater sample locations. The groundwater sampling locations were selected to evaluate known and suspected source areas and to supplement existing perchlorate information developed from the ongoing routine groundwater sampling program. The wells selected were identified generally along the plume margins to better understand the boundary and delineate perchlorate in that area.

6.5.14 Uranium-233/234

Uranium-233/234 was not identified as a Phase B SRC for either the direct contact or soil to groundwater pathways. Potential source areas for the uranium-233/234 isotopes have not been identified by historical and anecdotal sources for the Site. In addition, the results of Phase A did not identify elevated concentrations of uranium-233/234 in any of the samples analyzed. Therefore, as shown in **Figure 6-20**, additional soils assessment for uranium-233/234 is not proposed as a part of the Phase B investigation.

Although no additional soil borings are proposed for uranium-233/234, **Figure 6-20** shows the 22 proposed groundwater sample locations. The groundwater sampling locations were selected to evaluate those areas of the Site where localized concentrations of uranium-233/234 were found above the comparison level and to close data gaps in areas where data was not collected during Phase A. The additional sampling program was designed to provide a broader understanding of both the local and regional occurrence of uranium-233/234. This sampling will also serve as an indicator for the other radionuclides.

6.5.15 Hexachlorobenzene

Hexachlorobenzene was identified as a Phase B SRC for both the direct contact and soil to groundwater pathways. Potential source areas for hexachlorobenzene identified in the CSM are shown on **Figure 6-21** and are summarized on **Table 6-1**. Based on the results of the Phase A samples, further evaluation of the Site is proposed for hexachlorobenzene in the Beta Ditch and Koch Materials Company Site. Soil samples will be collected at and near source areas from four borings as shown on **Figure 6-21** in these areas. These sampling locations were also selected to evaluate hexachlorobenzene along the soil to groundwater migration pathway to supplement the Phase A results.

Based on the Phase A results, and as shown on **Figure 6-21**, additional groundwater assessment is not proposed for hexachlorobenzene as a part of the Phase B investigation. None of the Phase A groundwater samples analyzed identified detectible concentrations of hexachlorobenzene. Further groundwater evaluation for hexachlorobenzene does not appear to be justified.

6.5.16 TPH

Potential source areas for TPH were identified from research of historic Site operations and from prior assessment data **(Table 6-1)**. While additional investigation is not warranted based on the results of the Phase A investigation, further evaluation of the site is proposed for TPH as part of the Phase B investigation based on historical data. Soil samples will be collected from seven borings at the former diesel fuel storage tank and Koch Materials Company as shown on **Figure 6-22**. Several of the proposed borings have been included at the request of the NDEP (July 25, 2007 meeting). The source area located in the northeastern portion of the Site, which includes an auto salvage yard will not be assessed as part of the Phase B investigation; but will be assessed in 2009-2010 when the salvage yard vacates the Site. This delay has been approved by the NDEP (July 25, 2007).

Based on the Phase A results, and as shown on **Figure 6-22**, additional groundwater assessment is not proposed for TPH as part of the Phase B investigation. None of the Phase A groundwater samples analyzed identified detectible concentrations of TPH. Further evaluation of groundwater for TPH does not appear to be justified.

6.5.17 Carbon Tetrachloride

Carbon tetrachloride was identified as a Phase B SRC for the groundwater direct contact pathway. Carbon tetrachloride was not identified as a Phase B SRC for the soil direct contact pathway. Potential source areas for carbon tetrachloride have not been identified by either historical or anecdotal sources for the Site **(Table 6-1)**. In addition, the results of Phase A investigation did not identify elevated concentrations of carbon tetrachloride except in soil near the western property boundary. To further evaluate the extent of carbon tetrachloride in soil, soil samples will be collected from seven borings at the locations shown on **Figure 6-23** as part of Phase B investigation activities. These borings will be located along the western property boundary to evaluate subsurface impacts originating from potential off-Site sources.

Groundwater samples will be collected from the 15 monitoring locations shown on **Figure 6-23** to evaluate the extent of groundwater impacts along the western Site boundary and in the northern part of the Site in the vicinity of Warm Springs Road.

6.5.18 Chlorobenzene

Chlorobenzene was identified as a Phase B SRC for the groundwater direct contact pathway. Chlorobenzene was not identified as a Phase B SRC for the soil direct contact pathway. Potential source areas for chlorobenzene have not been identified in historical documents or from anecdotal sources for the Site **(Table 6-1)**. Elevated concentrations of chlorobenzene were not identified in soils from the Site except in soil near the western property boundary at depths below the water table. To further evaluate the extent of chlorobenzene in soil, soil samples will be collected at the seven locations shown on **Figure 6-24** as part of Phase B investigation activities. Soil samples will be collected along the western property boundary to evaluate subsurface impacts originating from potential off-Site source areas to the west.

Groundwater samples will be collected from the 10 monitoring locations shown on **Figure 6-24** to evaluate the extent of groundwater impacts along the western Site boundary and to evaluate subsurface impacts originating from potential offsite source areas to the west.

6.5.19 Chloroform

Chloroform was identified as a Phase B SRC along both the direct contact and soil to groundwater pathway. Potential source areas for chloroform identified in the CSM are shown on **Figure 6-25** and are summarized on **Table 6-1**. Based on the results of the Phase A investigation, further evaluation of the Site is proposed for chloroform as part of the Phase B Investigation. Soil samples will be collected from 17 borings to further evaluate potential source areas at the locations shown on **Figure 6-25**. Some of these borings from locations along the western boundary of the Site will also be sampled in order to evaluate for subsurface impacts originating from potential offsite source areas.

Groundwater samples will be collected from the 60 monitoring wells at the locations shown on **Figure 6-25**. The groundwater sample locations were selected to evaluate known or suspected source areas and to evaluate the extent of chloroform in groundwater beneath the Site.

6.5.20 Trichloroethylene (TCE)

TCE was identified as a Phase B SRC for the soil to groundwater pathway. Potential source areas for TCE identified in the CSM are shown on **Figure 6-26** and are summarized on **Table 6-1**. TCE was identified in Phase A soil samples at concentrations slightly above comparison levels at a few locations on the Site as shown in **Figure 6-26**. Phase B sampling activities include the collection of soil samples taken from eight borings at the locations shown on **Figure 6-26** to further evaluate suspected source areas for TCE.

Groundwater samples will be collected from the 16 monitoring wells at the locations shown on **Figure 6-26** in order to evaluate the extent of groundwater impacts along the western Site boundary and to evaluate subsurface impacts originating from potential offsite source areas to the west. Additional groundwater samples will be collected from monitoring wells in the central portion of the Site to further understand the nature and extent of TCE impacts to groundwater that were identified in the Phase A Investigation.

6.5.21 Summary

The sampling proposed in this section addresses the data gaps identified for the following:

- The direct contact with soil pathway;
- The direct contact with groundwater pathway;
- The soil to groundwater migration pathway;
- The groundwater to indoor air migration pathway; and
- The additional source are investigation.

The details of the Phase B sampling program are provided in **Appendix I**.

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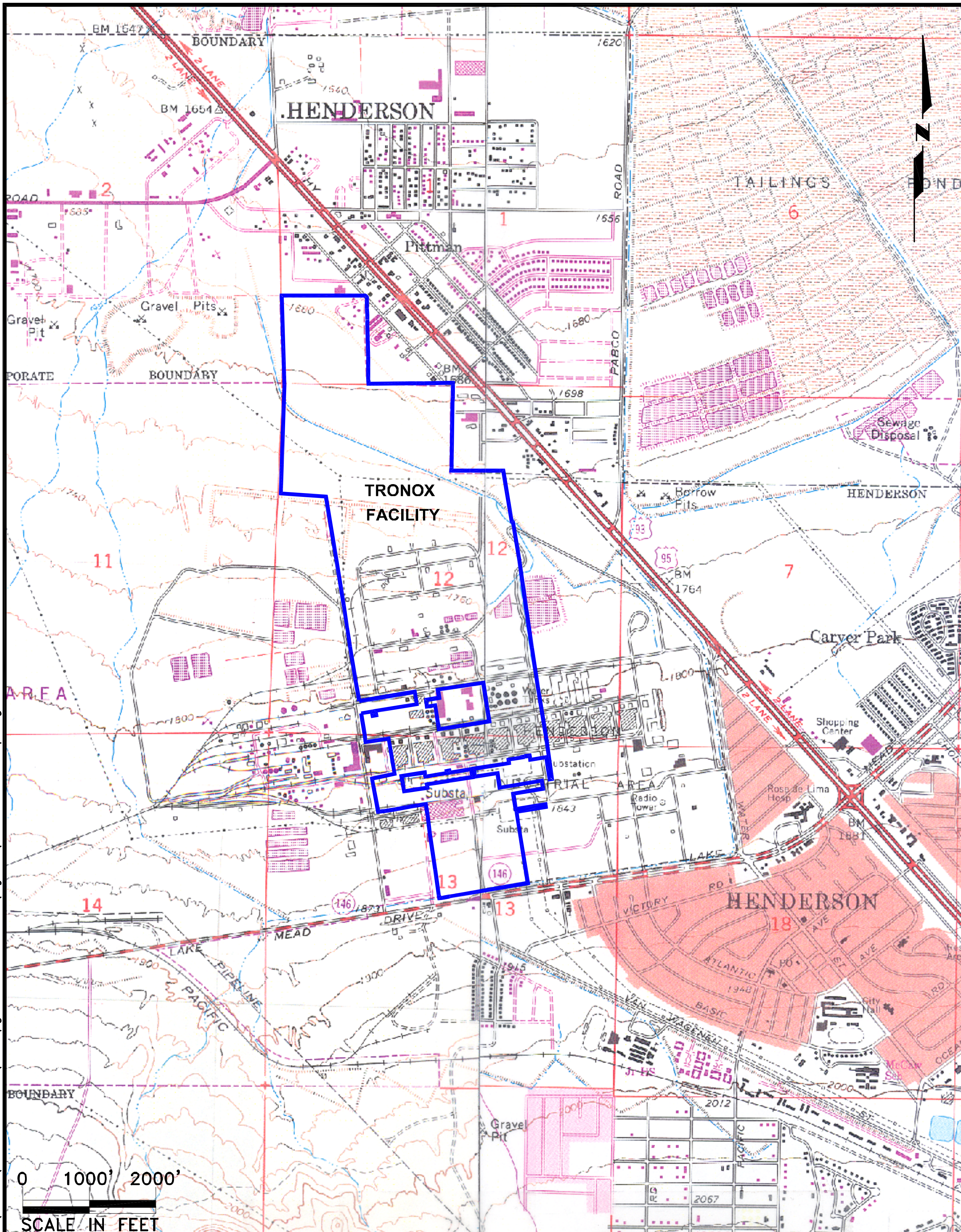
Figures



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NEVADA

QUADRANGLE LOCATION

TRONOX

SITE LOCATION MAP

Phase A Source Area Investigation
Tronox Facility
Henderson, Nevada

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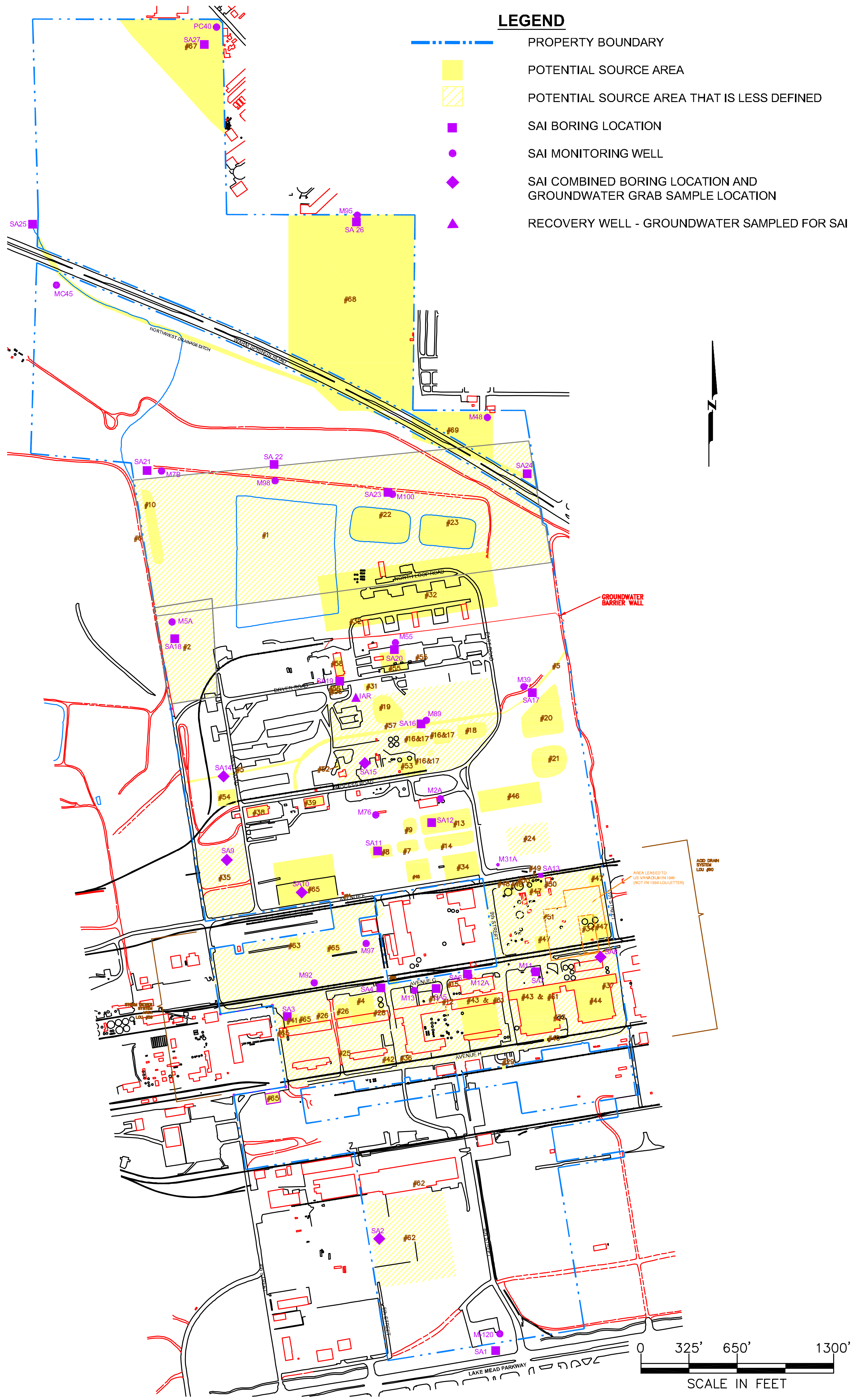

SAMPLING LOCATION MAP

Phase A Source Area Investigation
Tronox Facility
Henderson, Nevada

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DRAWN BY:	MS
CHECKED BY:	GH
APPROVED BY:	BH

REVISIONS

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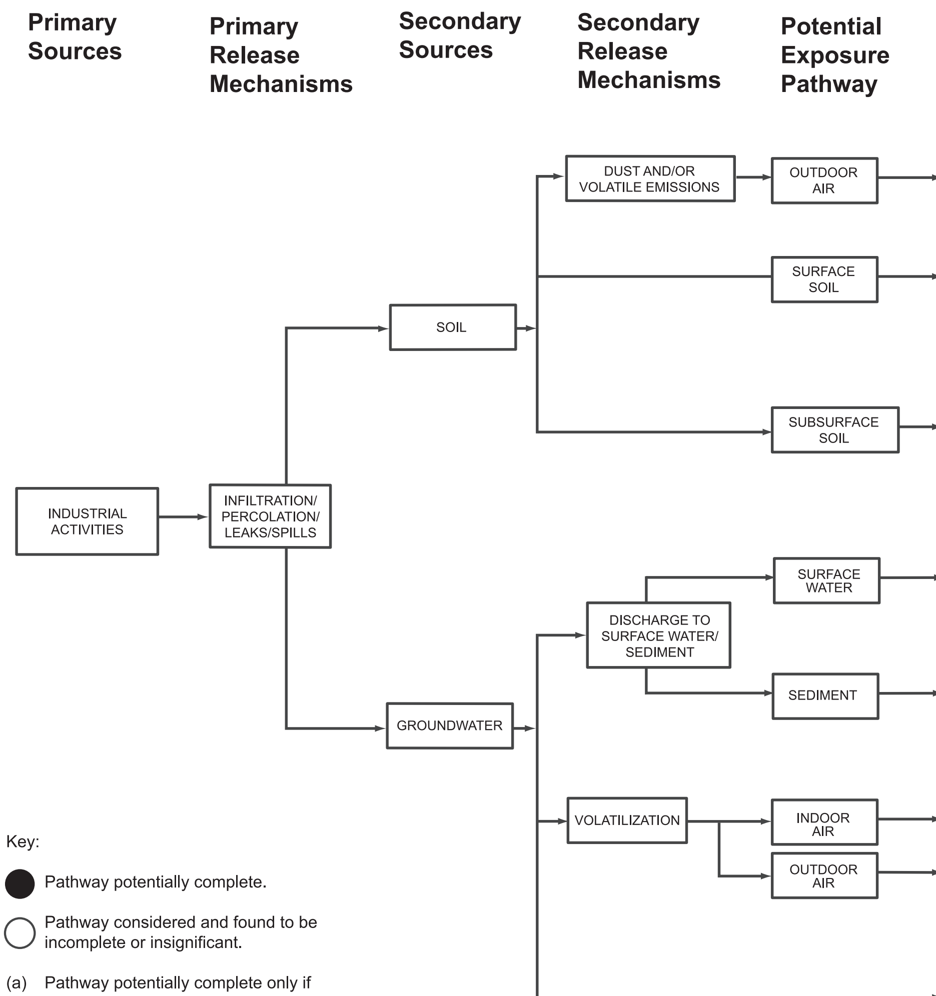
FIGURE 5-1
Preliminary Conceptual Site Model for Exposure
Phase A Source Area Investigation Results
Tronox Facility—Henderson, Nevada



Potential Receptors

Potential Exposure Pathway	Potential Exposure Route	Human Health: Indoor Industrial Worker	Human Health: Outdoor Industrial Worker	Human Health: Construction/ Utility Worker	Human Health: Off-Site Resident	Human Health: Visitor	Ecological: Terrestrial	Ecological: Aquatic
Outdoor Air	Inhalation	○	●	●	●	●	○	○
Surface Soil	Incidental Ingestion	○	●	●	○	●	●	○
Surface Soil	Dermal Contact	○	●	●	○	●	●	○
Subsurface Soil	Incidental Ingestion	○	○	●	○	○	○	○
Subsurface Soil	Dermal Contact	○	○	●	○	○	○	○
Surface Water	Incidental Ingestion	○	○	○	● (b)	○	●	●
Surface Water	Dermal Contact	○	○	○	● (b)	○	●	●
Sediment	Incidental Ingestion	○	○	○	● (b)	○	●	●
Sediment	Dermal Contact	○	○	○	● (b)	○	●	●
Indoor Air	Inhalation	●	○	○	●	●	○	○
Outdoor Air	Inhalation	○	●	●	●	●	○	○
Groundwater	Incidental Ingestion	○	○	● (a)	○	○	○	○
Groundwater	Dermal Contact	○	○	● (a)	○	○	○	○

Key:

● Pathway potentially complete.

○ Pathway considered and found to be incomplete or insignificant.

(a) Pathway potentially complete only if excavation extends to the water table.

(b) Las Vegas Wash.

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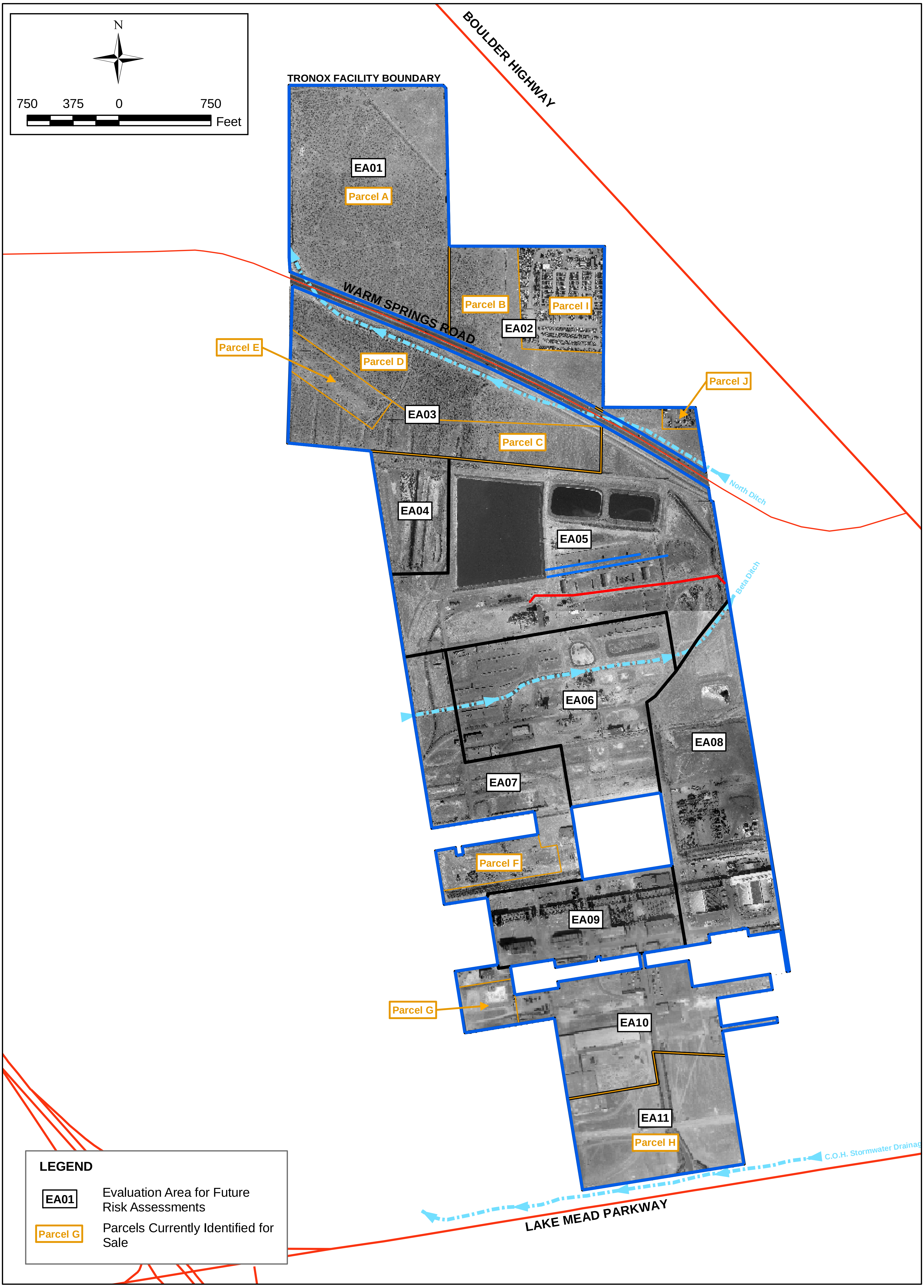

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PHASE B EVALUATION AREA LOCATION MAP

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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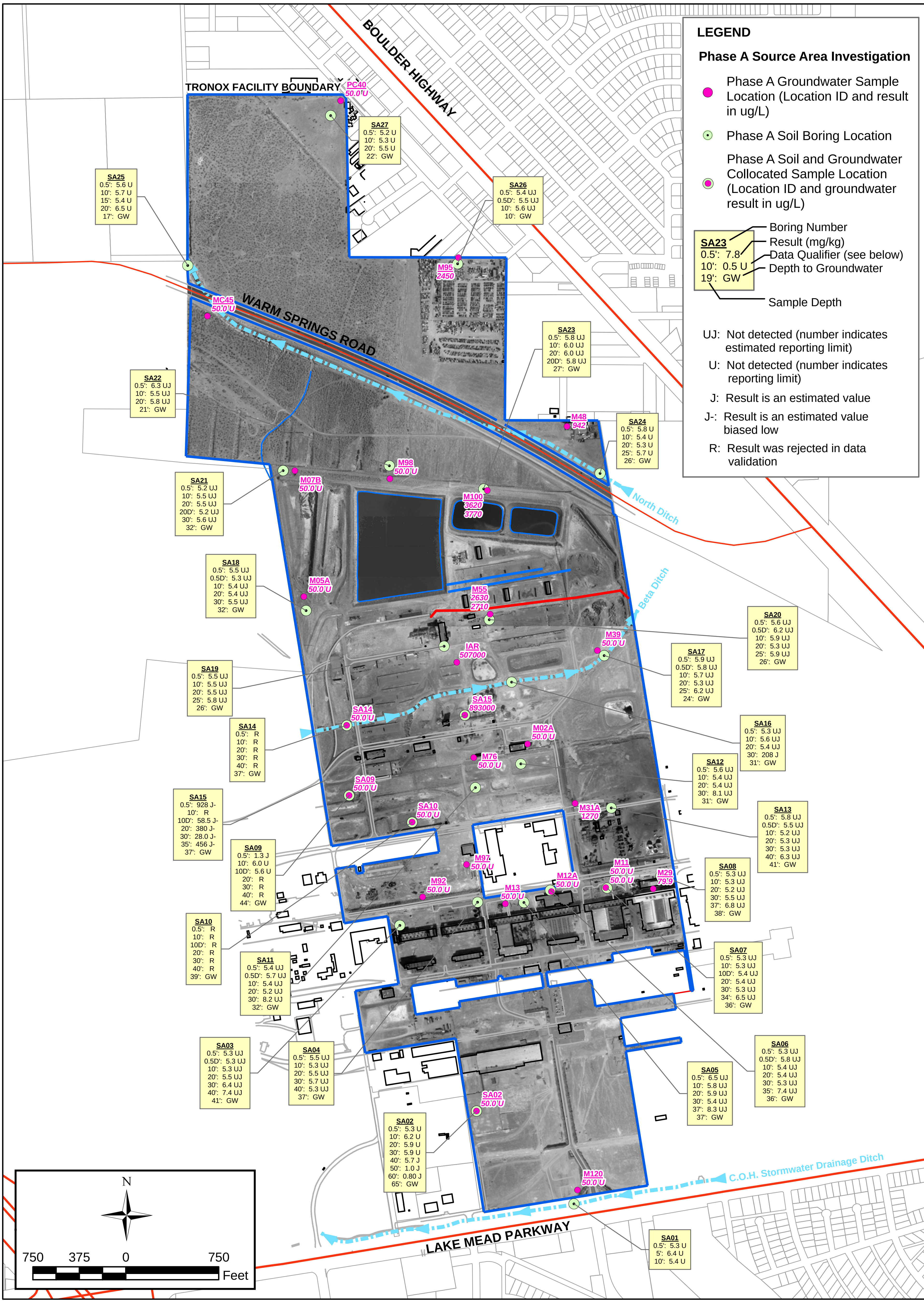

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AMMONIA RESULTS IN SOIL AND GROUNDWATER
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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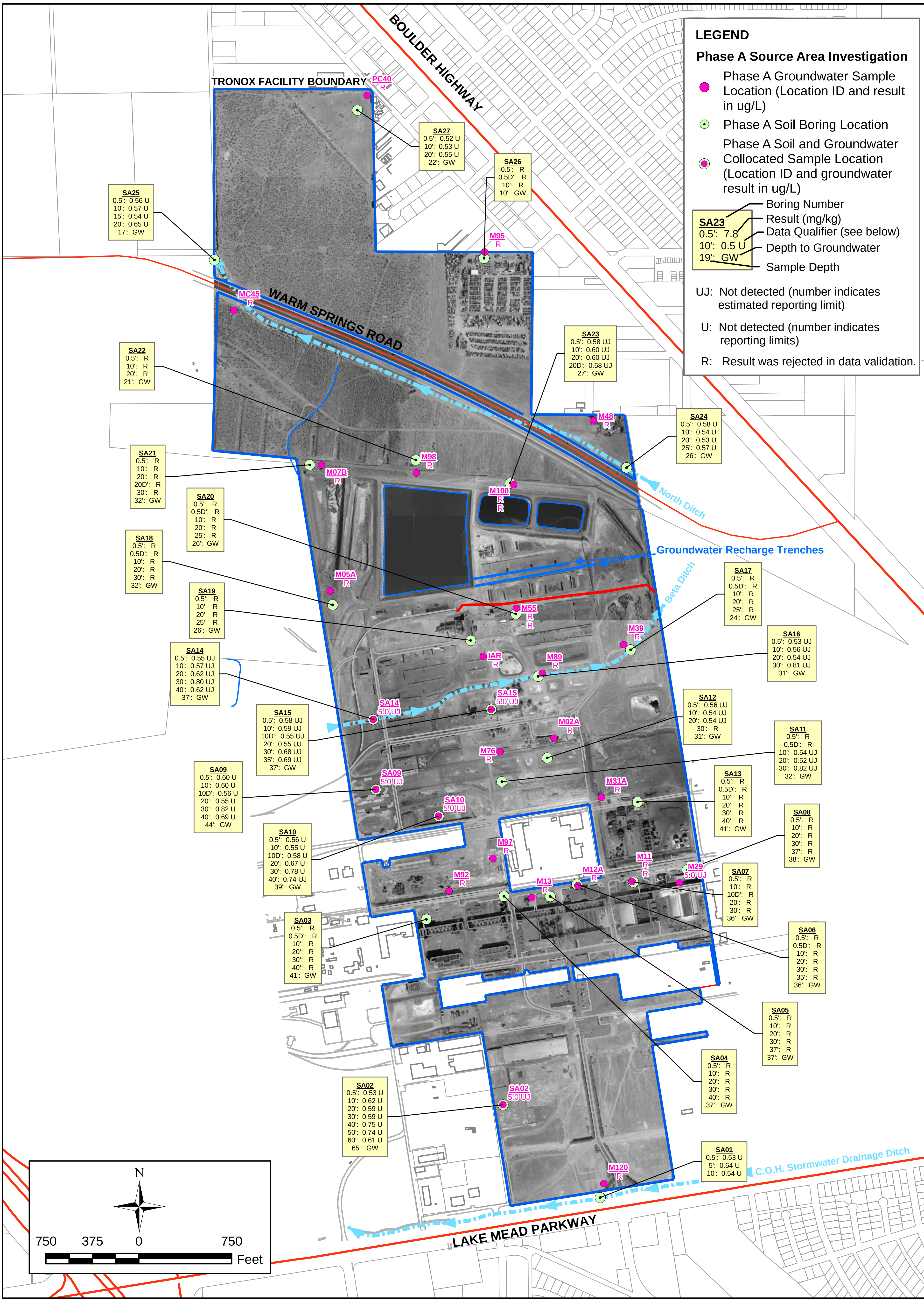

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CYANIDE RESULTS IN SOIL AND GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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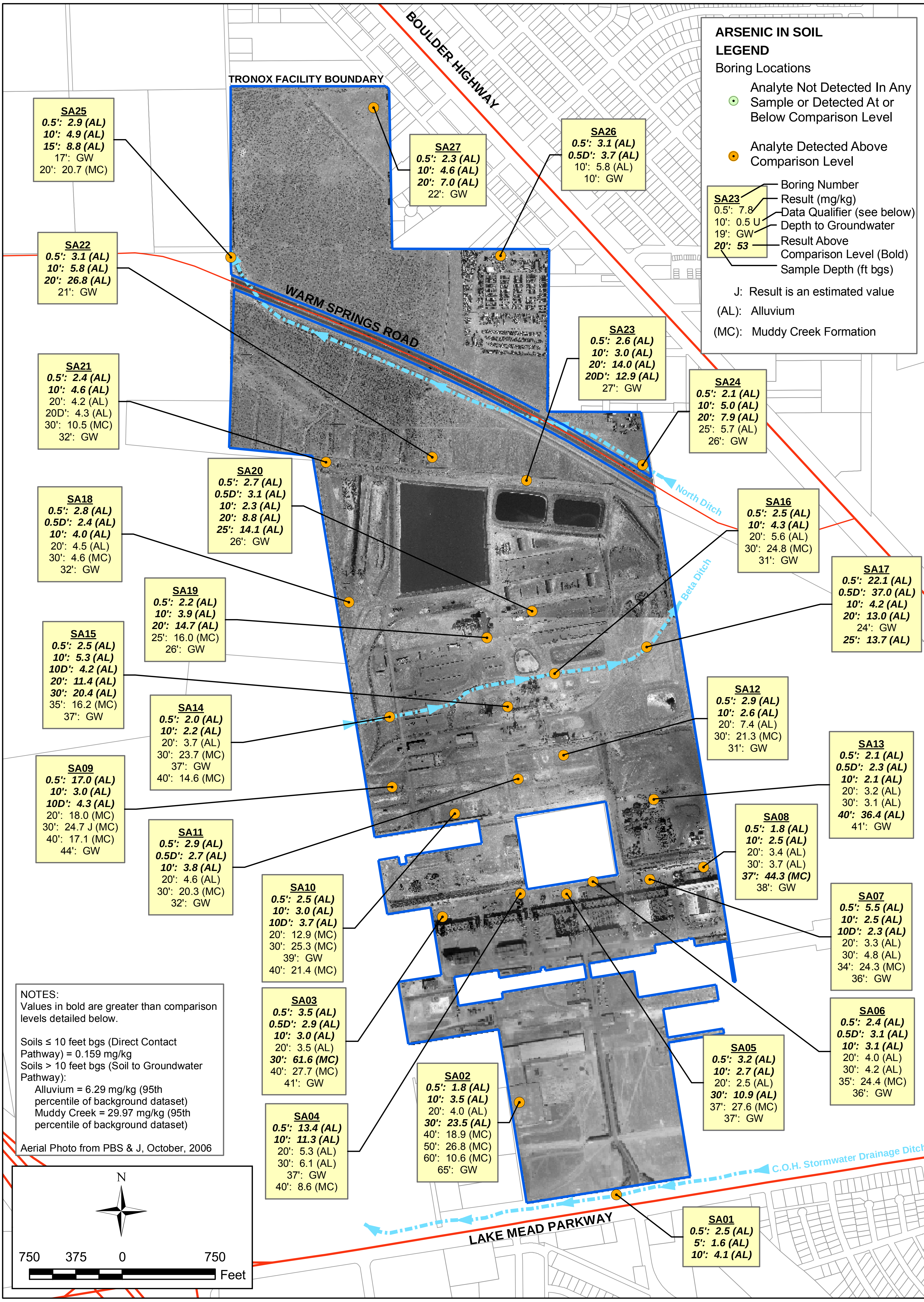

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ARSENIC IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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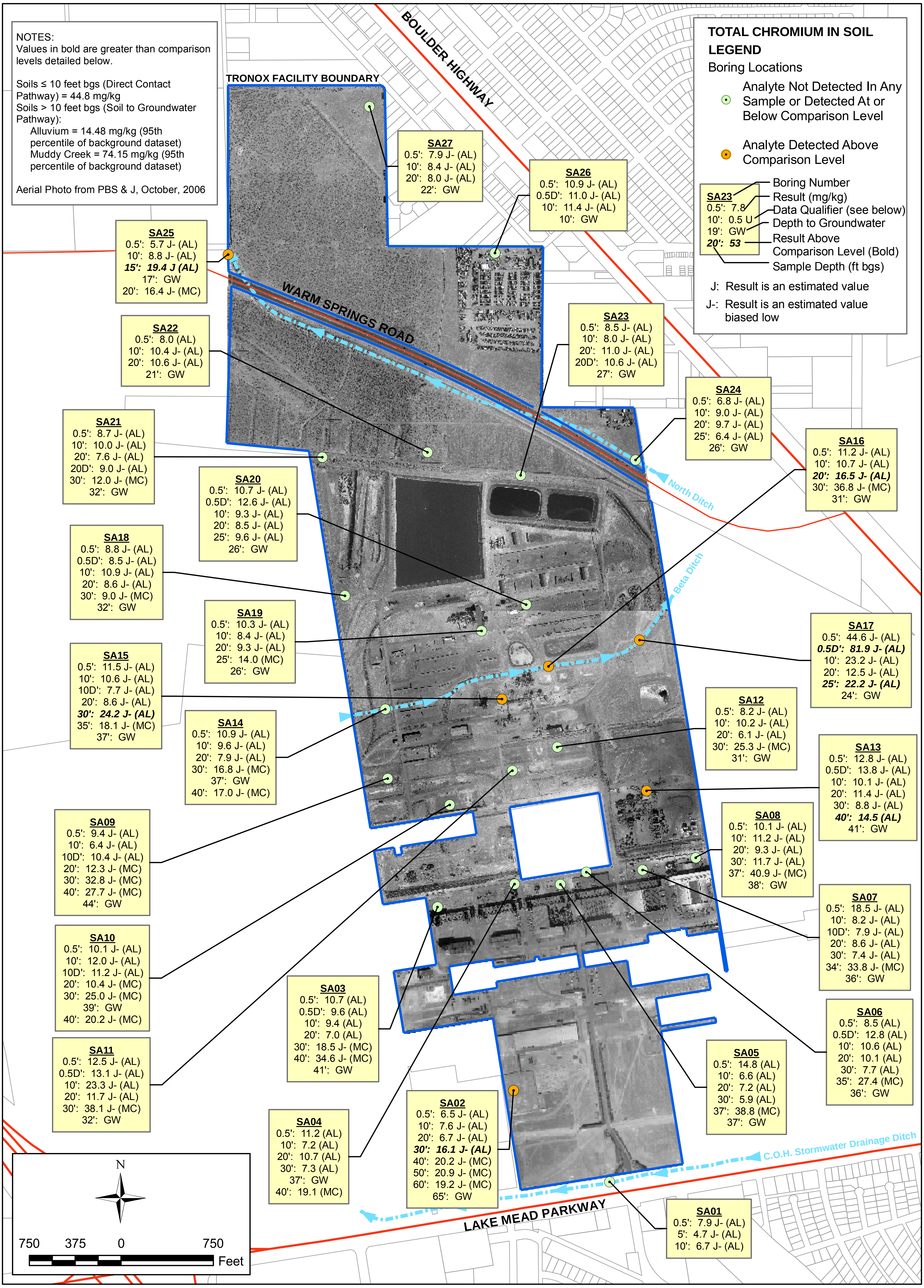

SHEET NUMBER: X	FIGURE NUMBER: 5-6

TOTAL CHROMIUM IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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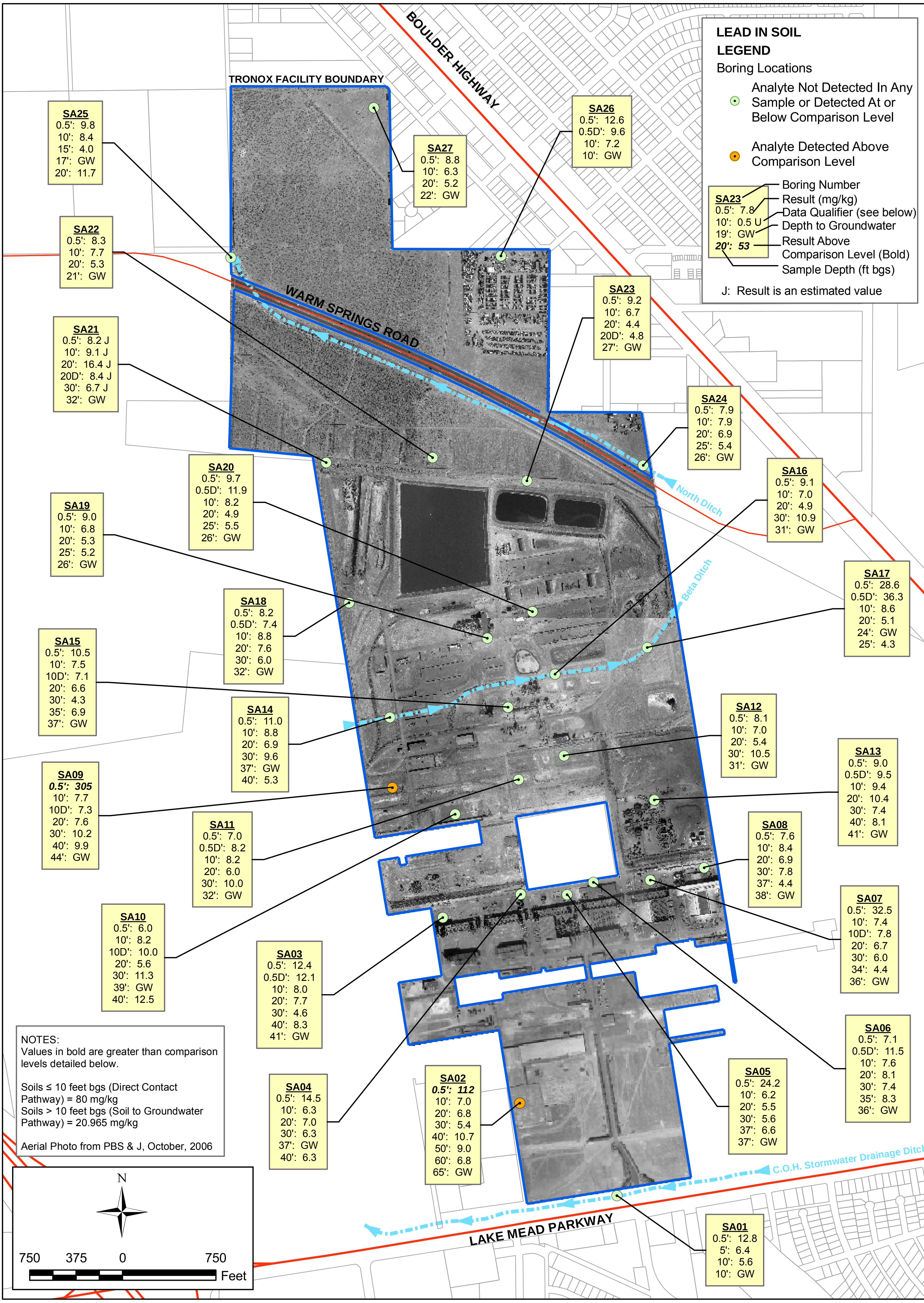

LEAD IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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FIGURE NUMBER: 5-7

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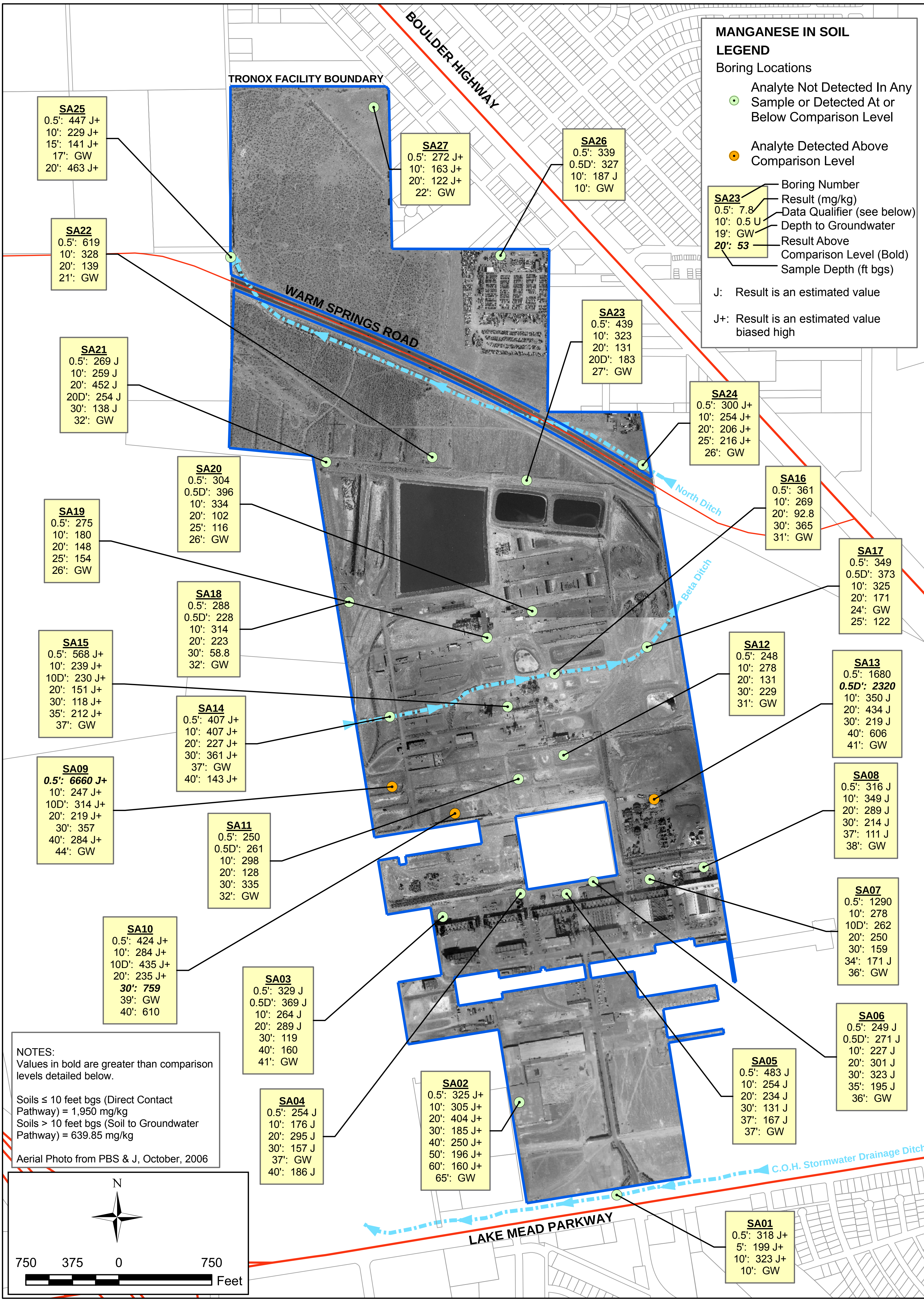

FIGURE NUMBER:	SHEET NUMBER:
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MANGANESE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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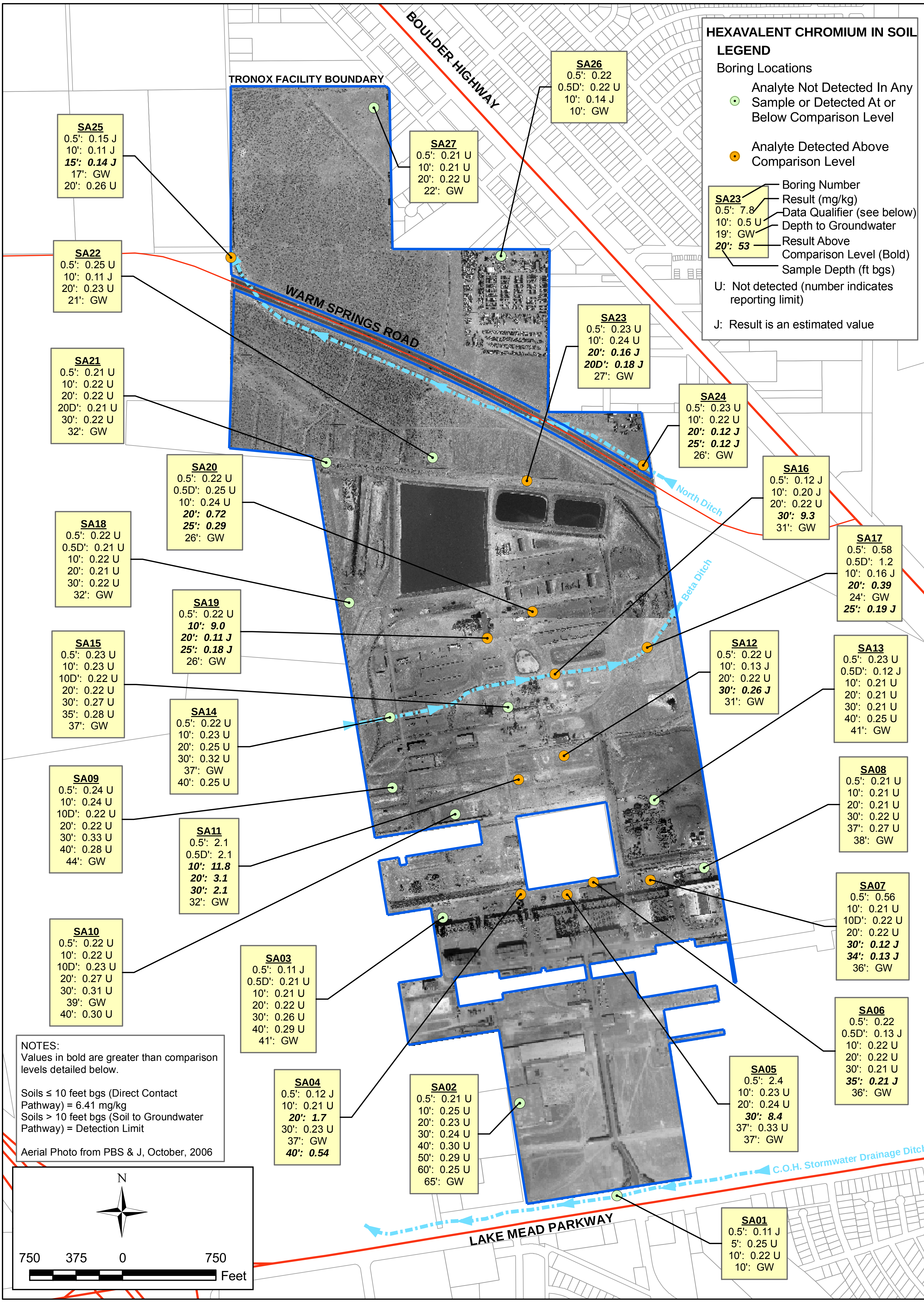

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HEXAVALENT CHROMIUM IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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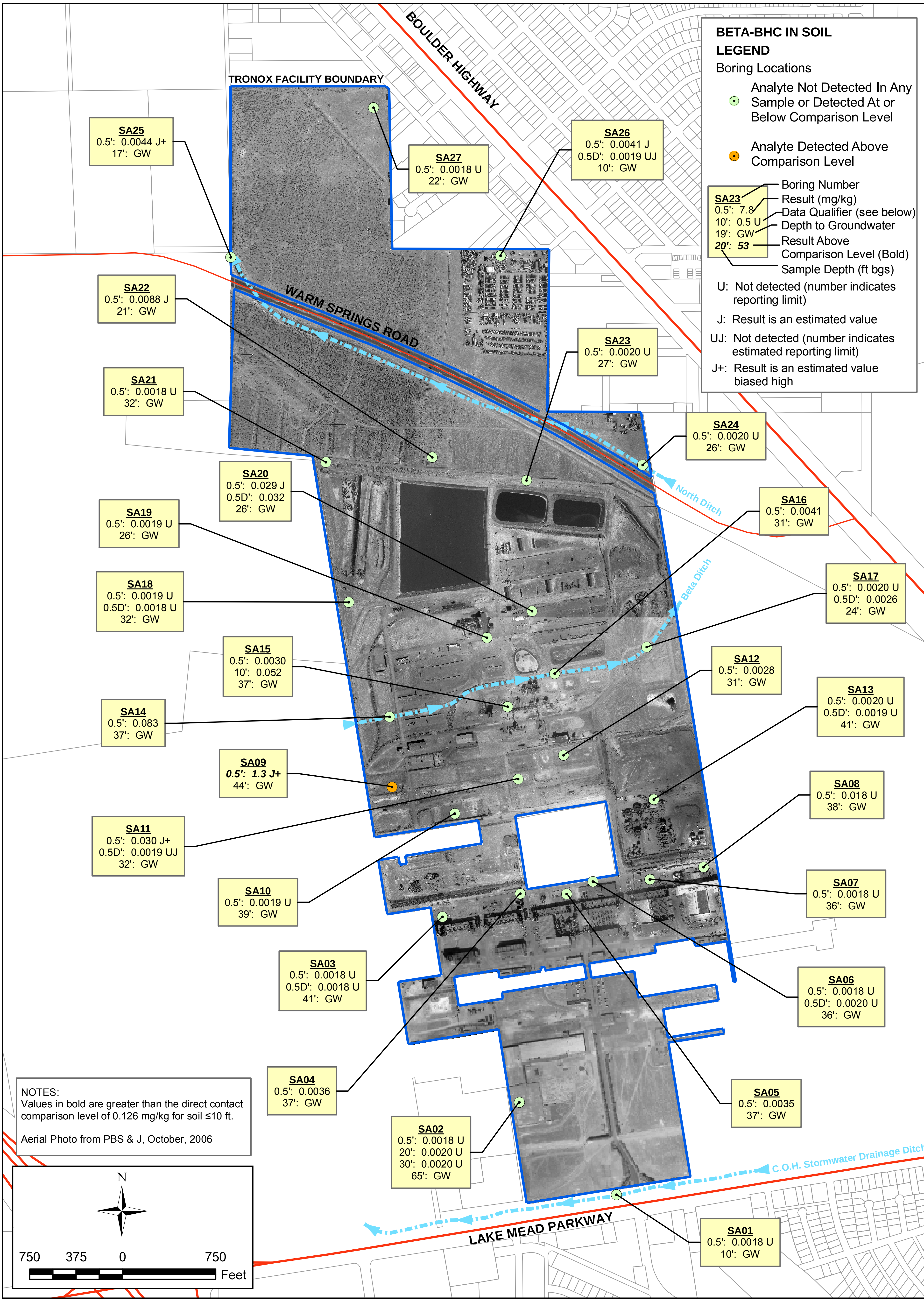

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FIGURE NUMBER: 5-10

BETA-BHC IN SOIL
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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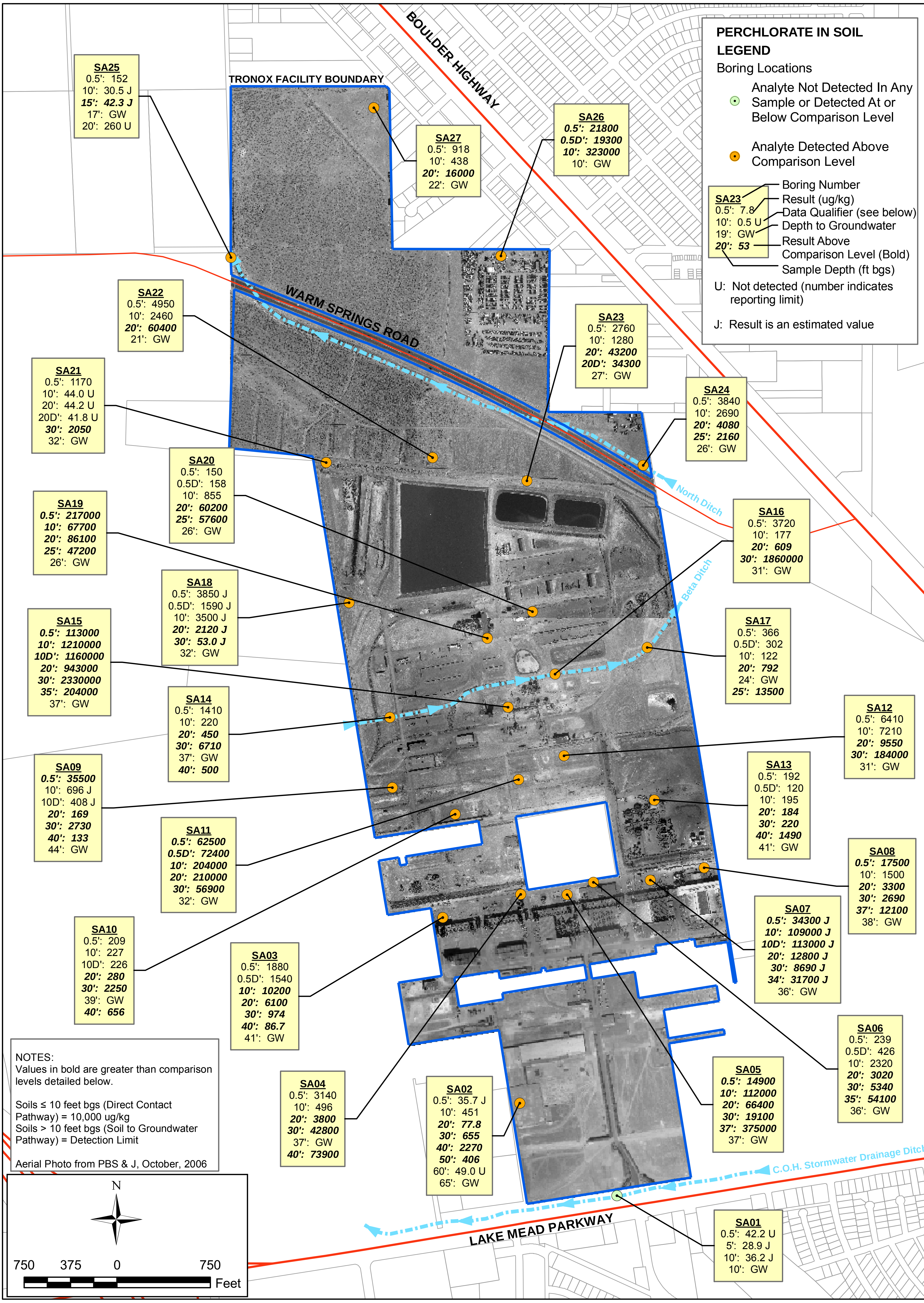

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FIGURE NUMBER: 5-11

PERCHLORATE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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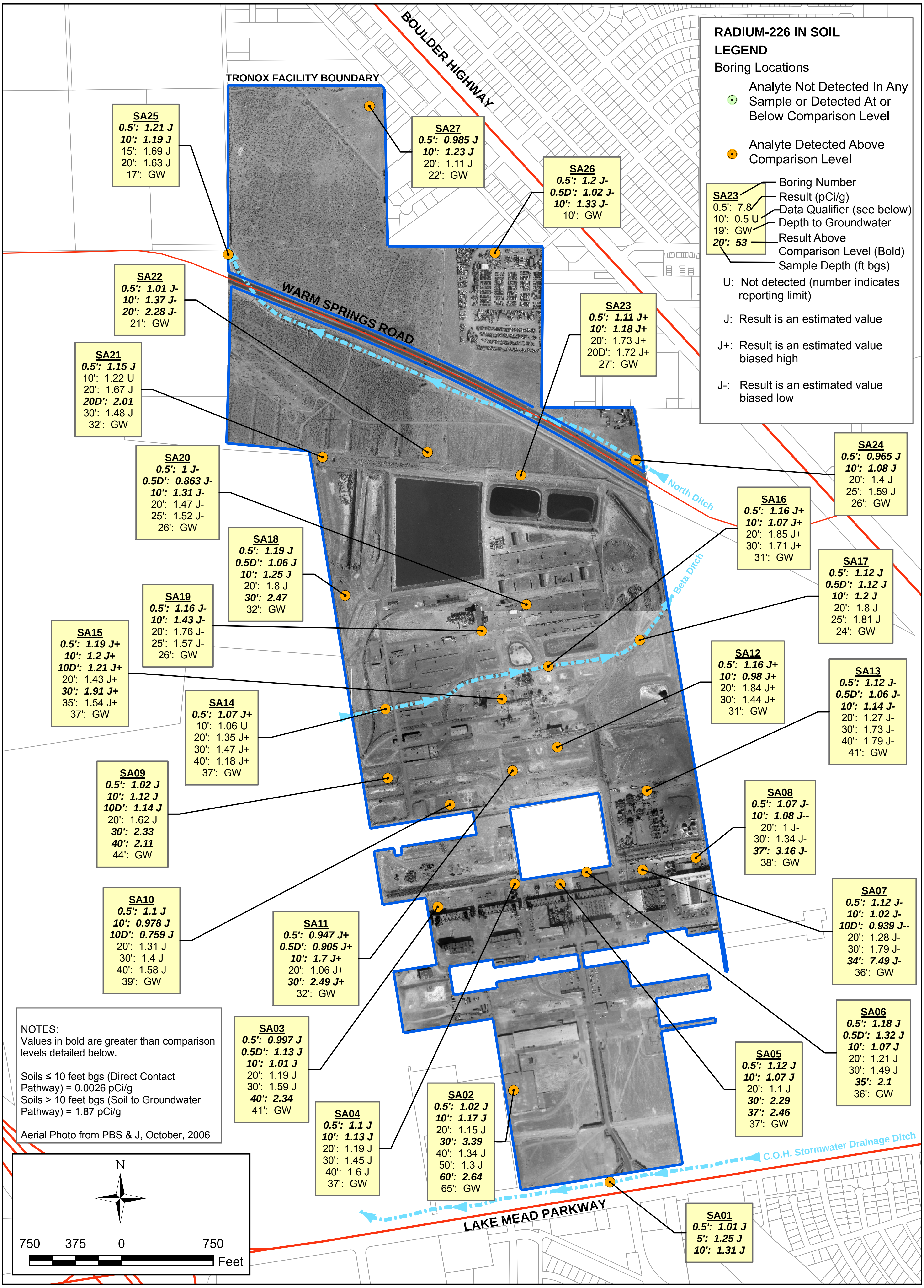

SHEET NUMBER:	FIGURE NUMBER:
X	5-12

RADIUM-226 IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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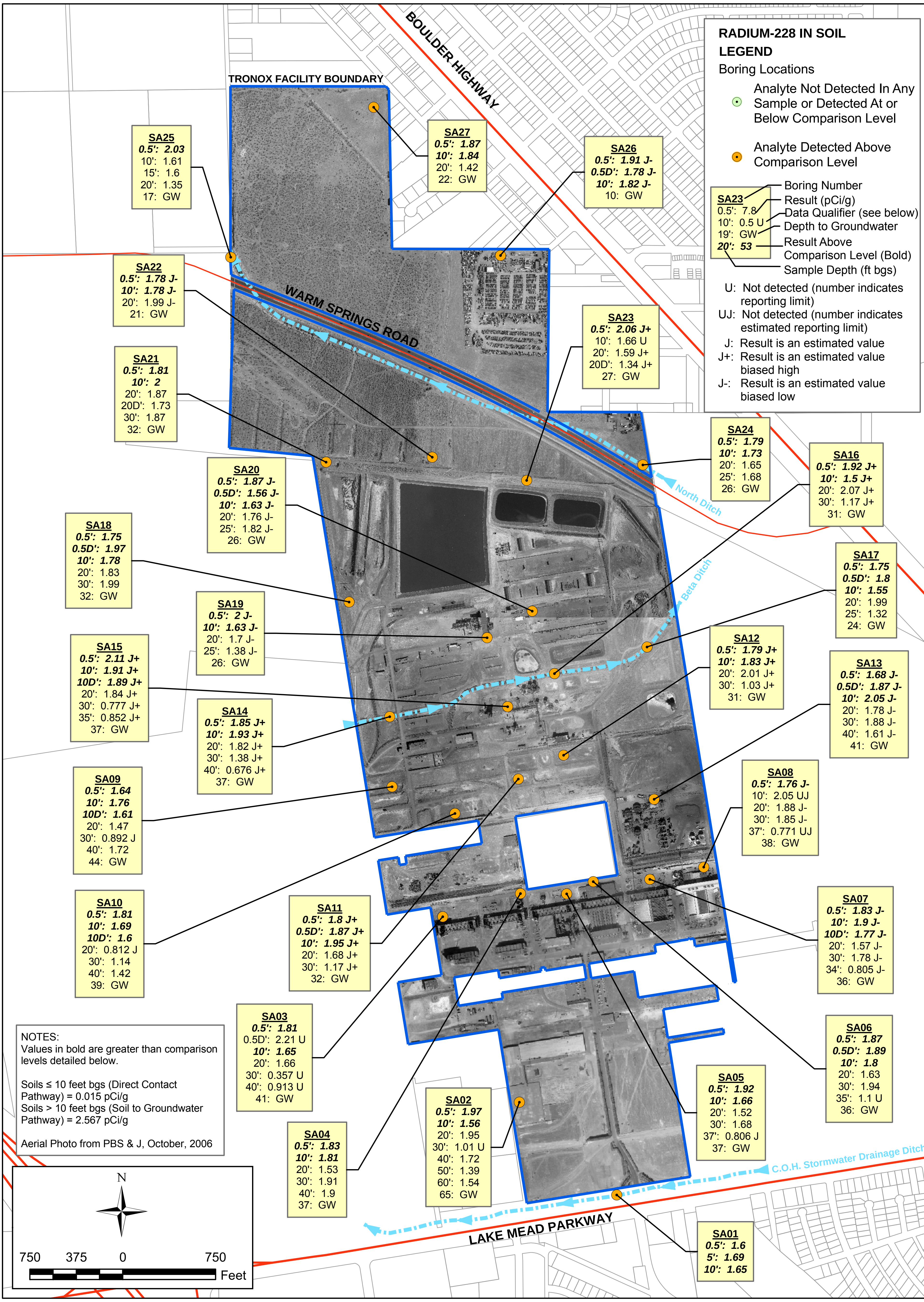

SHEET NUMBER:	FIGURE NUMBER:
X	5-13

RADIUM-228 IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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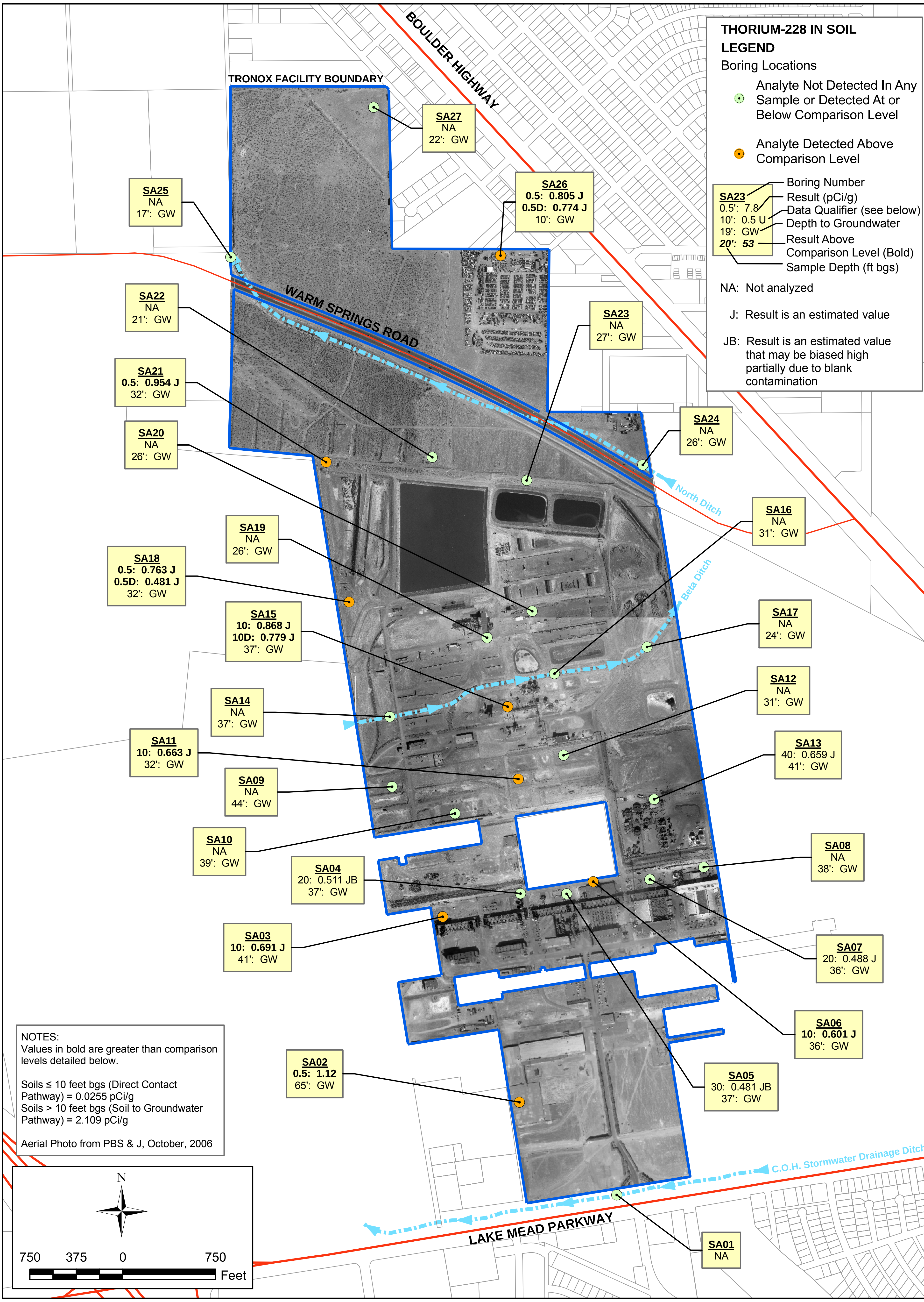

SHEET NUMBER: X

FIGURE NUMBER: 5-14

THORIUM-228 IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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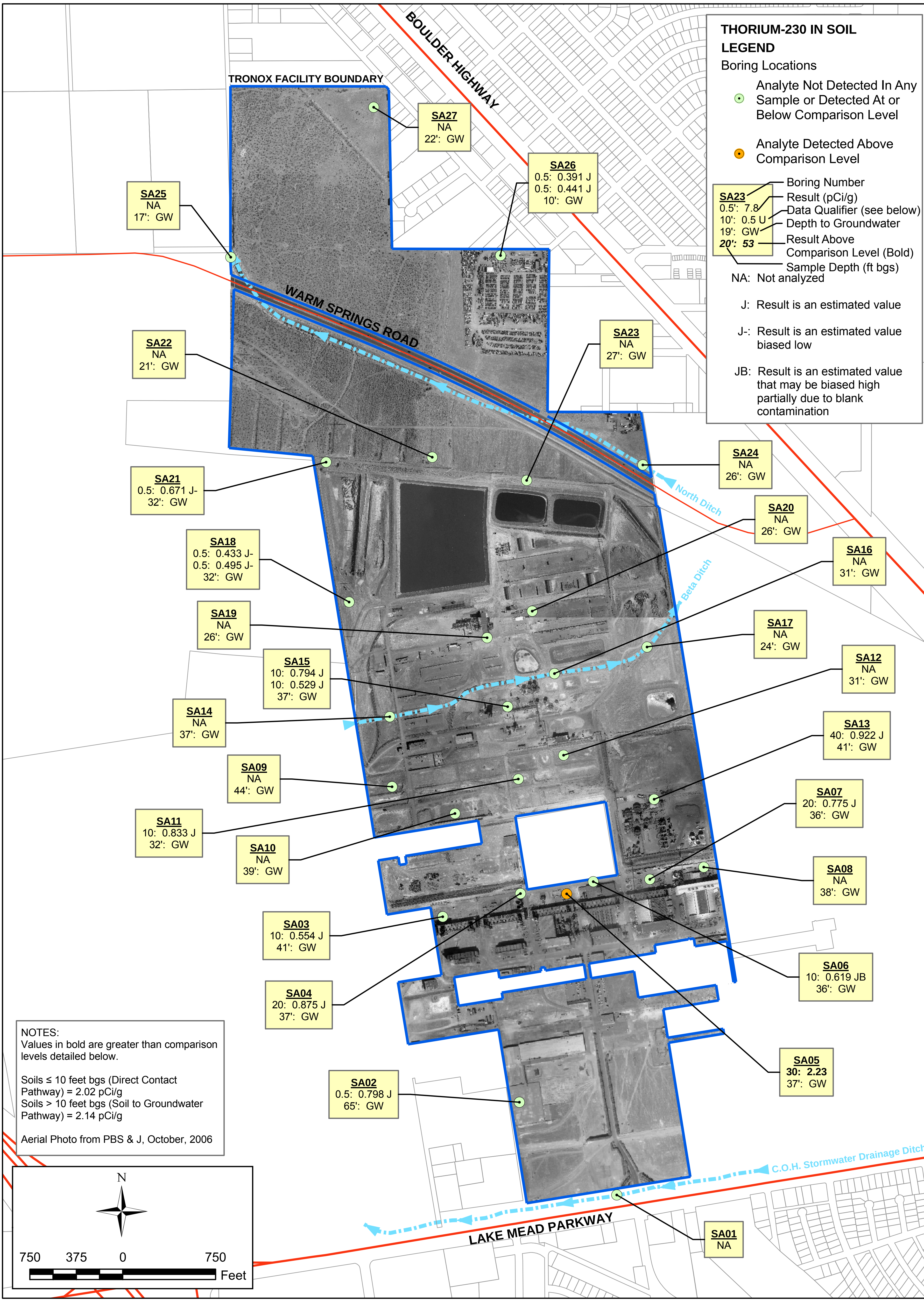

SHEET NUMBER:	FIGURE NUMBER:
X	5-15

THORIUM-230 IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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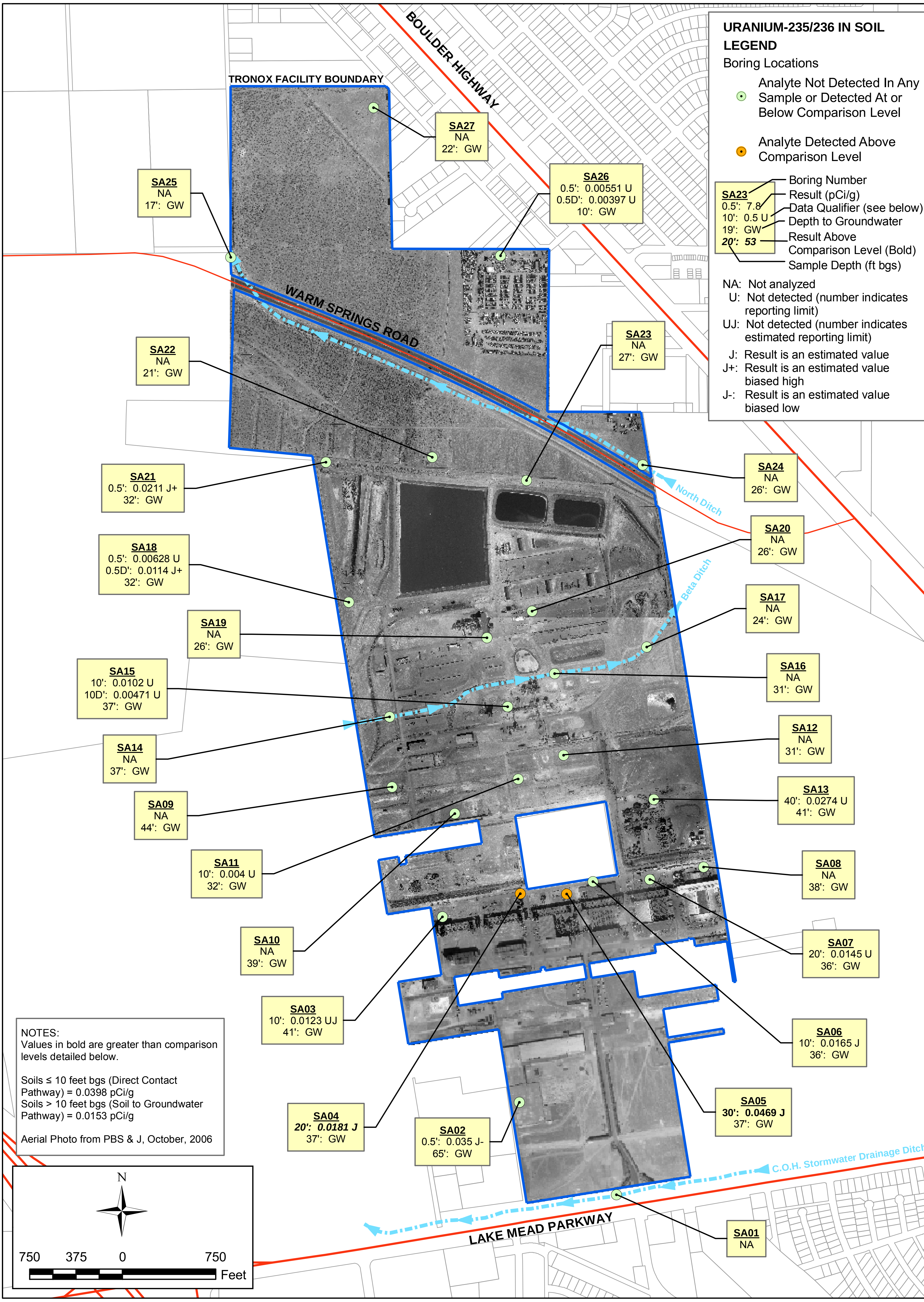

SHEET NUMBER: X

FIGURE NUMBER: 5-16

URANIUM-235/236 IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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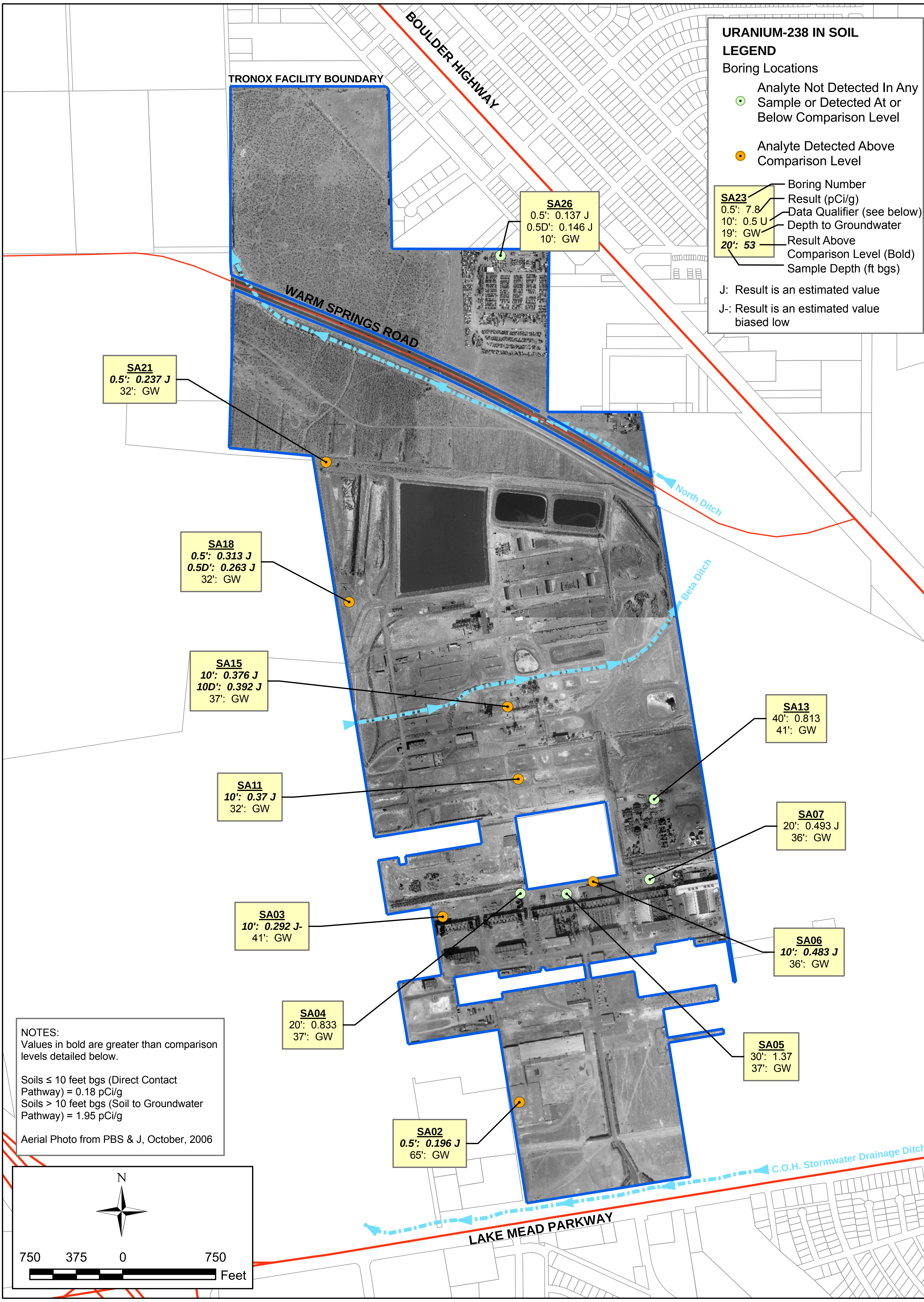

SHEET NUMBER: X

FIGURE NUMBER: 5-17

URANIUM-238 IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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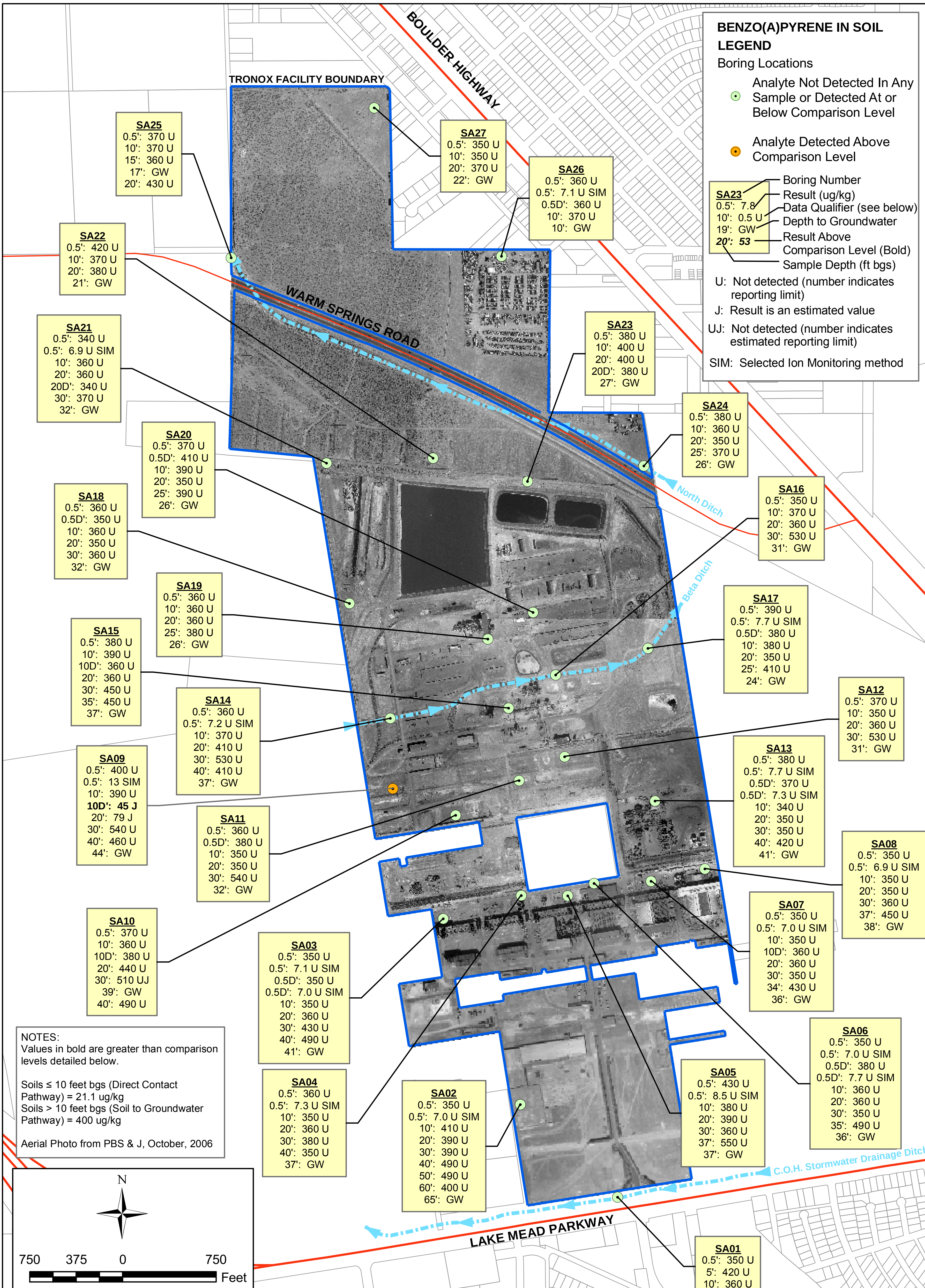

SHEET NUMBER:	FIGURE NUMBER:
X	5-18

BENZO(A)PYRENE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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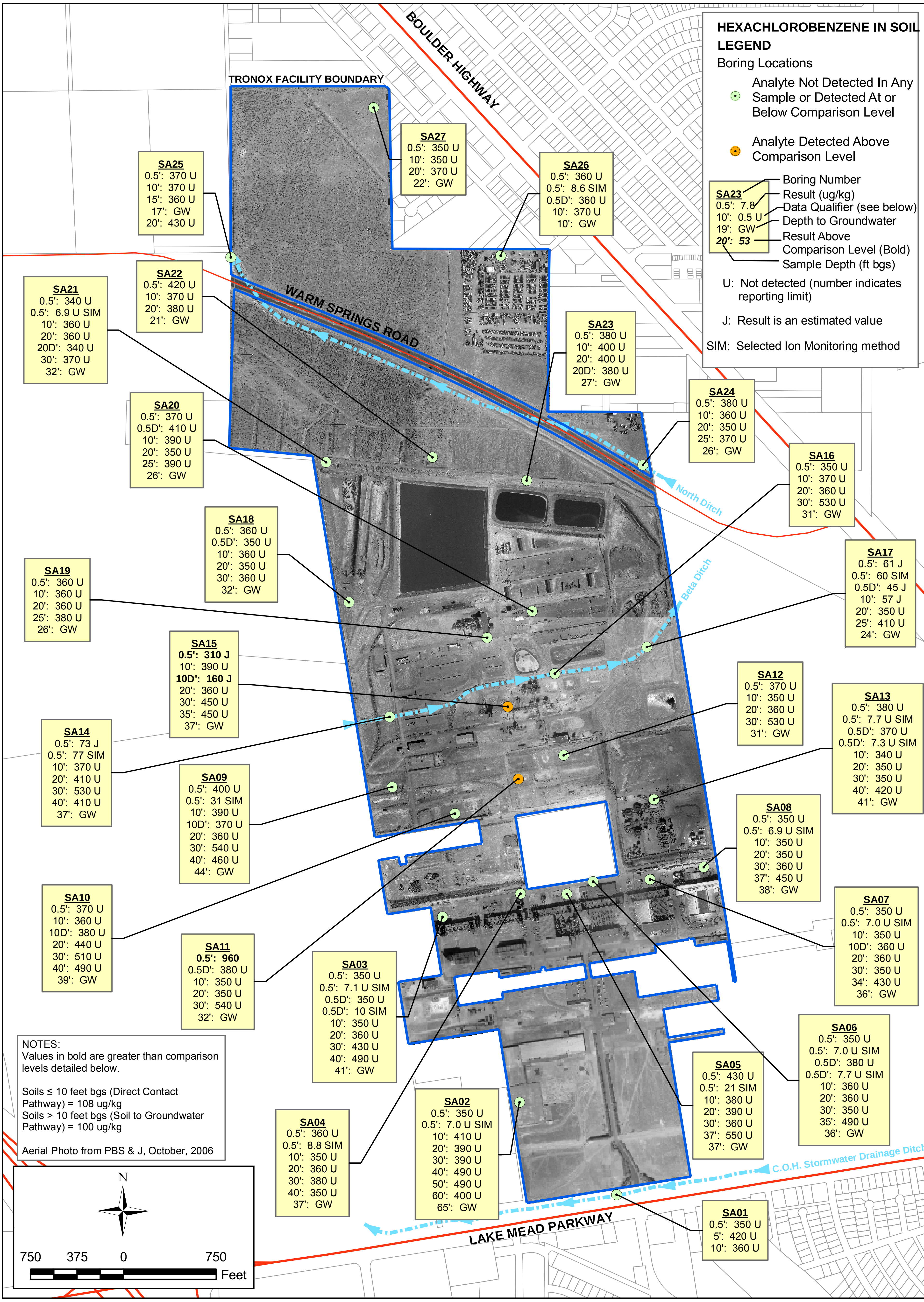

X	SHEET NUMBER:	5-19	FIGURE NUMBER:

HEXACHLOROBENZENE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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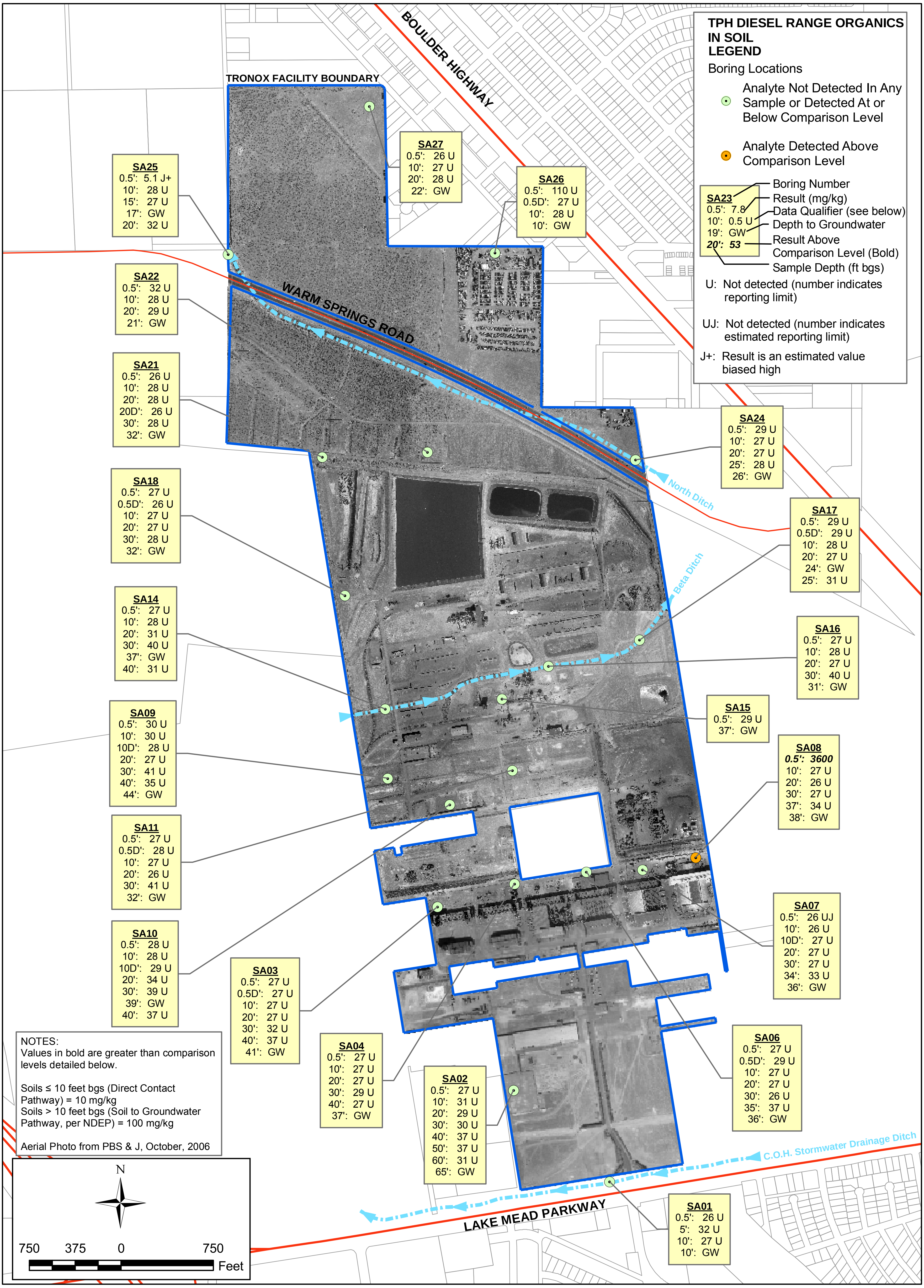

TPH DIESEL RANGE ORGANICS IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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FIGURE NUMBER: 5-20
SHEET NUMBER: X

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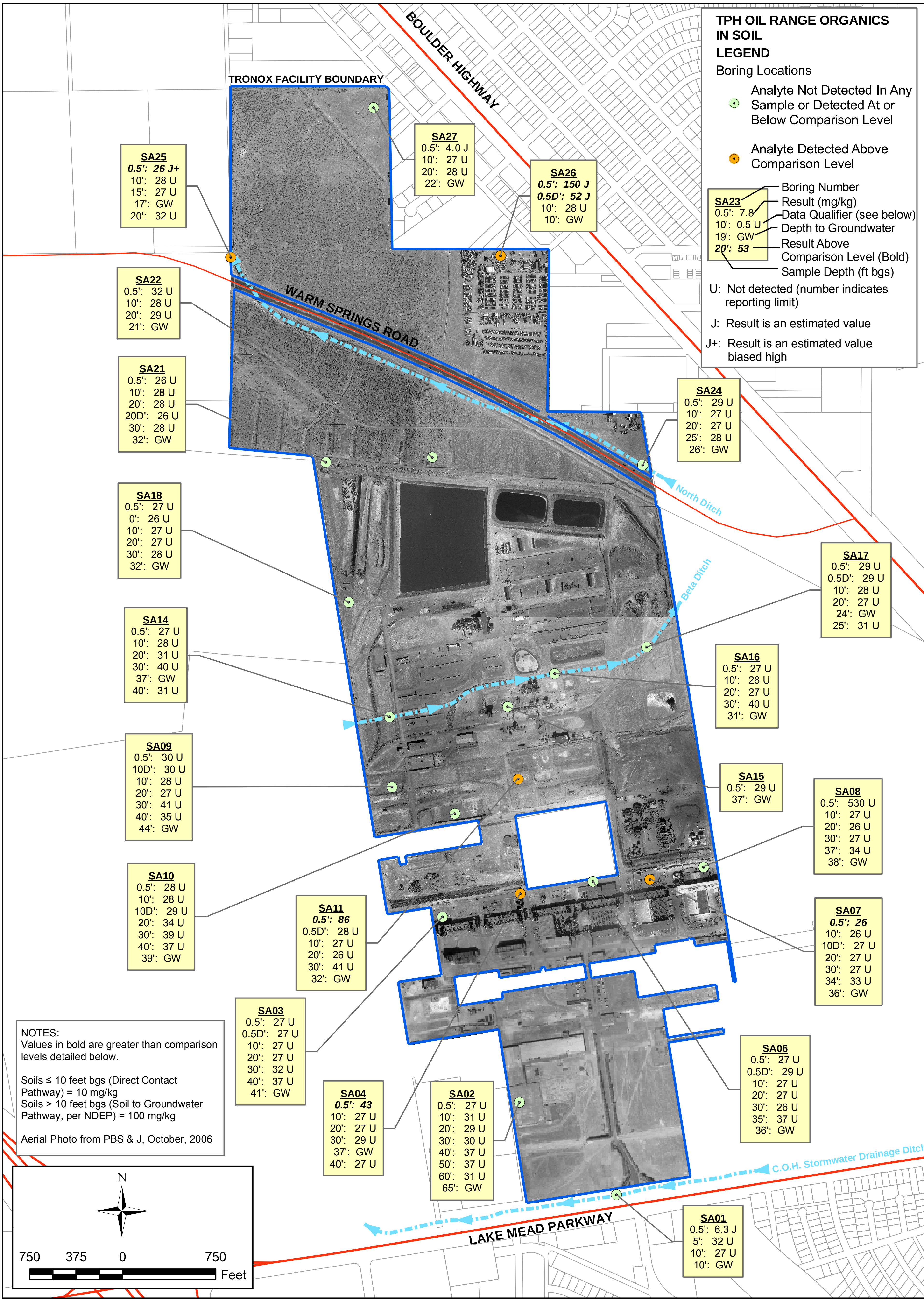

SHEET NUMBER:	FIGURE NUMBER:
X	5-21

TPH OIL RANGE ORGANICS IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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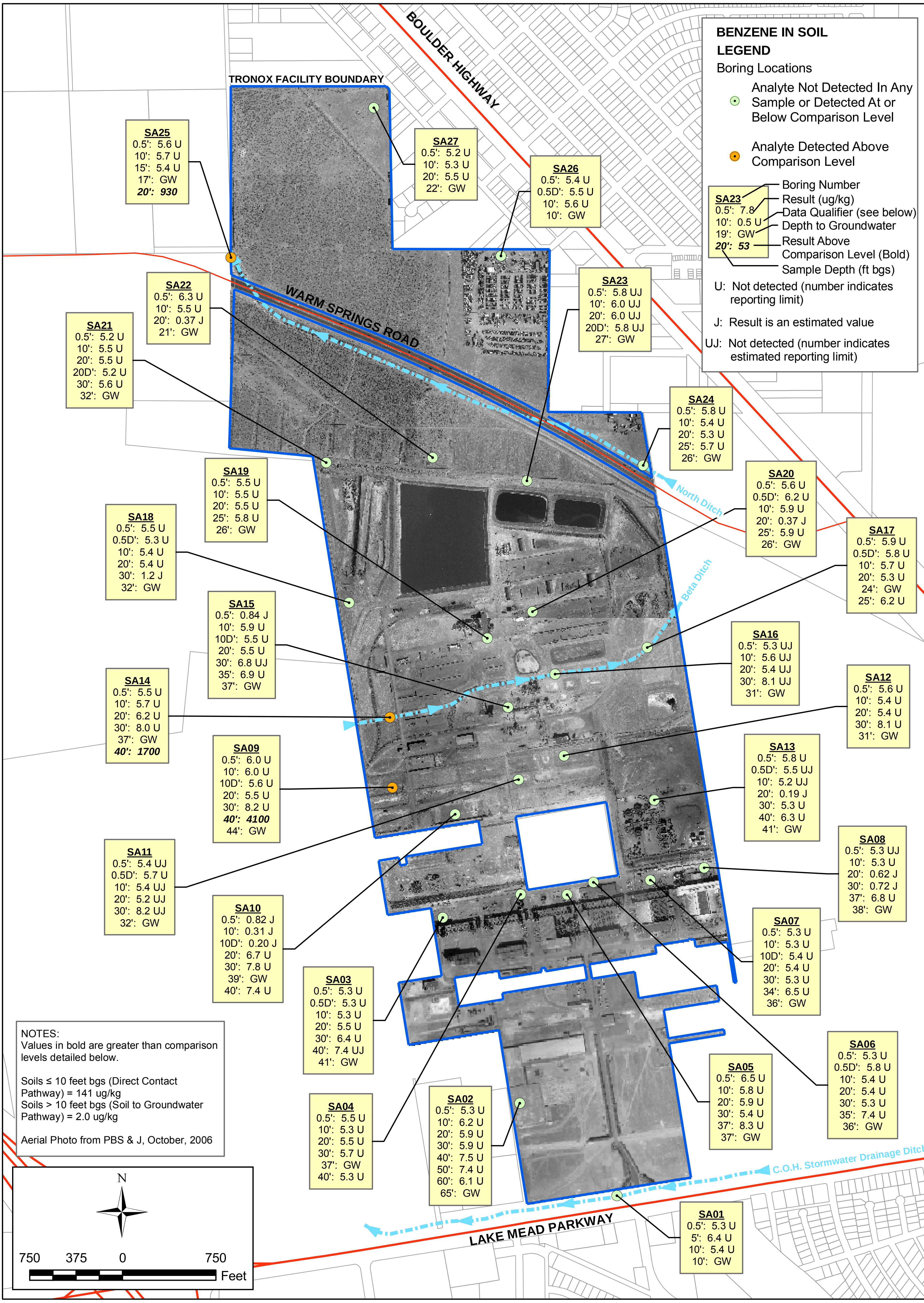

BENZENE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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FIGURE NUMBER: 5-22

SHEET NUMBER: X

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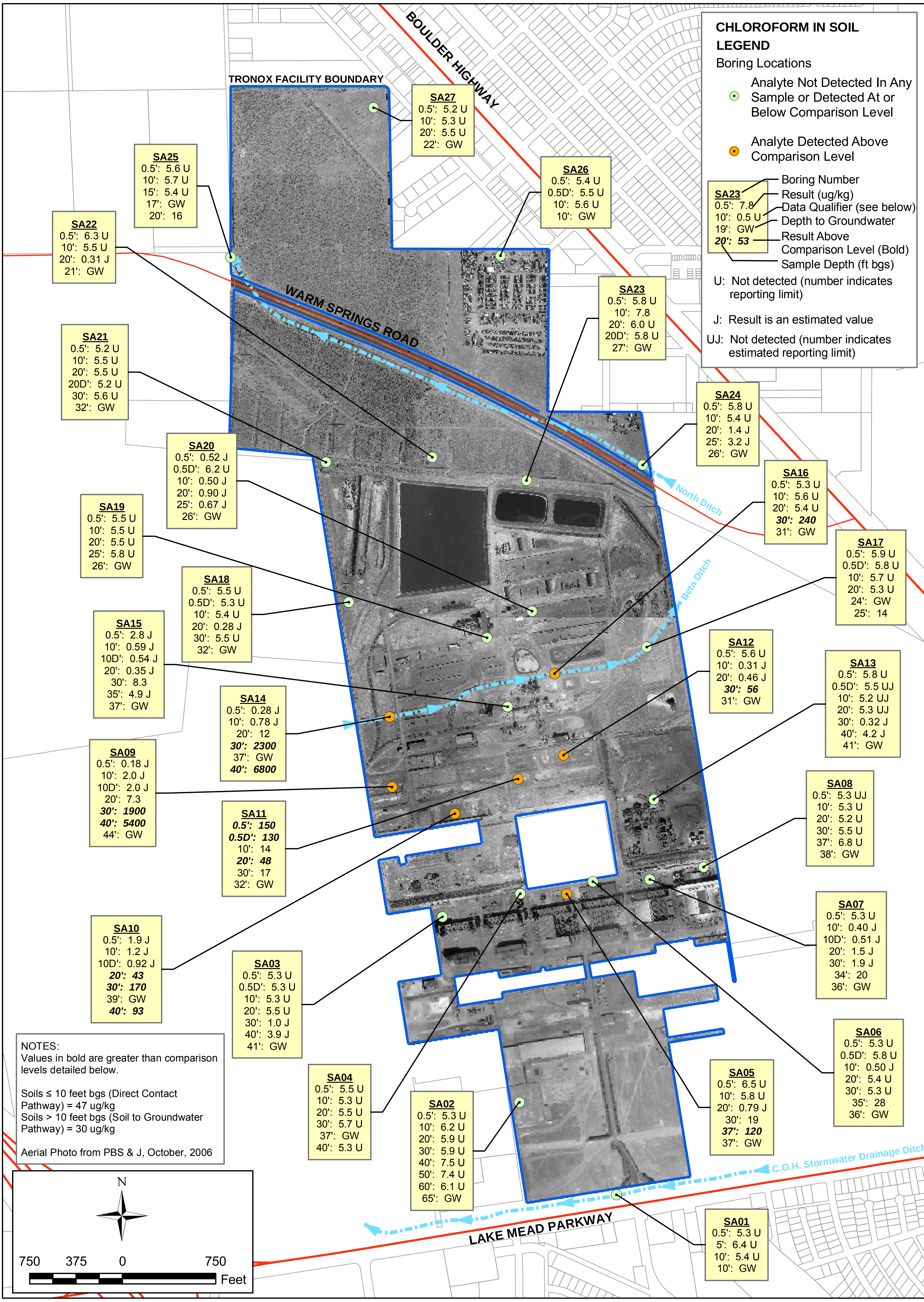

SHEET NUMBER: X

FIGURE NUMBER: 5-23

CHLOROFORM IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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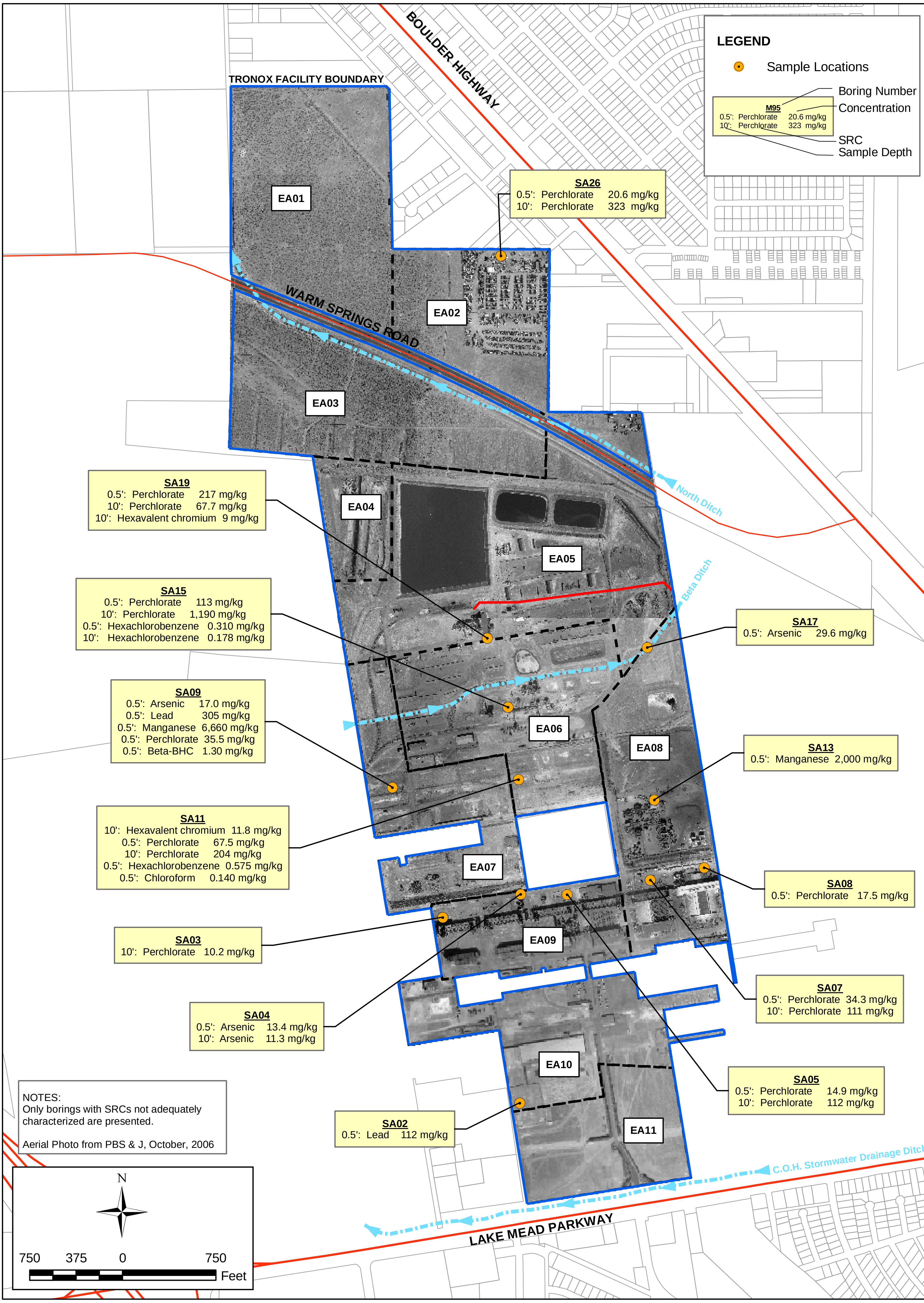

SHEET NUMBER: X

FIGURE NUMBER: 5-24

SUMMARY OF SRCs NOT ADEQUATELY CHARACTERIZED

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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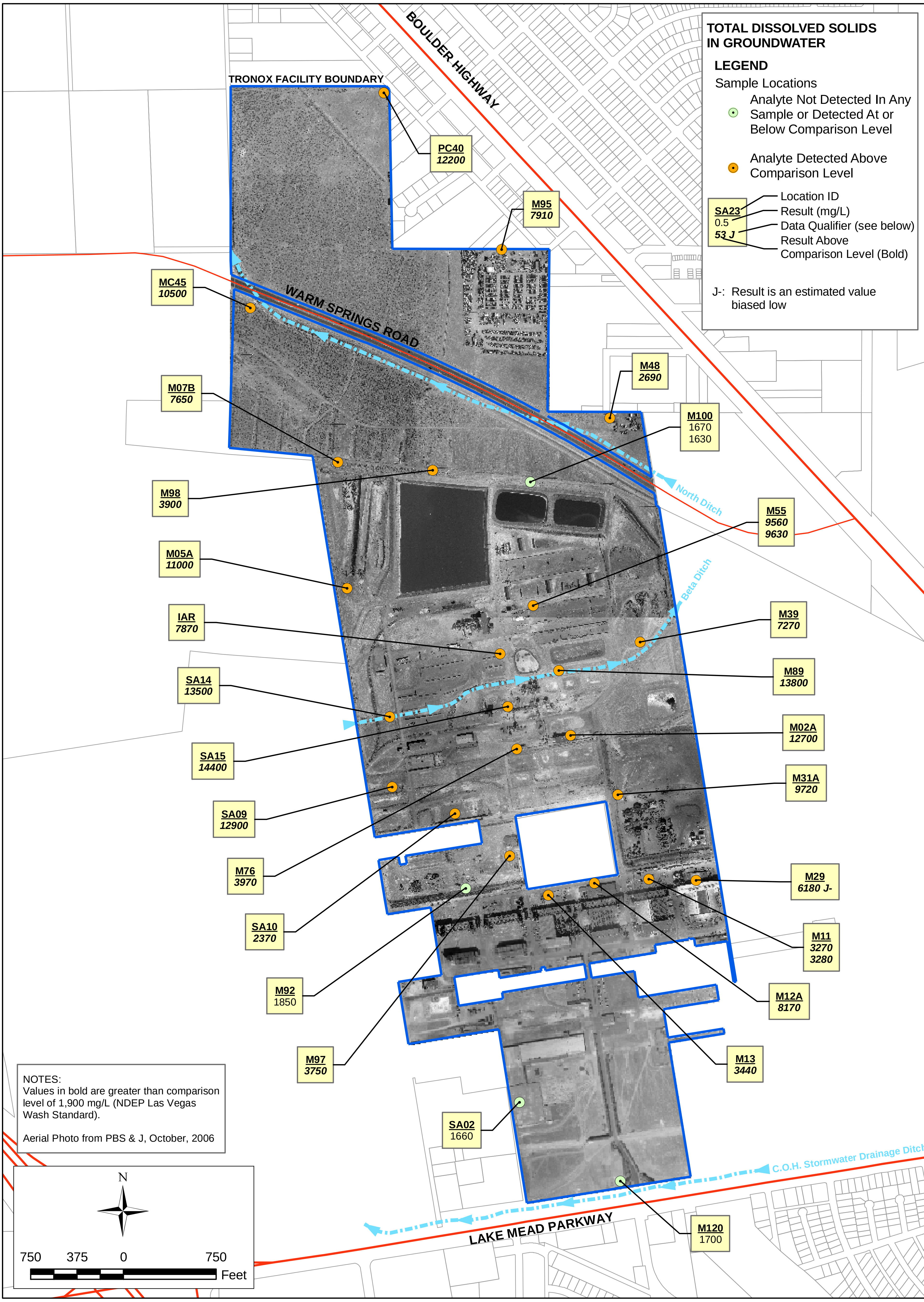

SHEET NUMBER:	X
FIGURE NUMBER:	5-25

TOTAL DISSOLVED SOLIDS IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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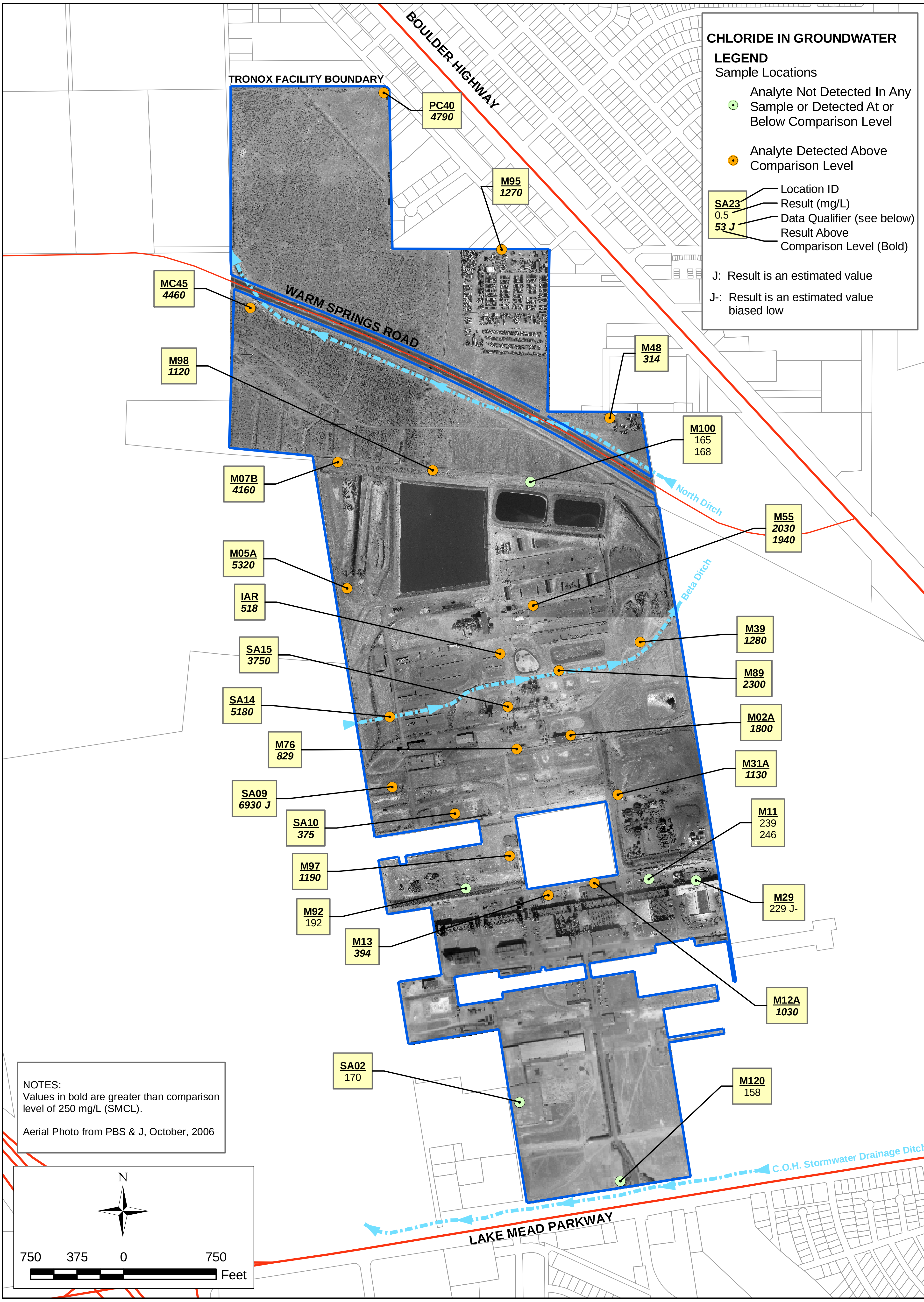

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SHEET NUMBER:

5-26

FIGURE NUMBER:

CHLORIDE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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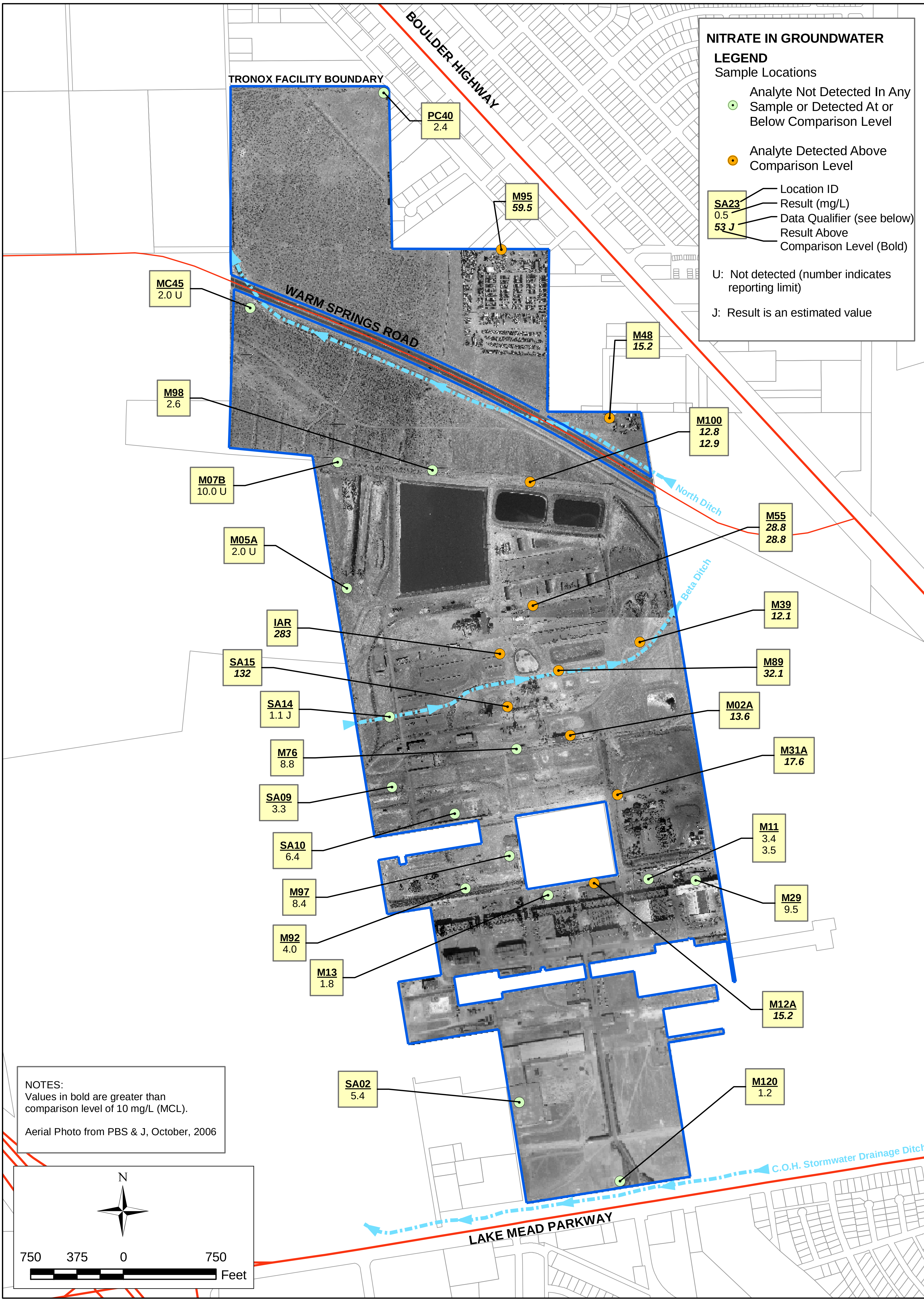

SHEET NUMBER:	X
FIGURE NUMBER:	5-27

NITRATE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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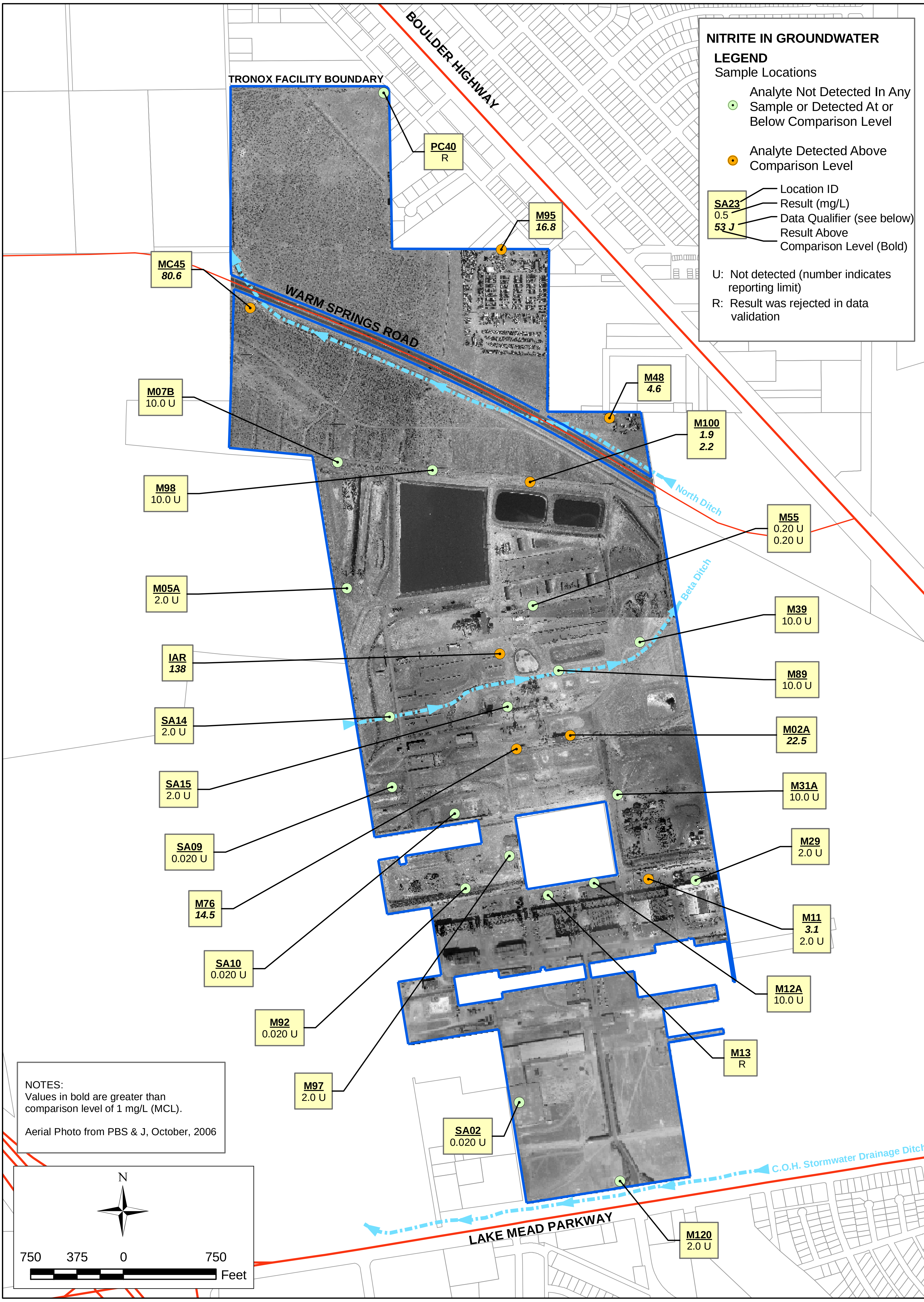

SHEET NUMBER: X

FIGURE NUMBER: 5-28

NITRITE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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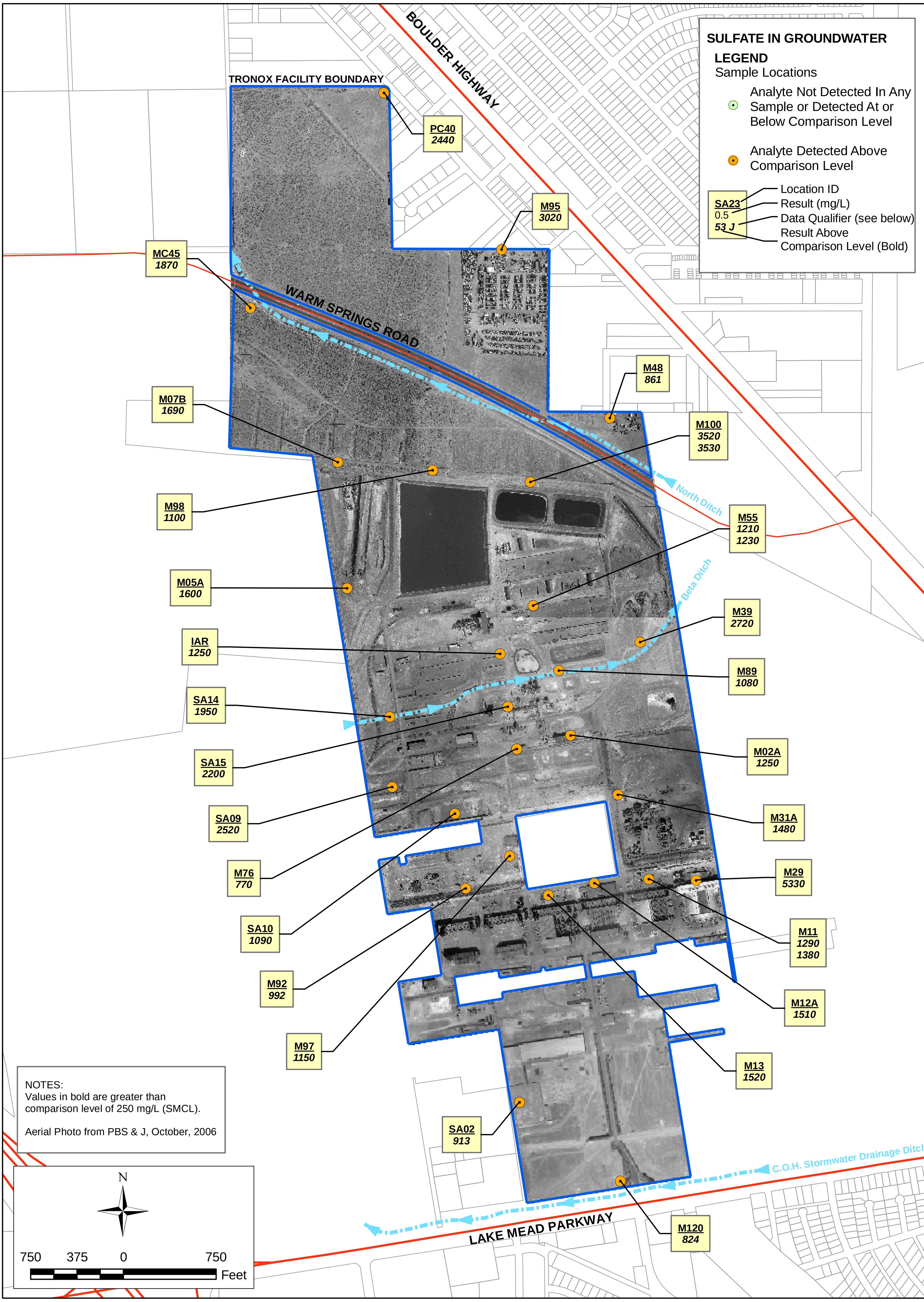

SHEET NUMBER:	X
FIGURE NUMBER:	5-29

SULFATE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
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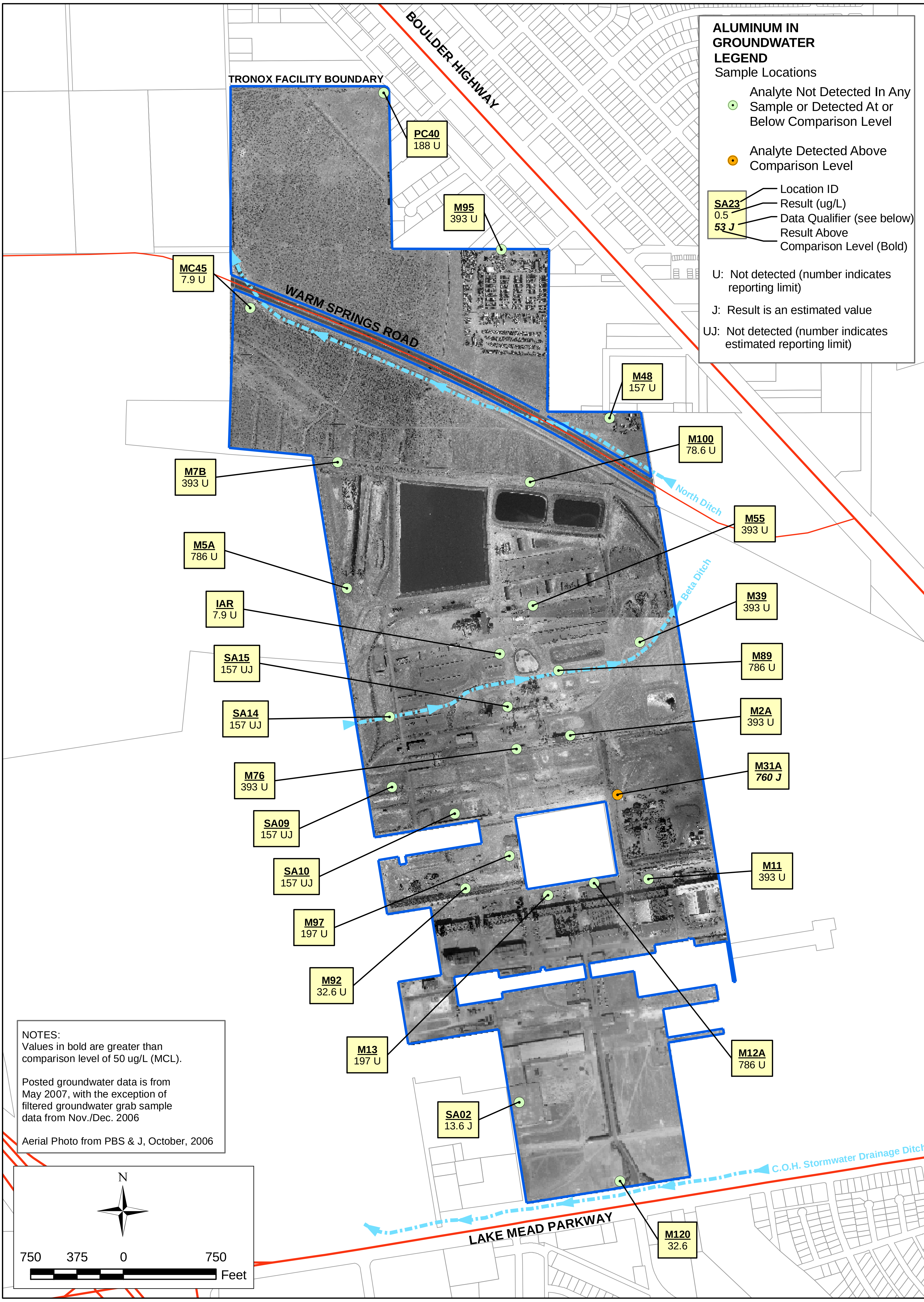

SHEET NUMBER: X

FIGURE NUMBER: 5-30

ALUMINUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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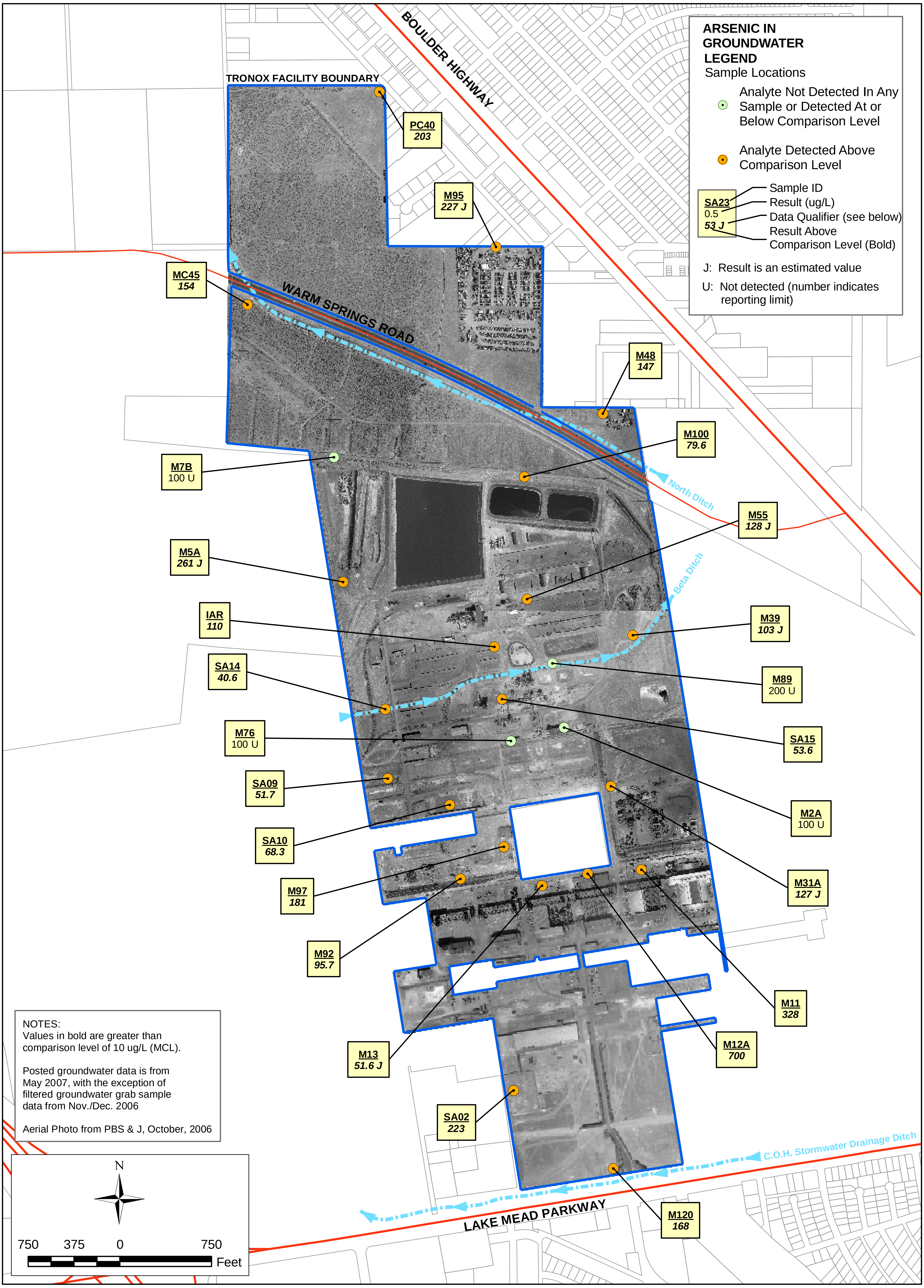

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SHEET NUMBER:

5-31

FIGURE NUMBER:

ARSENIC IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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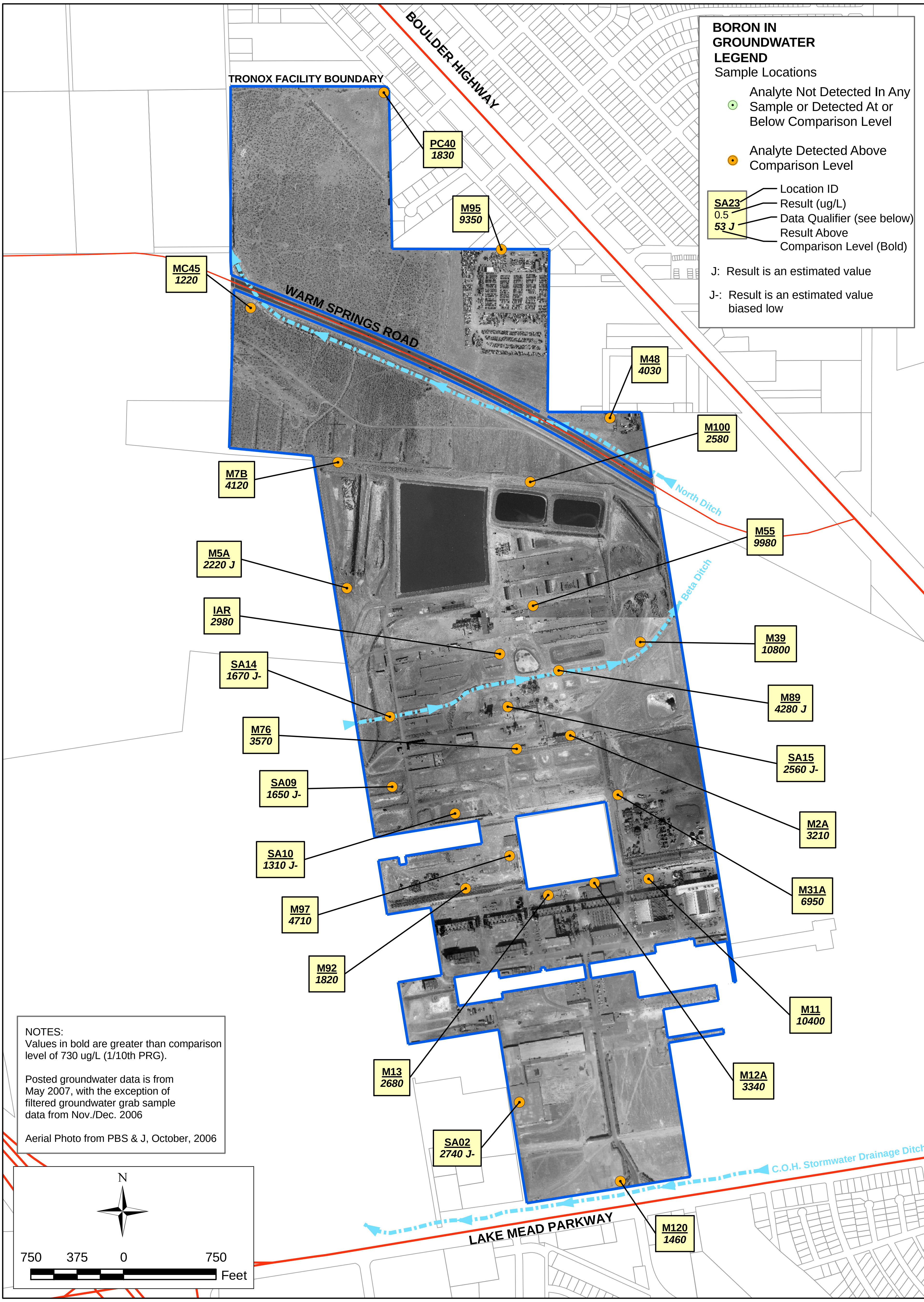

SHEET NUMBER: X	FIGURE NUMBER: 5-32	

BORON IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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D GERRY				

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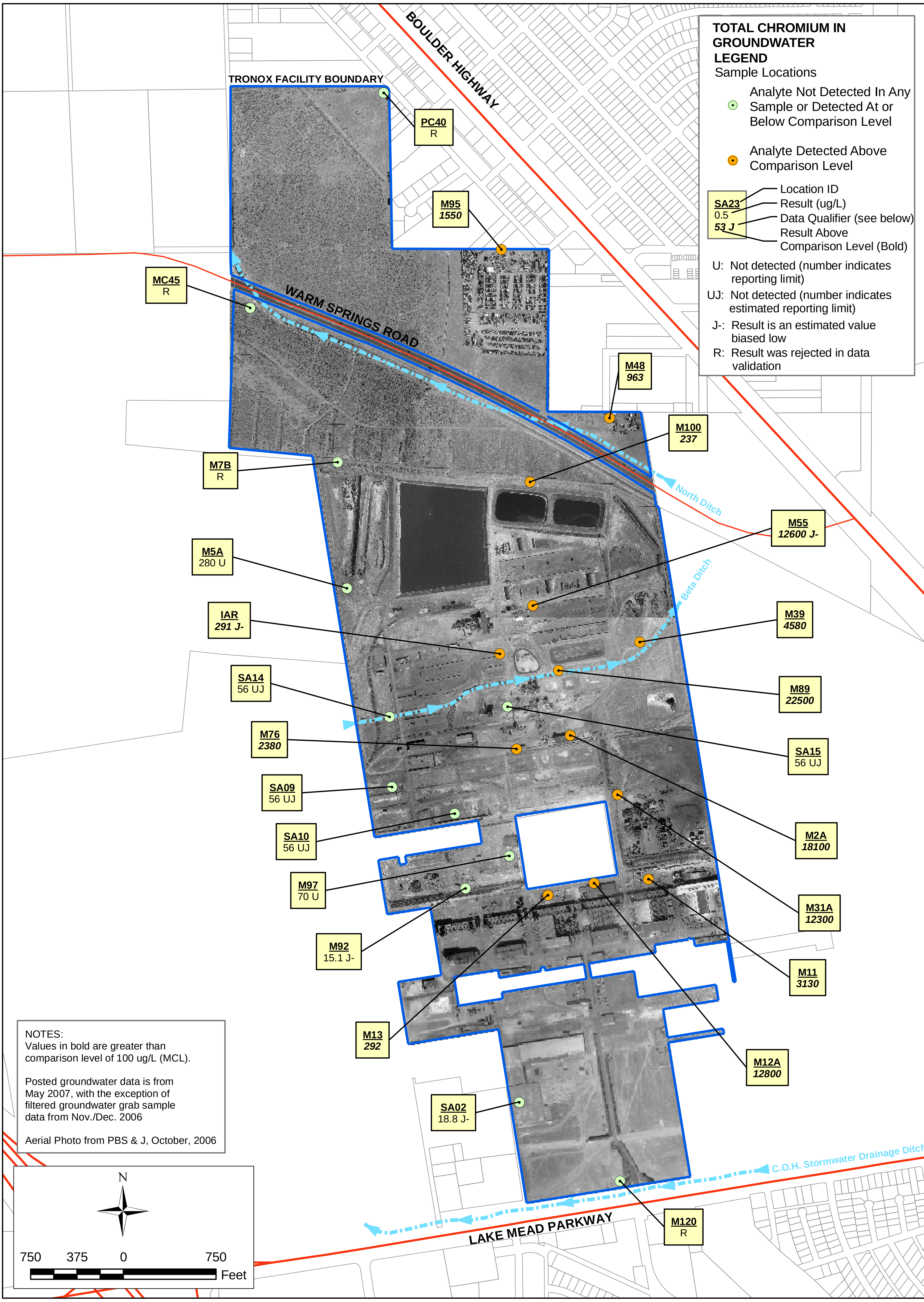

SHEET NUMBER: X

FIGURE NUMBER: 5-33

TOTAL CHROMIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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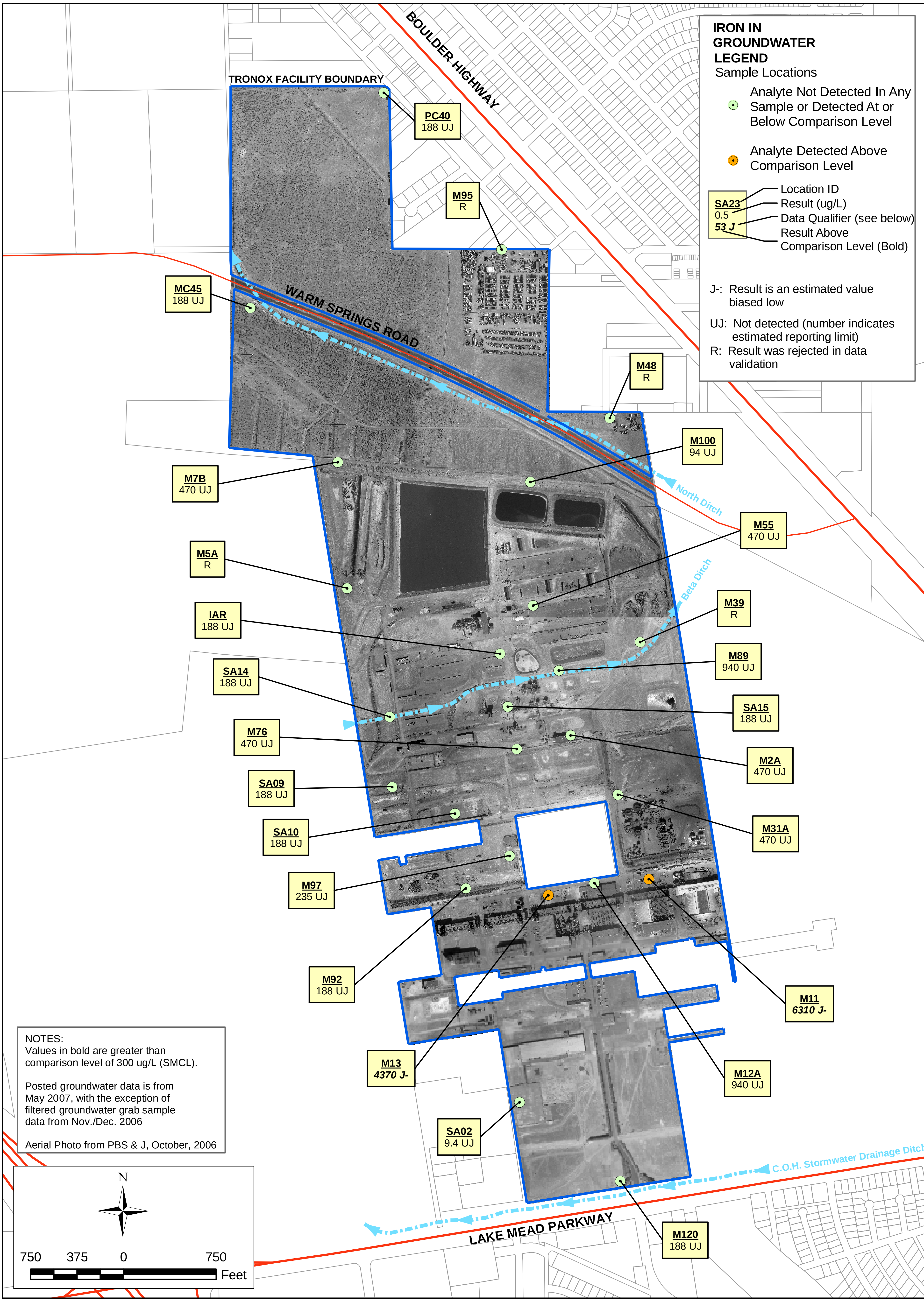

SHEET NUMBER: X

FIGURE NUMBER: 5-34

IRON IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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B HO				
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D GERRY				

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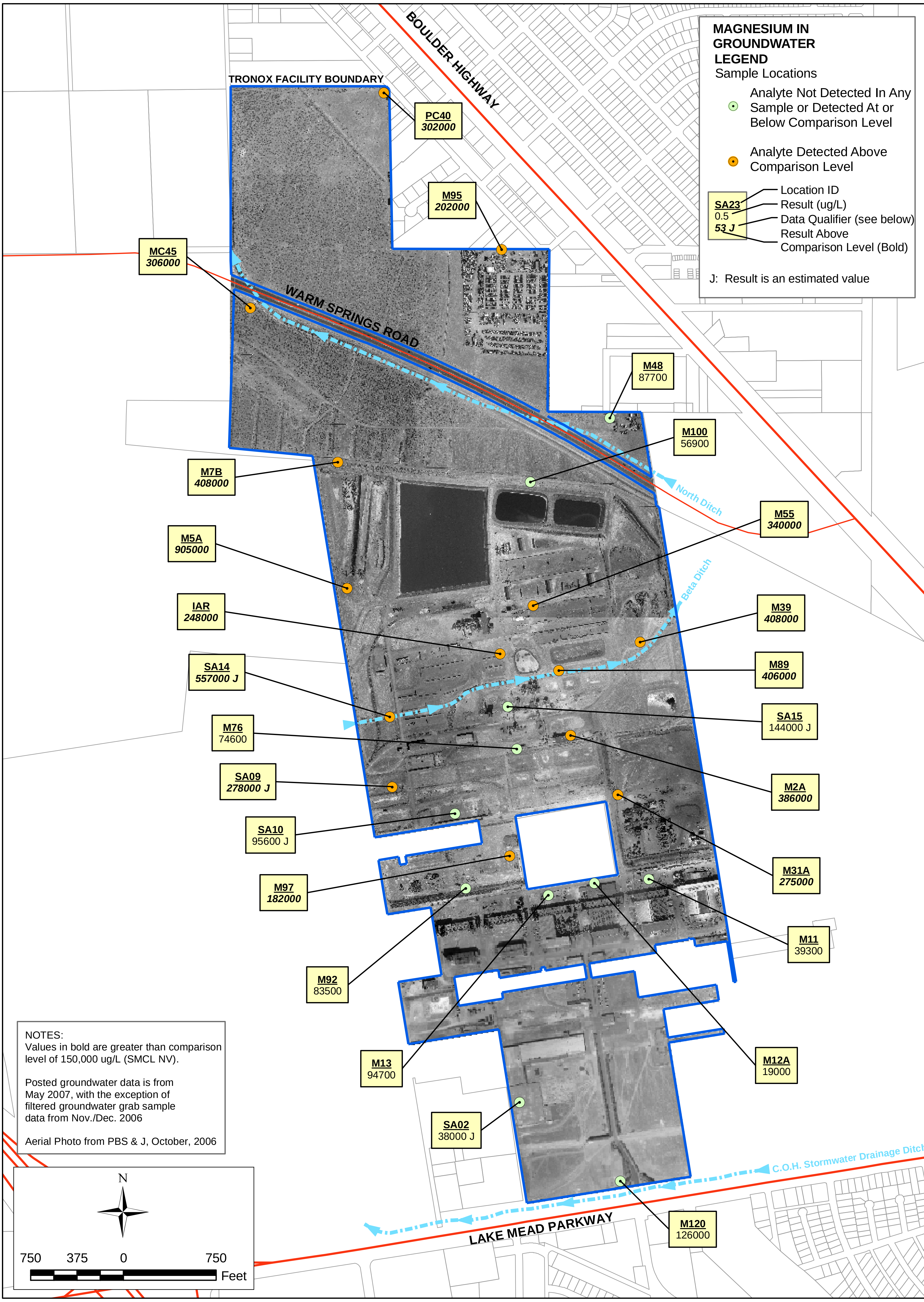

X

SHEET NUMBER:

5-35

FIGURE NUMBER:

MAGNESIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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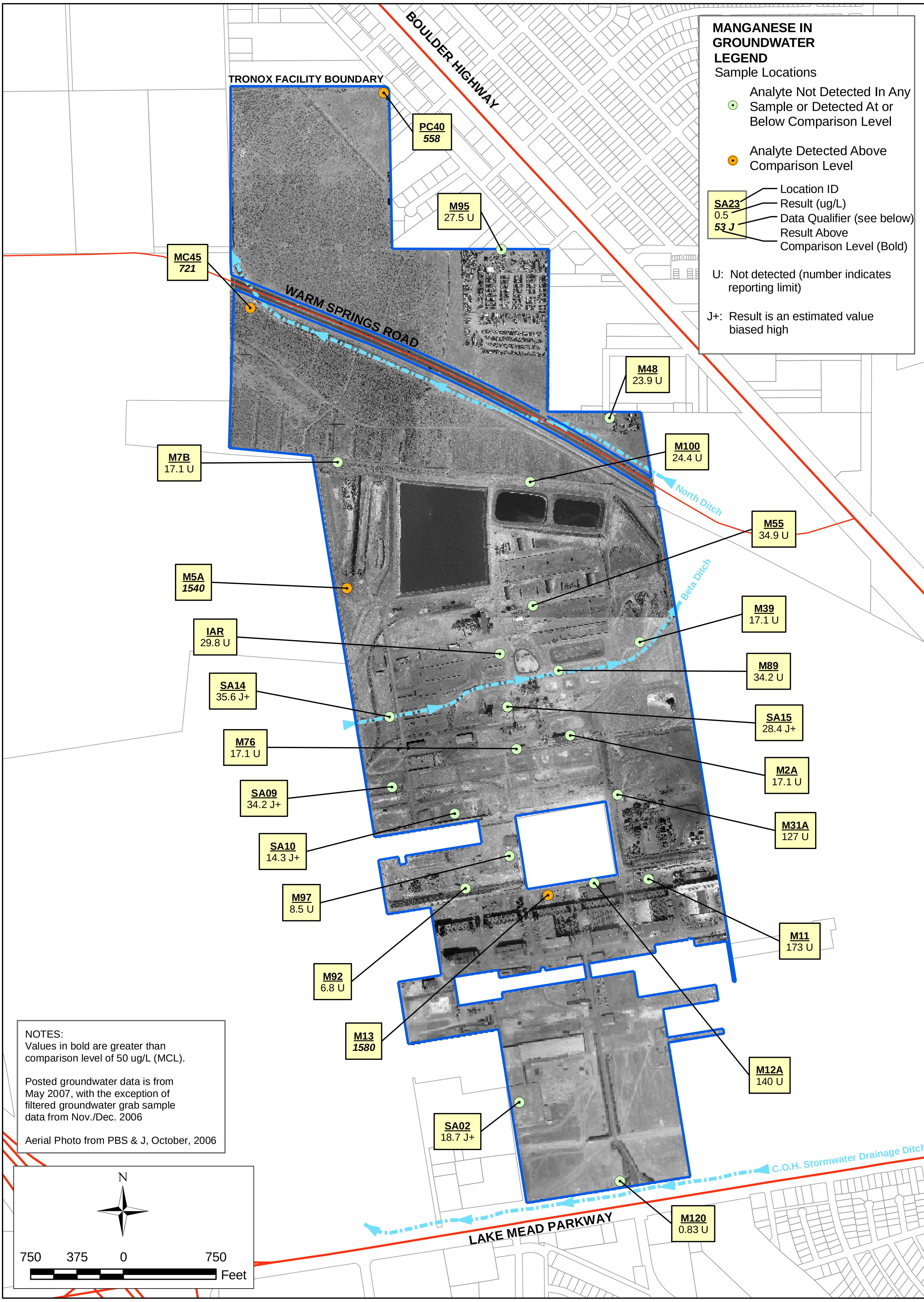

X SHEET NUMBER:

5-36 FIGURE NUMBER:

MANGANESE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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D GERRY				

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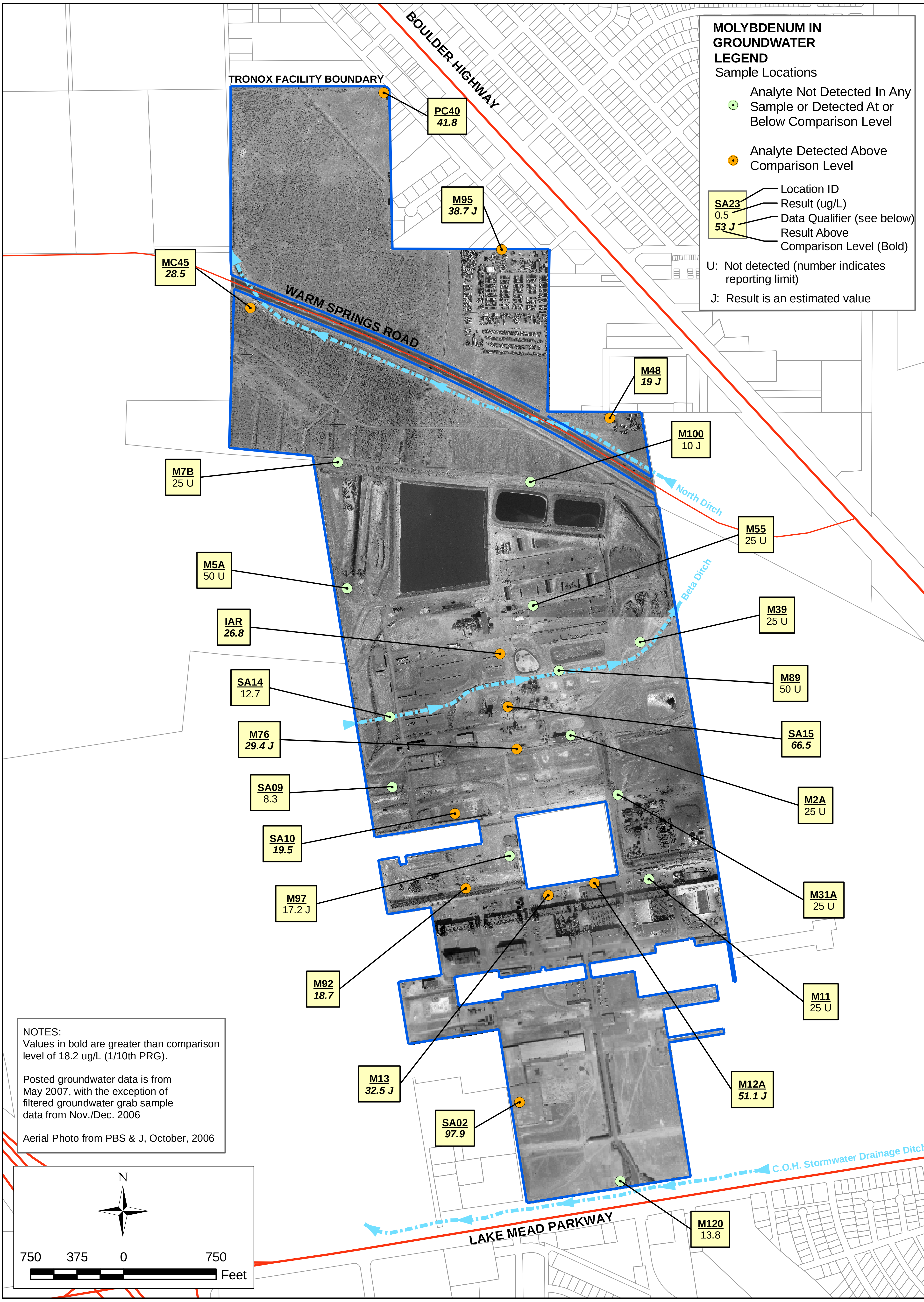

MOLYBDENUM IN GROUNDWATER LEGEND

Sample Locations

- Analyte Not Detected In Any Sample or Detected At or Below Comparison Level
- Analyte Detected Above Comparison Level

SA23 – Location ID
0.5 – Result (ug/L)
53 J – Data Qualifier (see below); Result Above Comparison Level (Bold)

U: Not detected (number indicates reporting limit)

J: Result is an estimated value

NOTES:
Values in bold are greater than comparison level of 18.2 ug/L (1/10th PRG).

Posted groundwater data is from May 2007, with the exception of filtered groundwater grab sample data from Nov./Dec. 2006

Aerial Photo from PBS & J, October, 2006

SHEET NUMBER:	FIGURE NUMBER:
X	5-37

MOLYBDENUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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APPROVED BY:				
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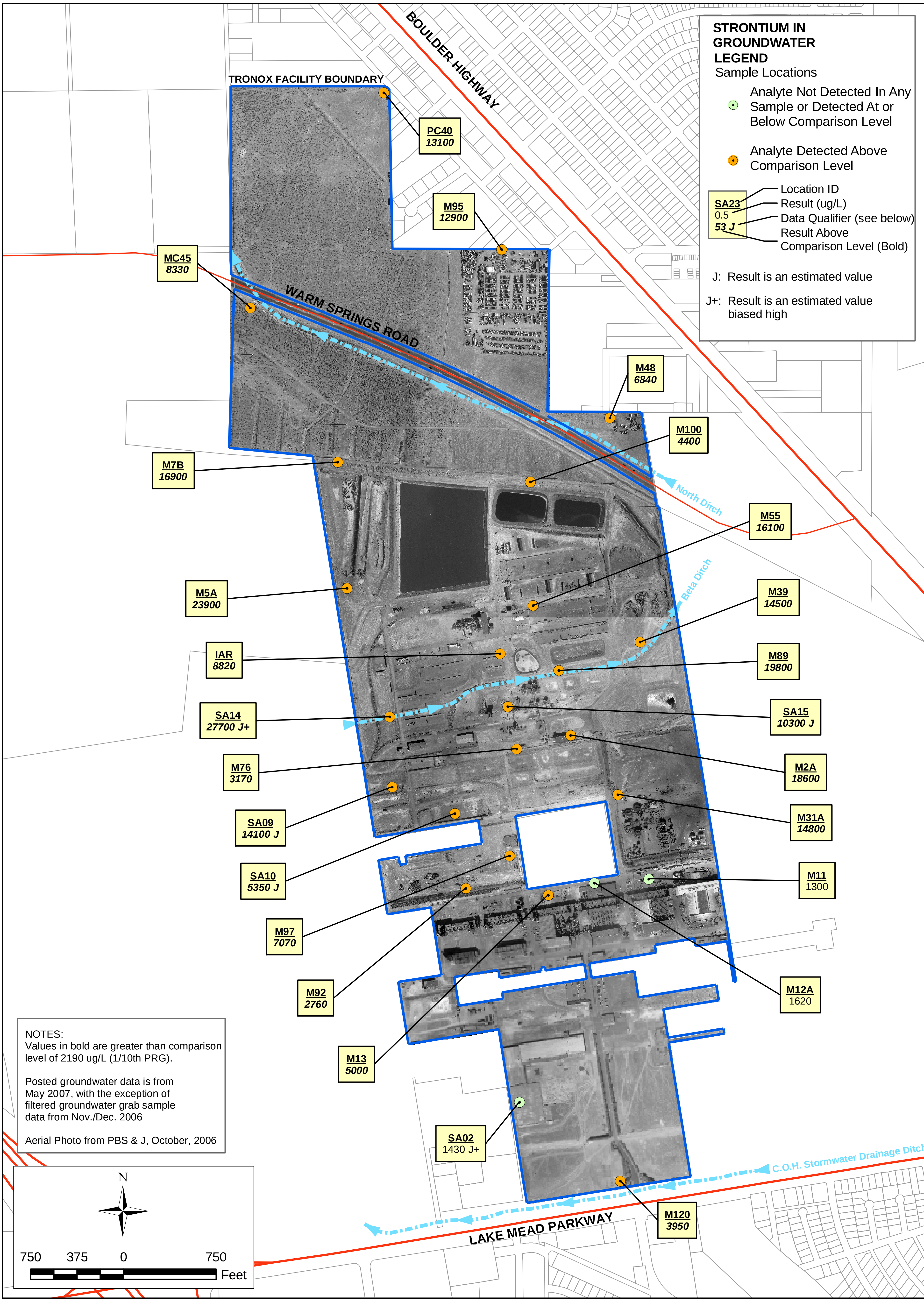

X

SHEET NUMBER:

5-38

FIGURE NUMBER:

STRONTIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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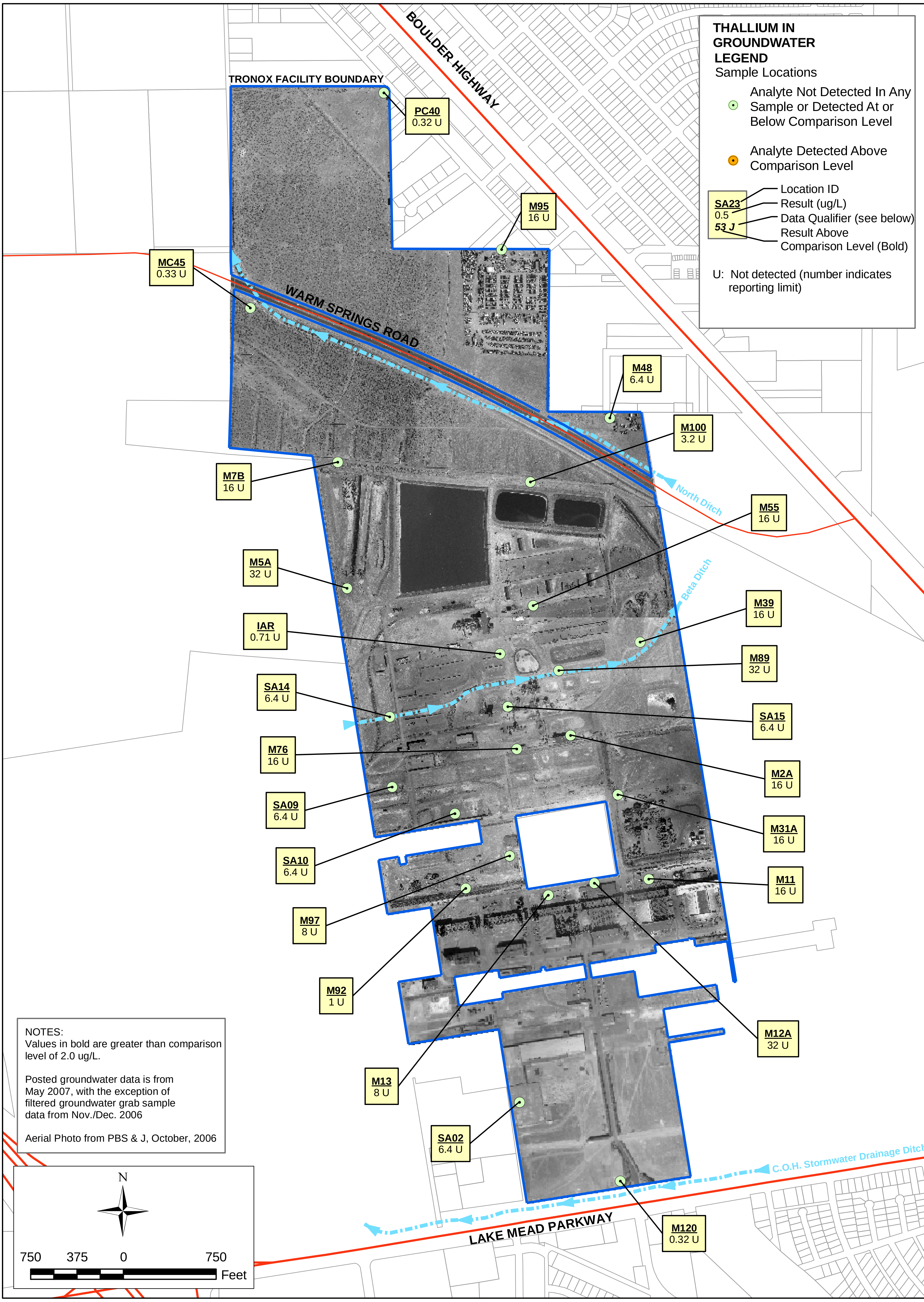

X

SHEET NUMBER:

5-39

FIGURE NUMBER:

THALLIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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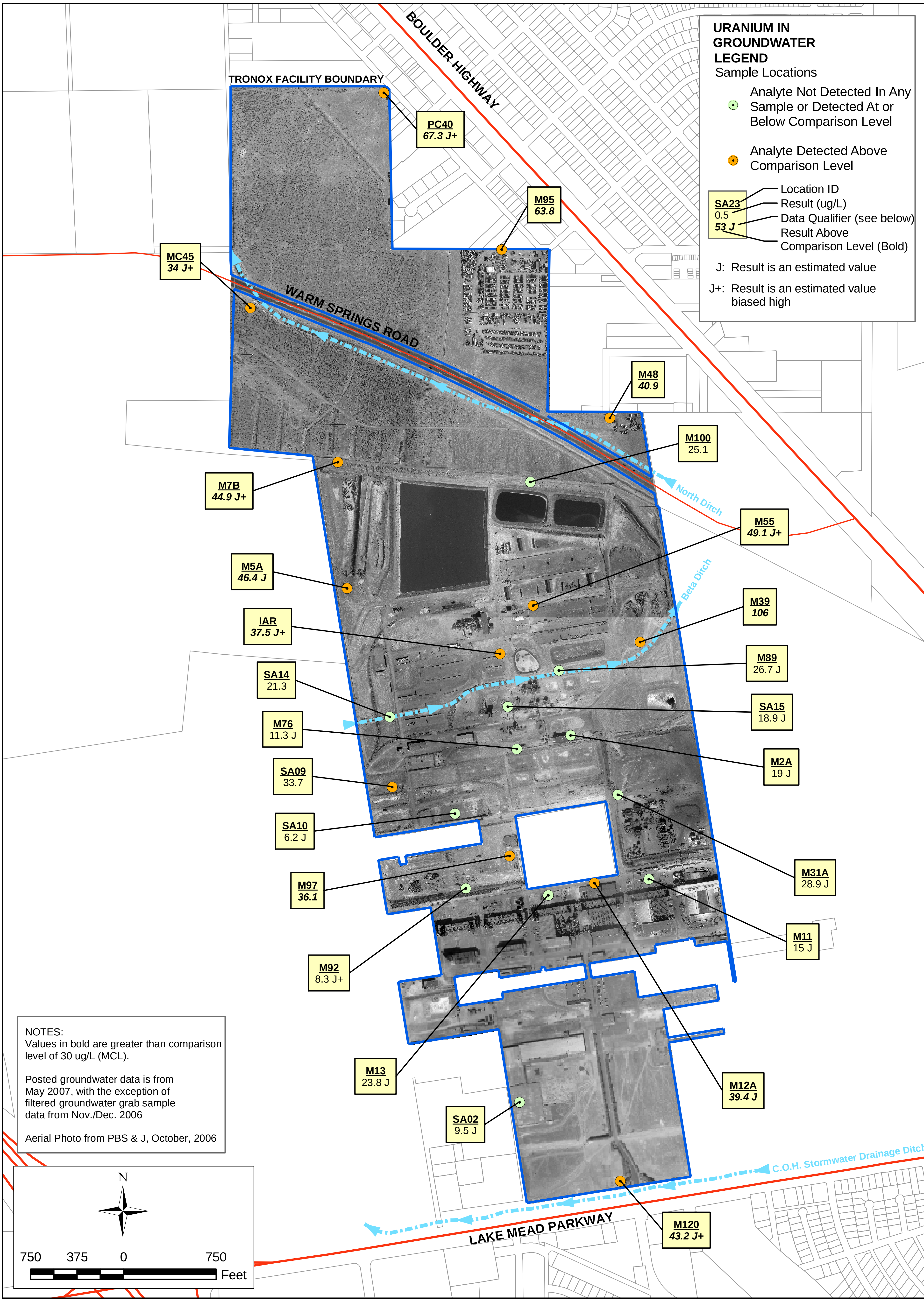

SHEET NUMBER:	FIGURE NUMBER:
X	5-40

URANIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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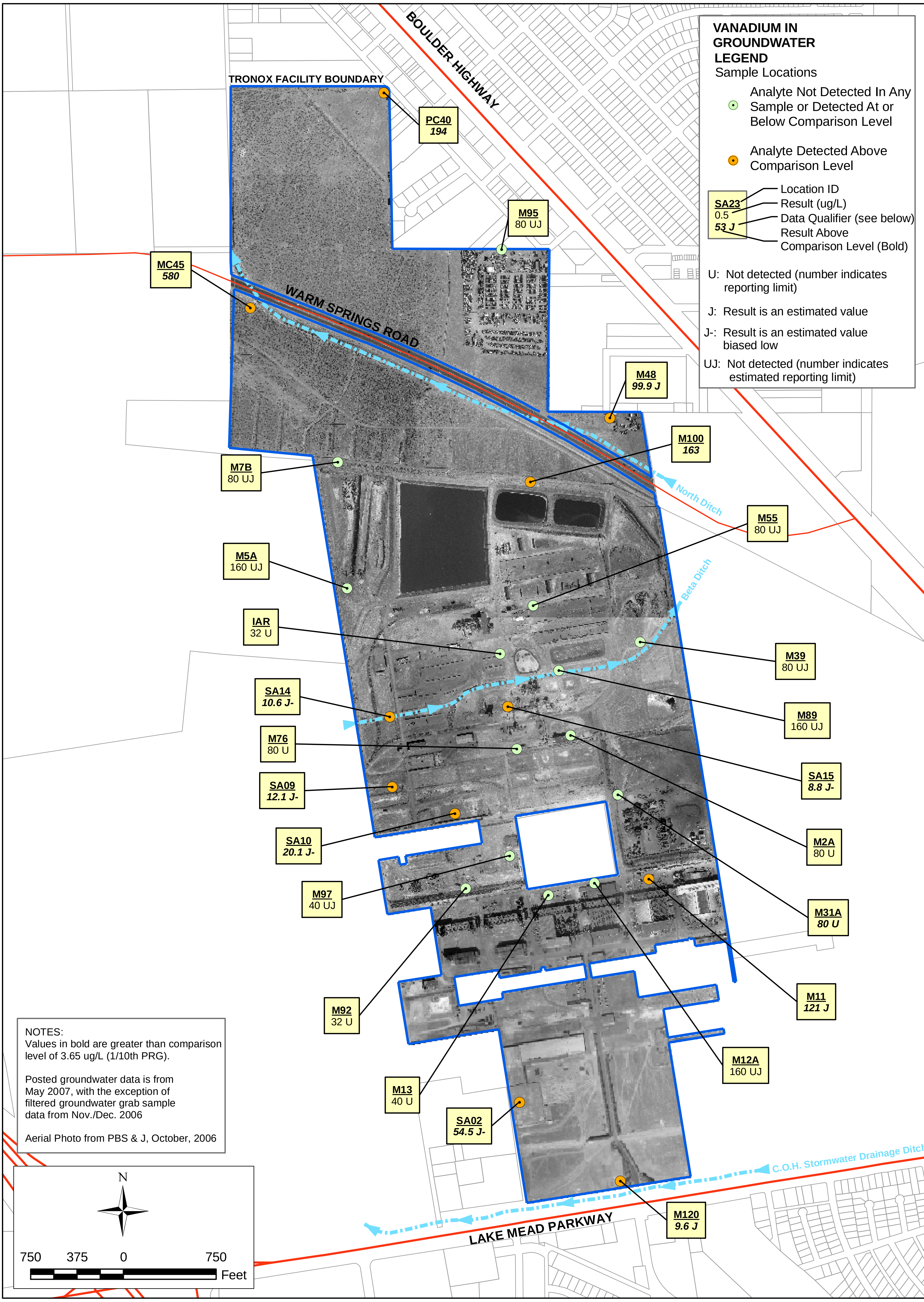

SHEET NUMBER: X

FIGURE NUMBER: 5-41

VANADIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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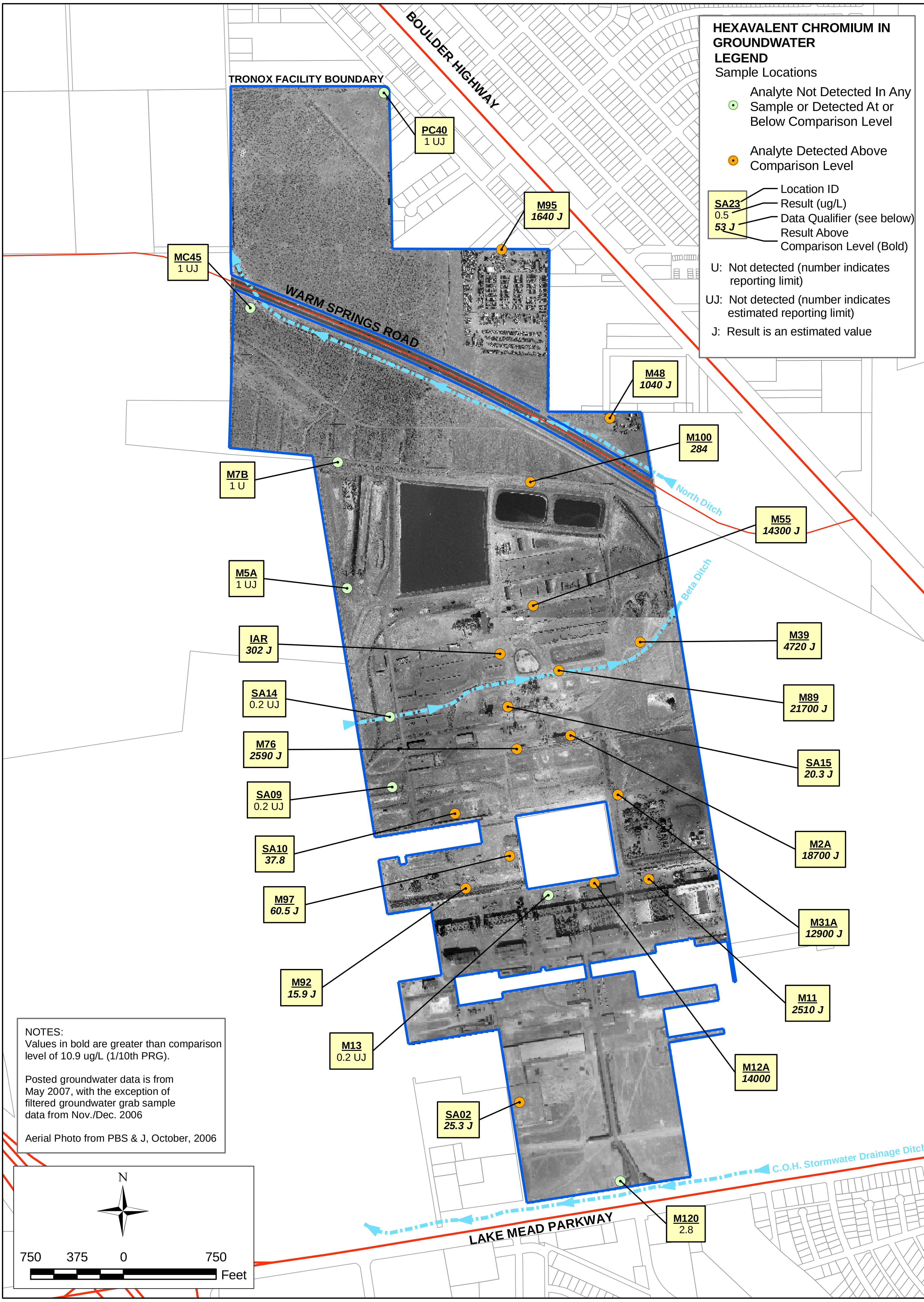

SHEET NUMBER: X

FIGURE NUMBER: 5-42

HEXAVALENT CHROMIUM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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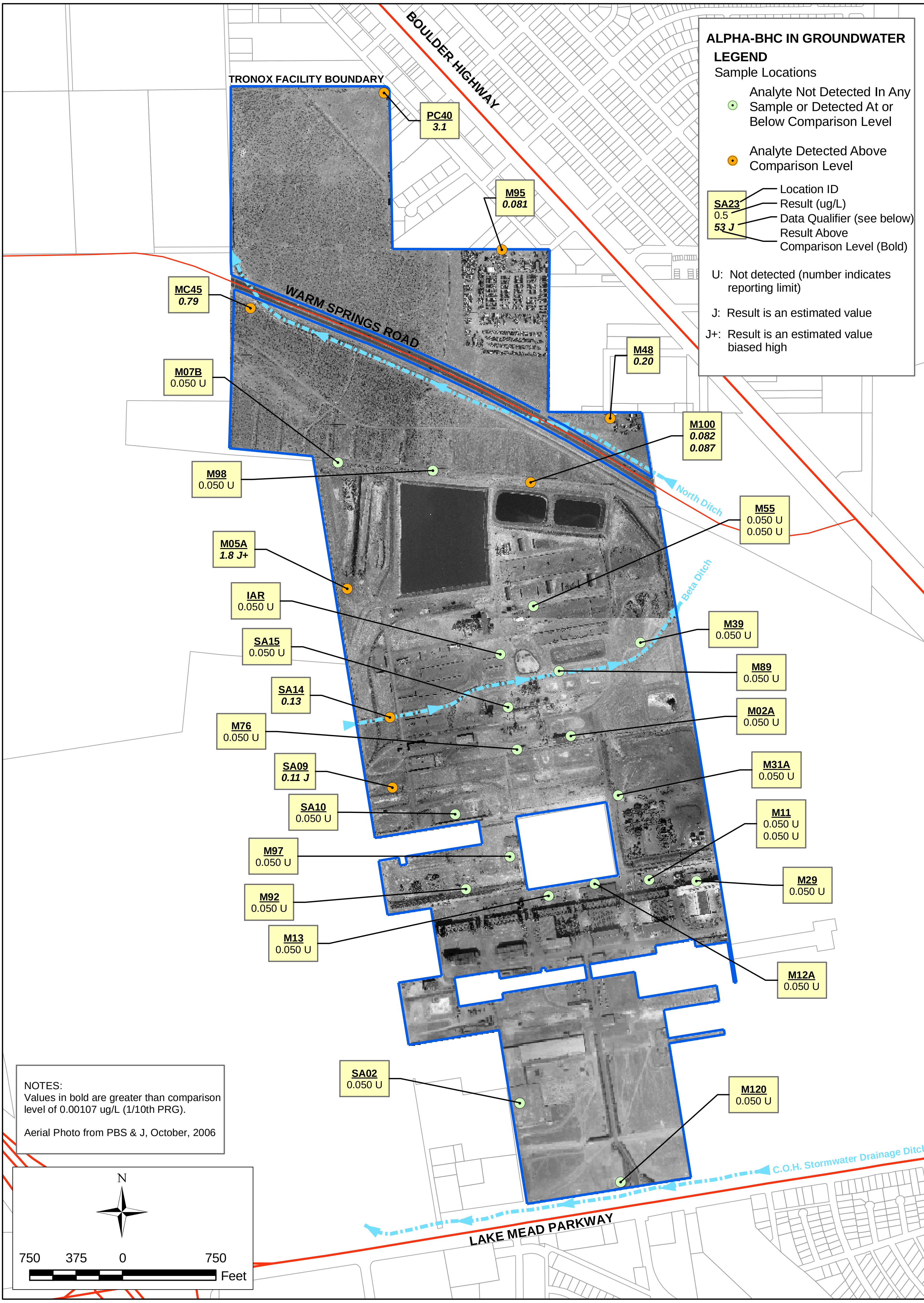

SHEET NUMBER:	FIGURE NUMBER:
X	5-43

ALPHA-BHC IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	6/15/2007	04020-023-402

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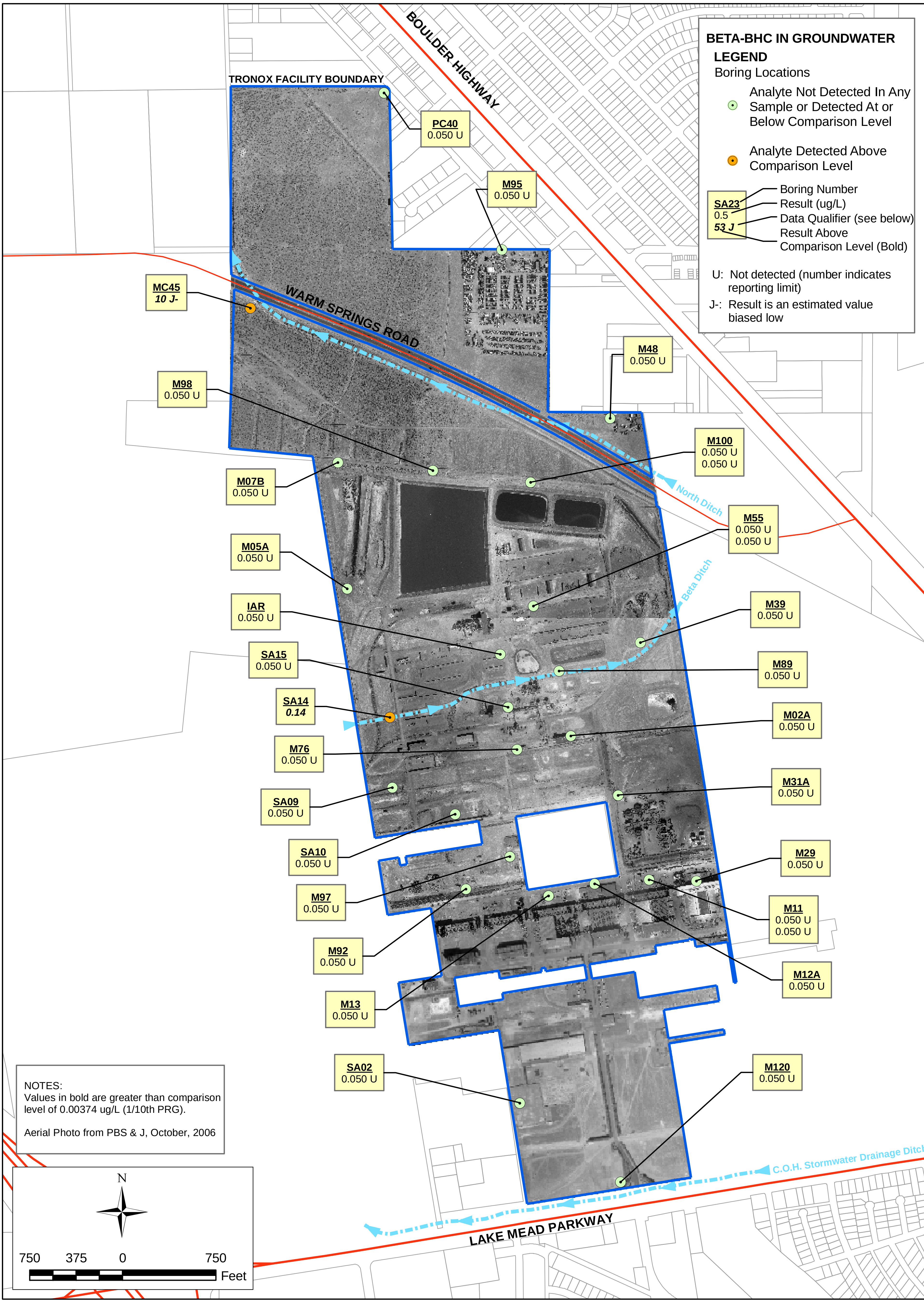

SHEET NUMBER:	FIGURE NUMBER:
X	5-44

BETA-BHC IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	6/15/2007	04020-023-402

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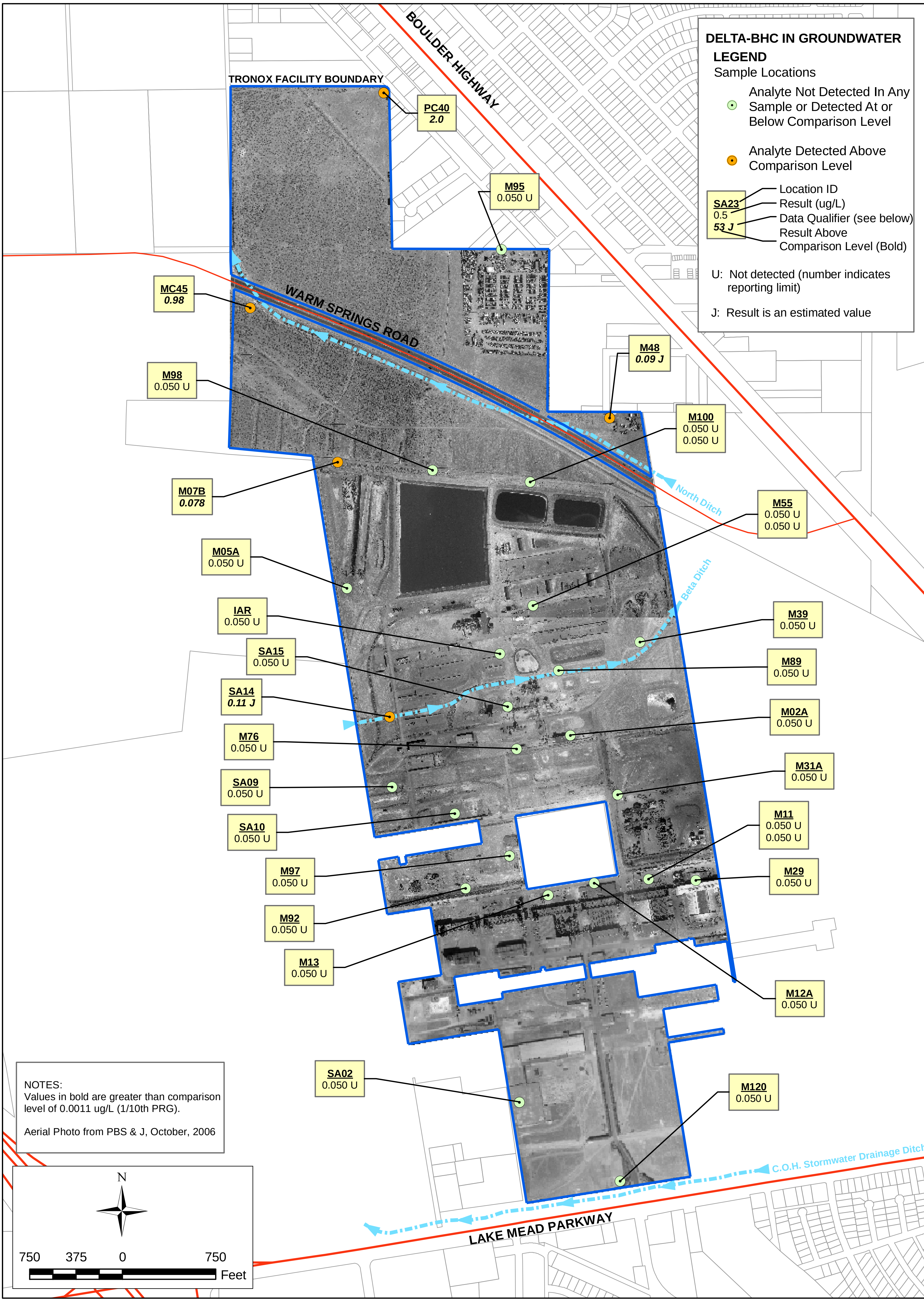

SHEET NUMBER: X	FIGURE NUMBER: 5-45	

DELTA-BHC IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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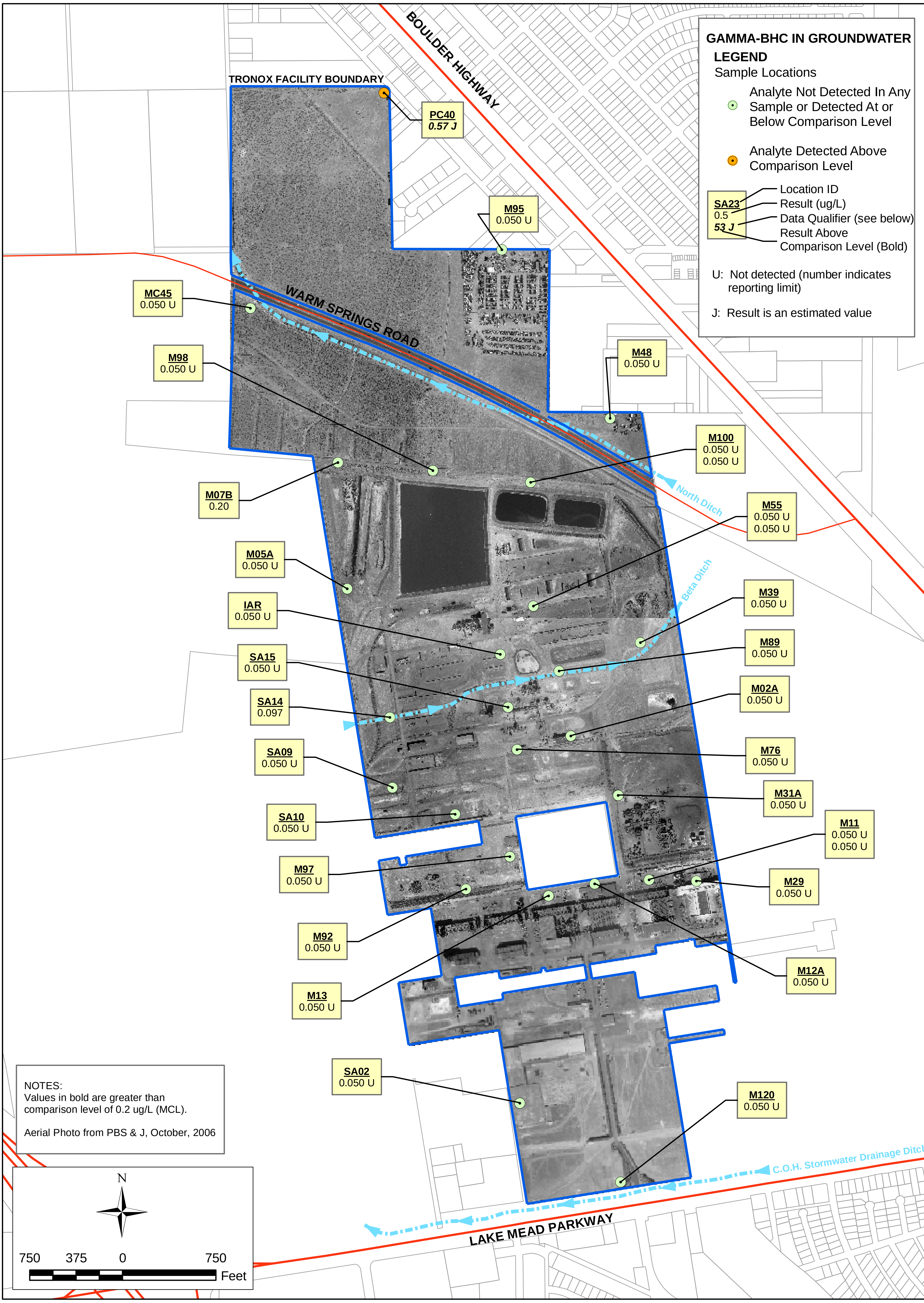

SHEET NUMBER:	X
FIGURE NUMBER:	5-46

GAMMA-BHC IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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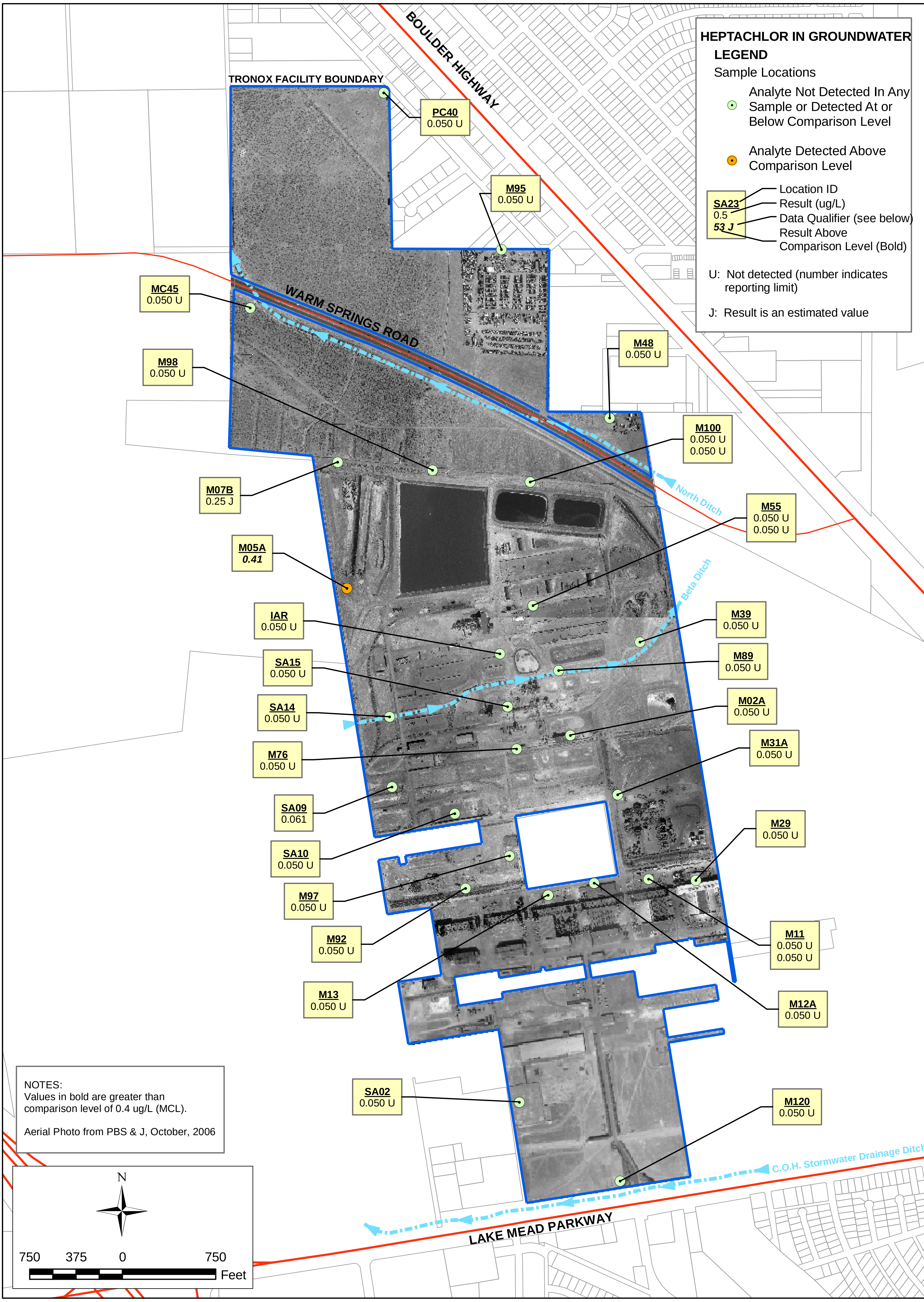

X

SHEET NUMBER:

5-47

FIGURE NUMBER:

HEPTACHLOR IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	6/15/2007	04020-023-402

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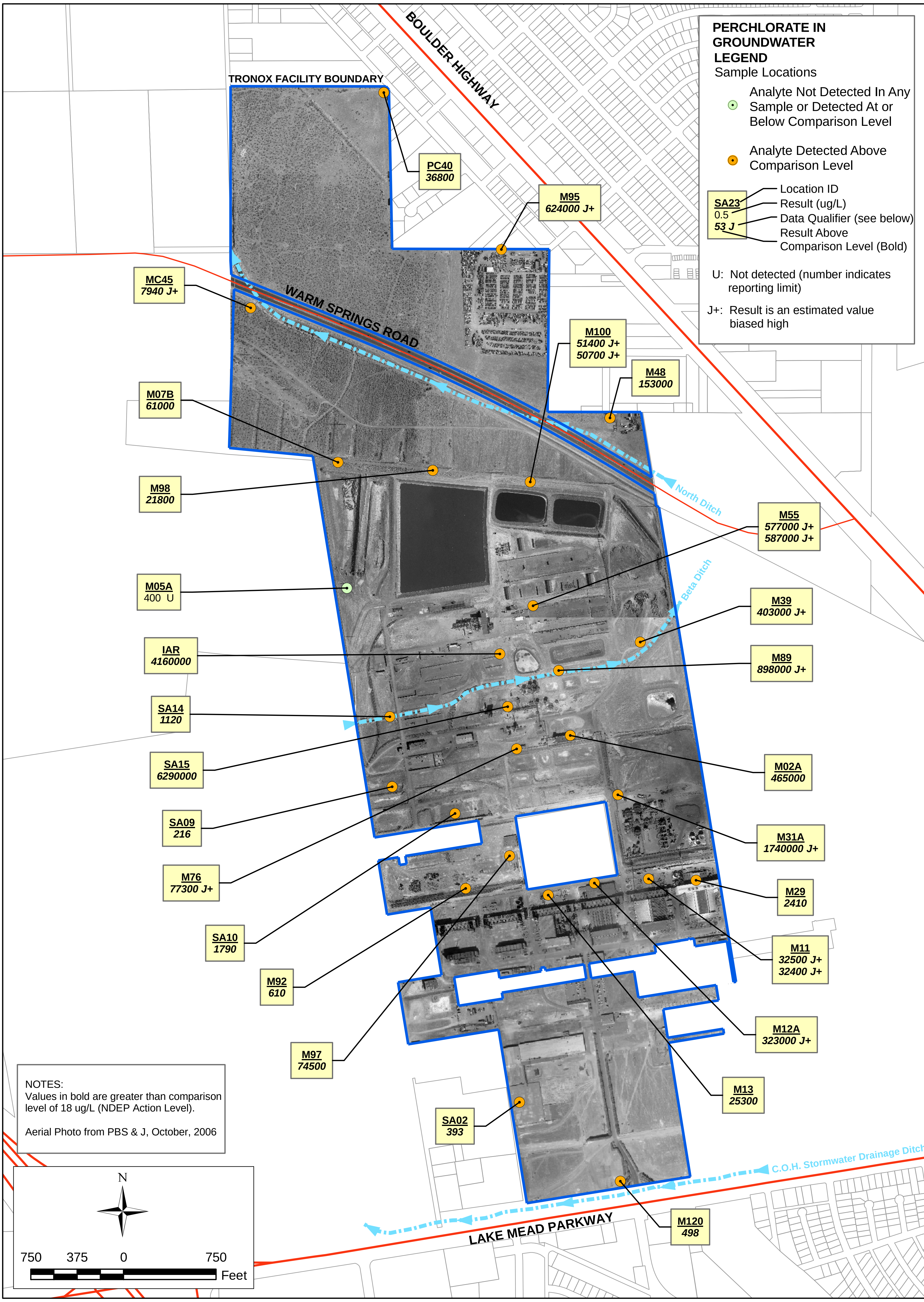

SHEET NUMBER: X	FIGURE NUMBER: 5-48	

PERCHLORATE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	8/23/2007	04020-023-402

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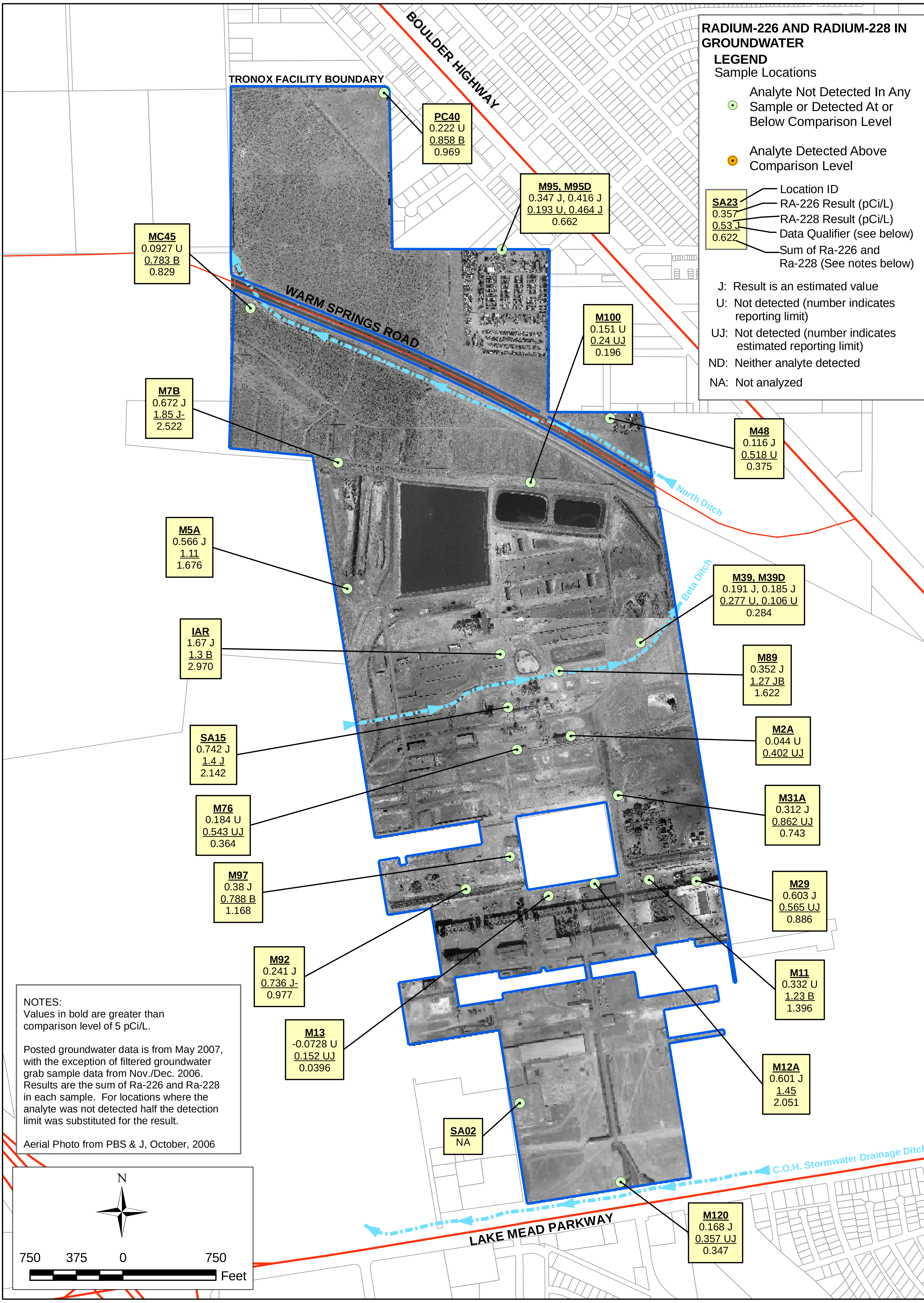

NOTES:
Values in bold are greater than comparison level of 5 pCi/L.

Posted groundwater data is from May 2007, with the exception of filtered groundwater grab sample data from Nov./Dec. 2006. Results are the sum of Ra-226 and Ra-228 in each sample. For locations where the analyte was not detected half the detection limit was substituted for the result.

Aerial Photo from PBS & J, October, 2006

SHEET NUMBER: X

FIGURE NUMBER: 5-49

RADIUM-226 AND RADIUM-228 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	9/20/2007	04020-023-402

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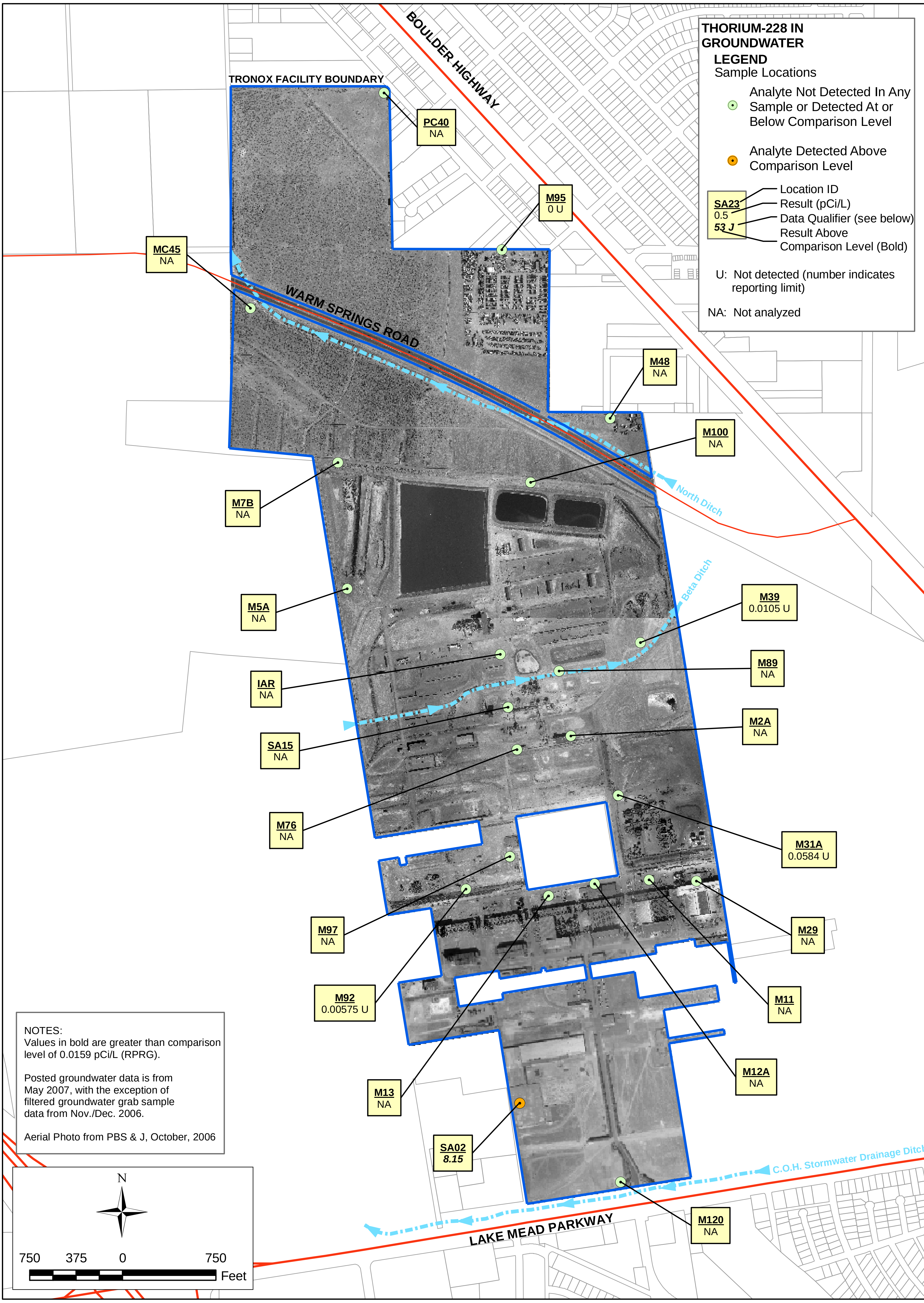

SHEET NUMBER:	FIGURE NUMBER:
X	5-50

THORIUM-228 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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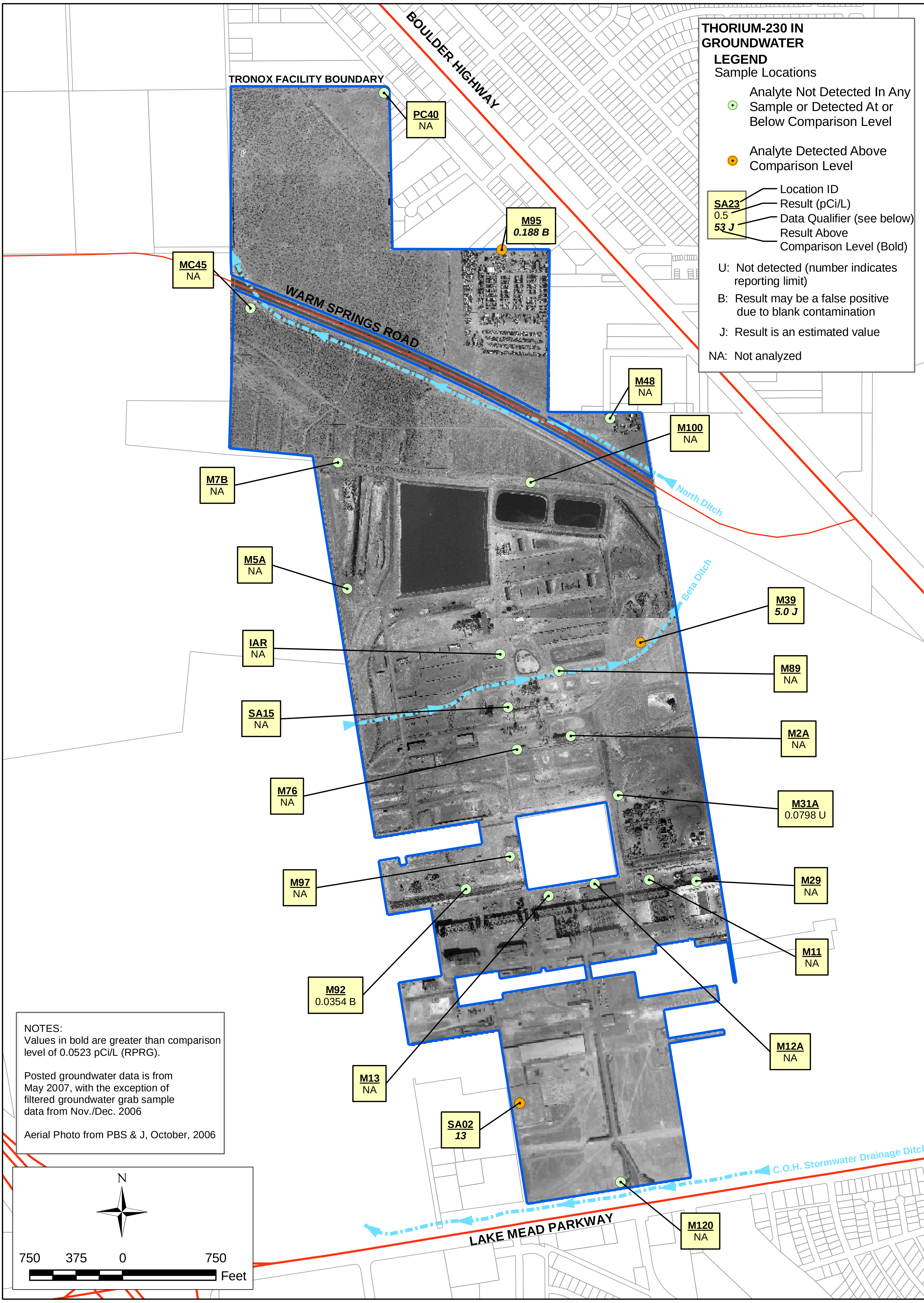

X
SHEET NUMBER:
5-51
FIGURE NUMBER:

THORIUM-230 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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B HO				
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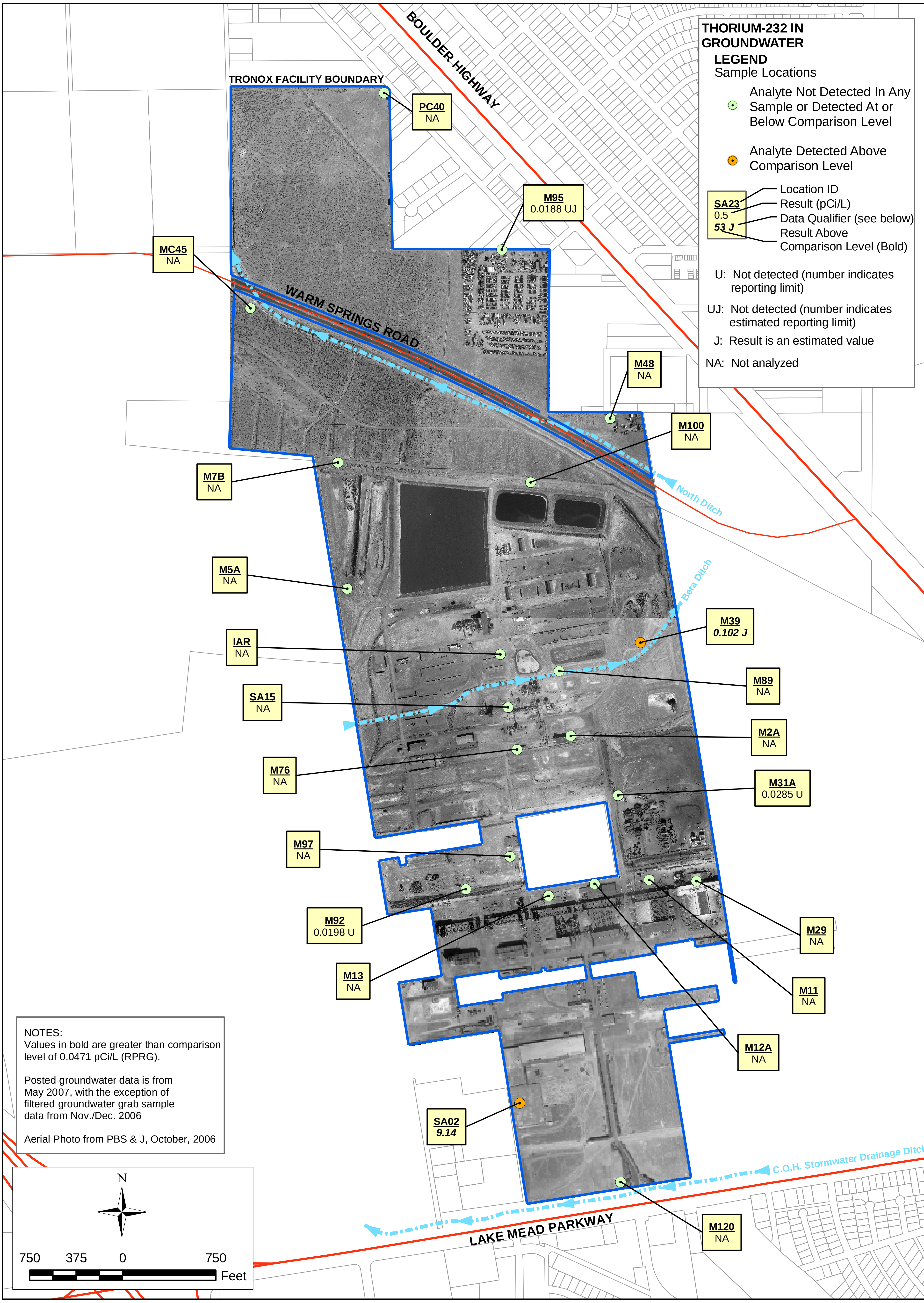

X

SHEET NUMBER:

5-52

FIGURE NUMBER:

THORIUM-232 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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CHECKED BY:				
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APPROVED BY:				
D GERRY				

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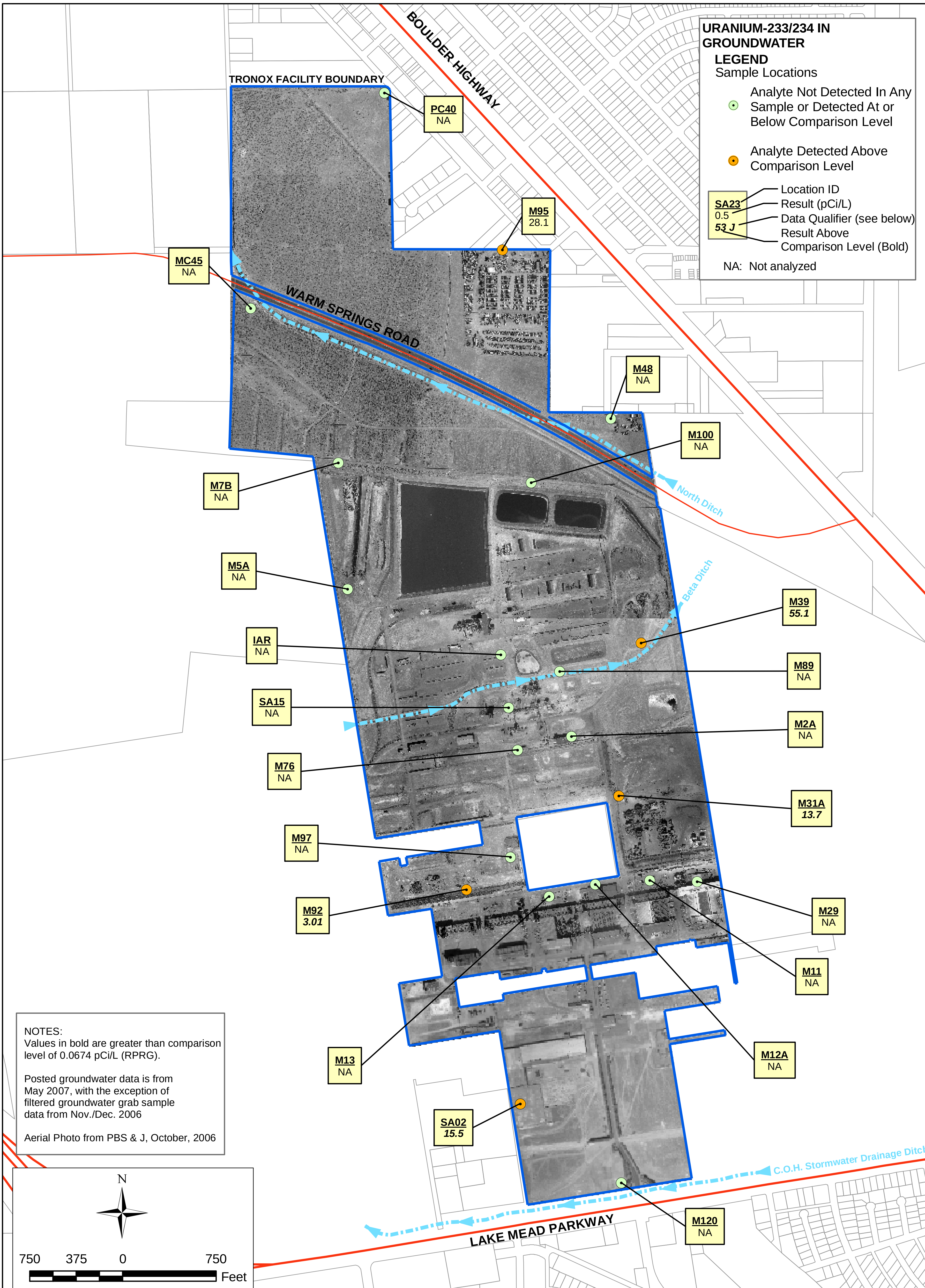

X

SHEET NUMBER:

5-53

FIGURE NUMBER:

URANIUM-233/234 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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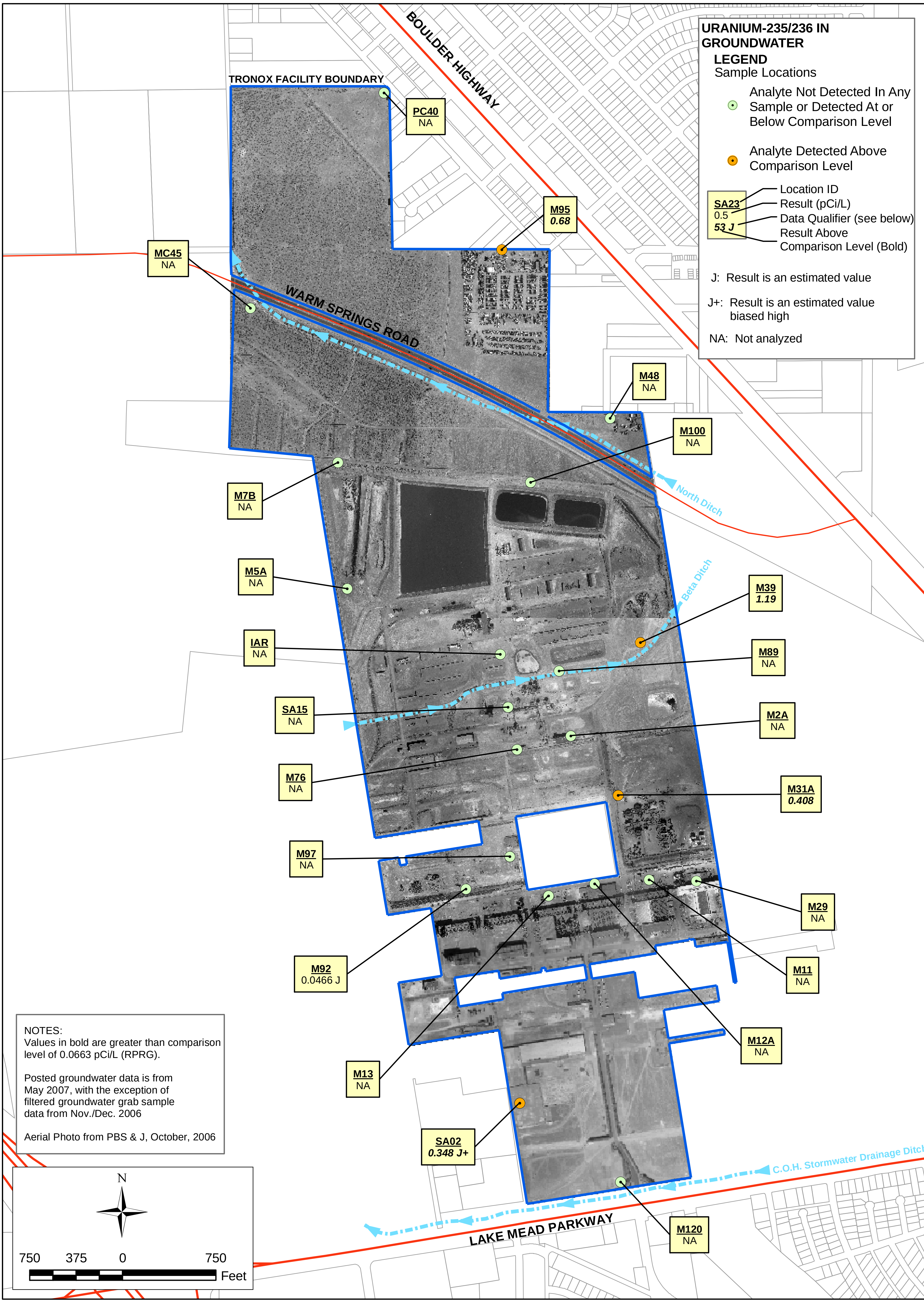

SHEET NUMBER:	FIGURE NUMBER:
X	5-54

URANIUM-235/236 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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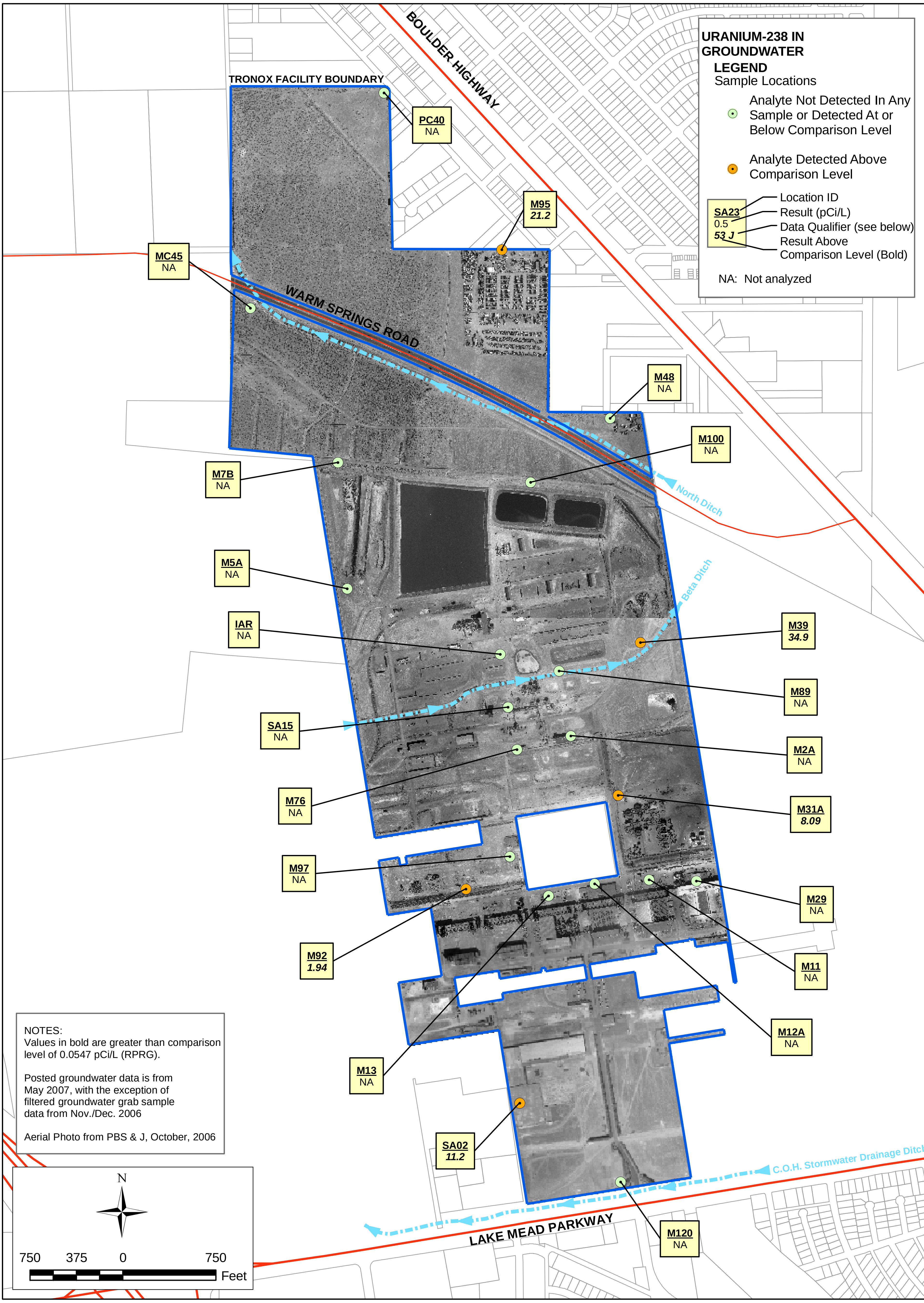

SHEET NUMBER:	FIGURE NUMBER:
X	5-55

URANIUM-238 IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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D GERRY				

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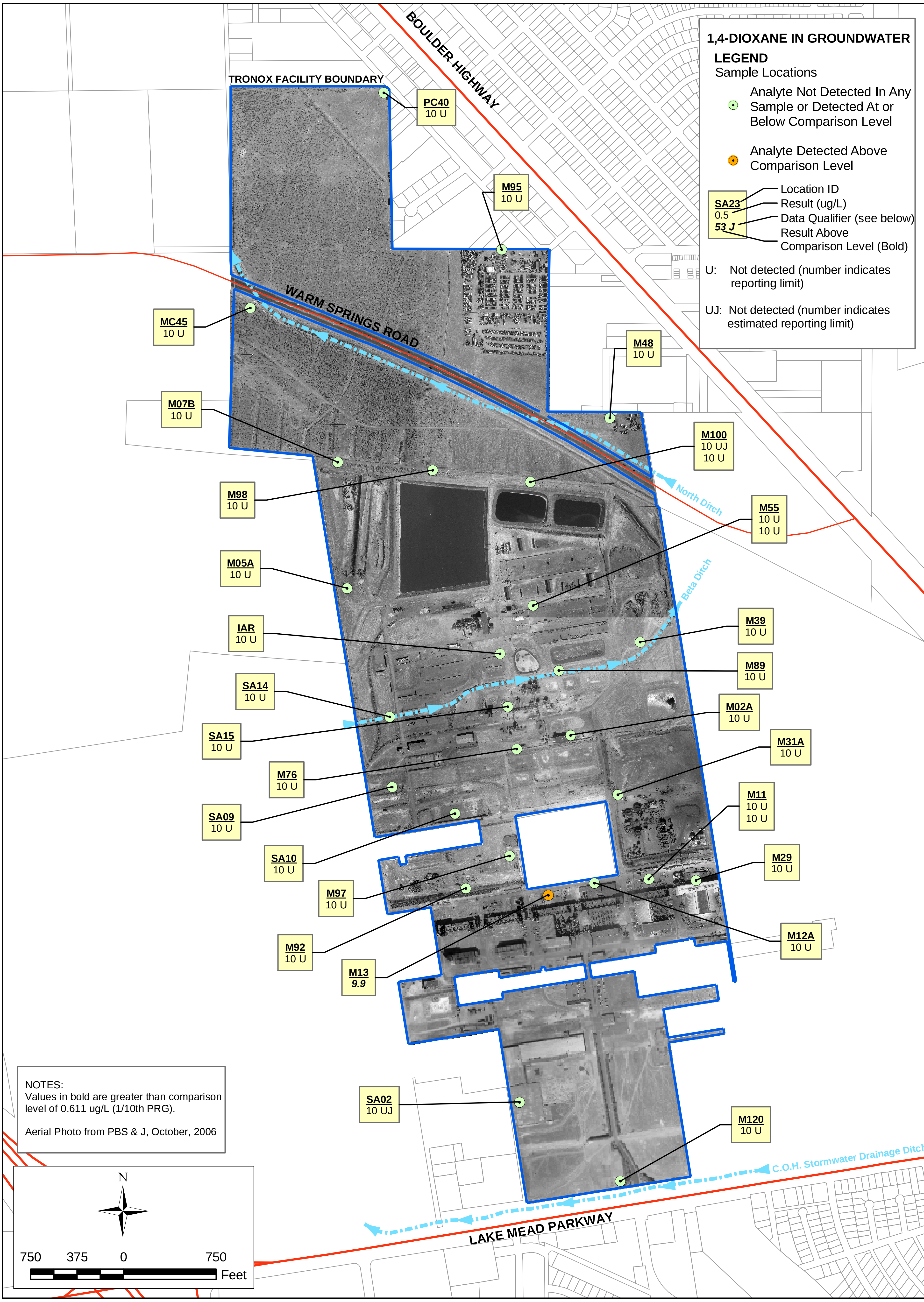

SHEET NUMBER:	FIGURE NUMBER:
X	5-56

1,4-DIOXANE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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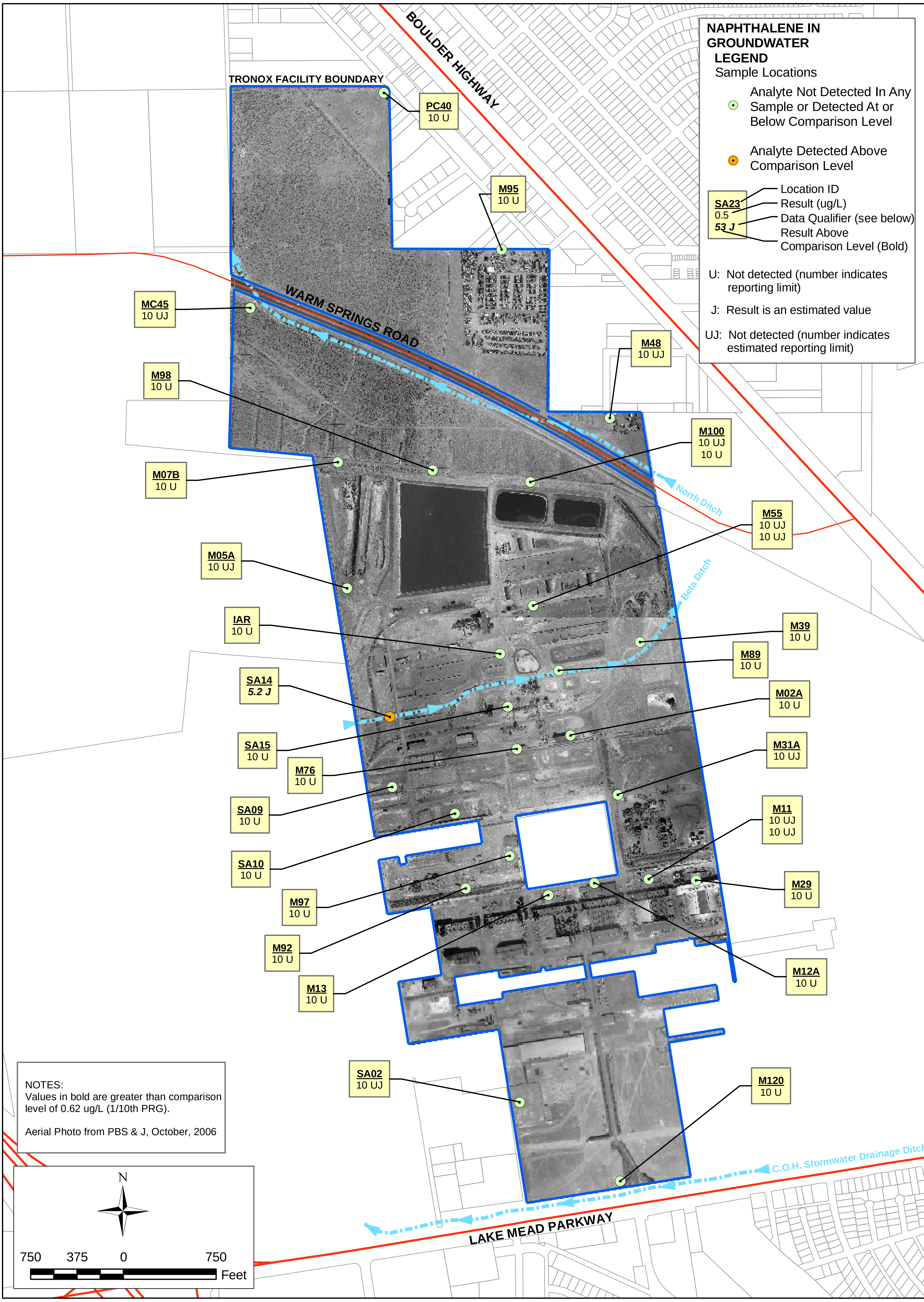

NAPHTHALENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	8/23/2007	04020-023-402

FIGURE NUMBER: 5-57

SHEET NUMBER: X

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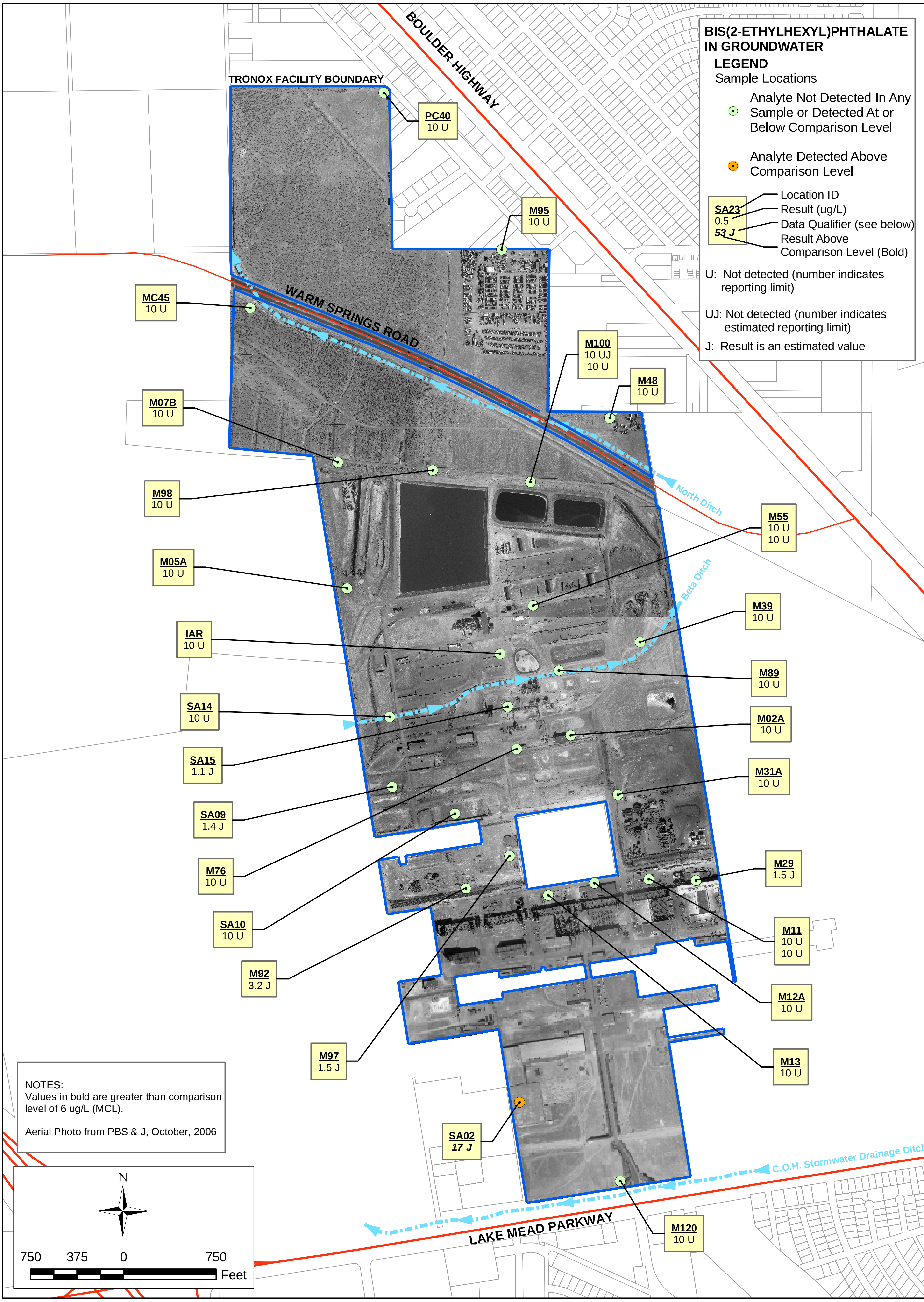

X	SHEET NUMBER:	5-58	FIGURE NUMBER:

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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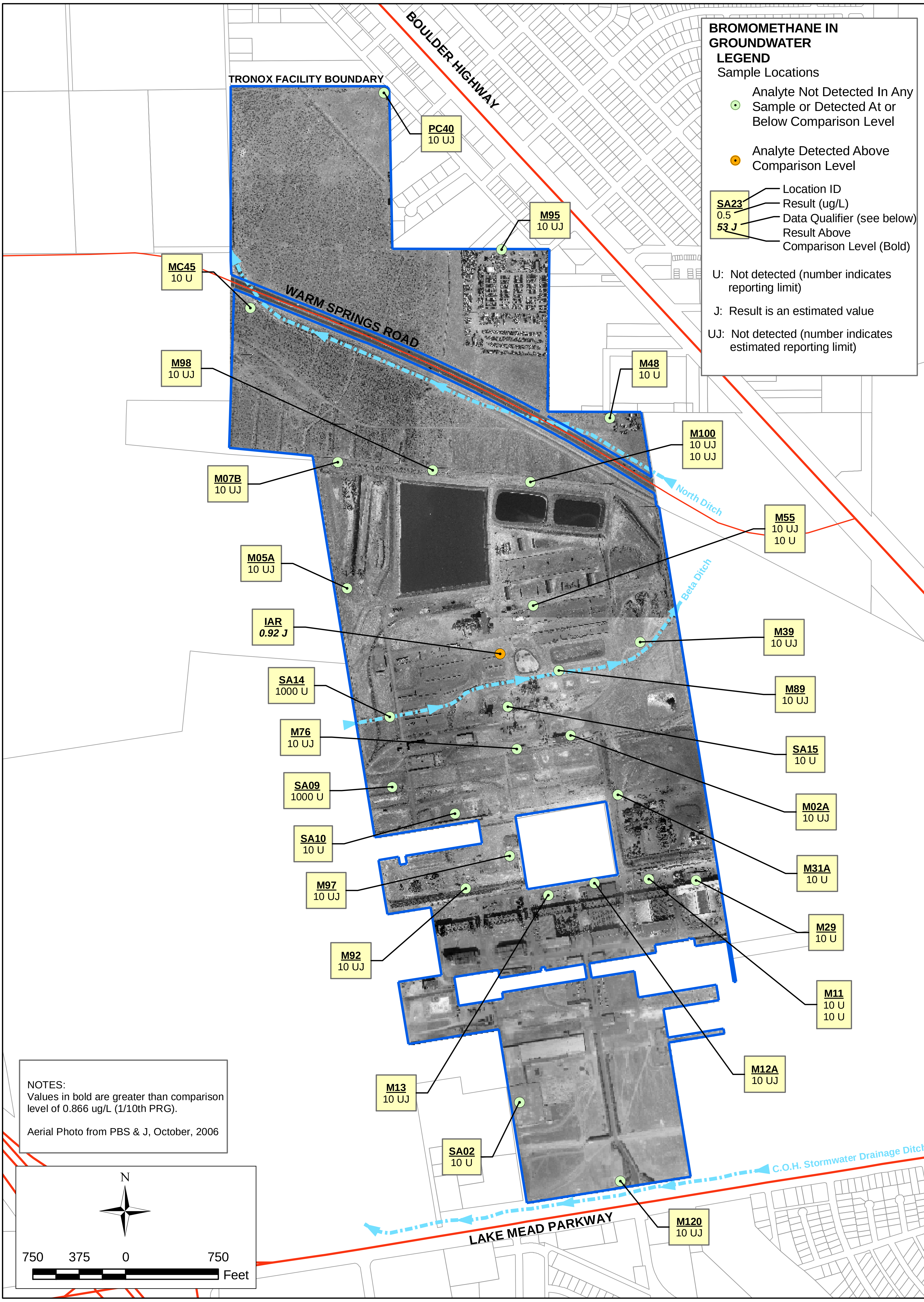

X

SHEET NUMBER:

5-59

FIGURE NUMBER:

BROMOMETHANE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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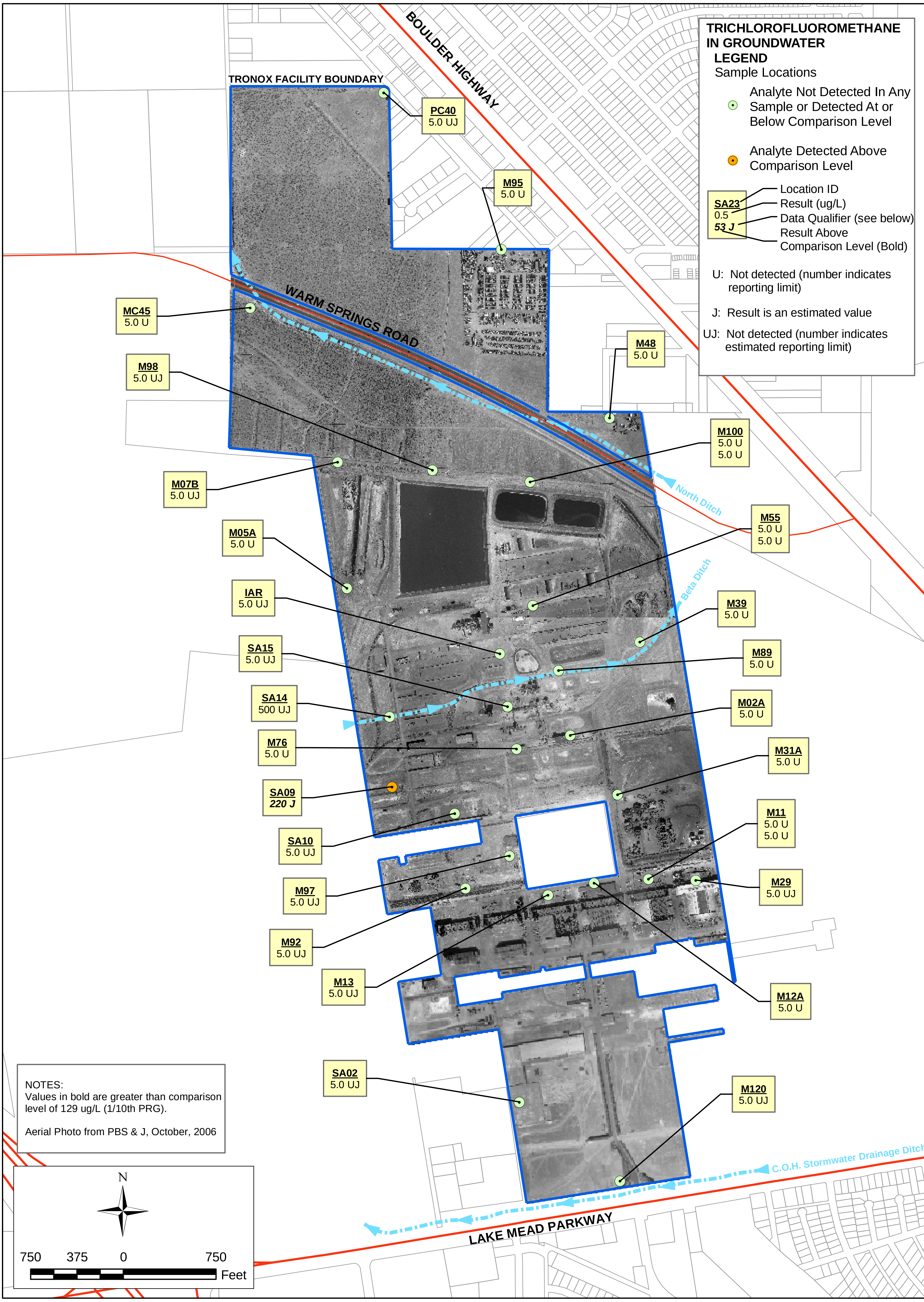

SHEET NUMBER:	X
FIGURE NUMBER:	5-60

TRICHLOROFLUOROMETHANE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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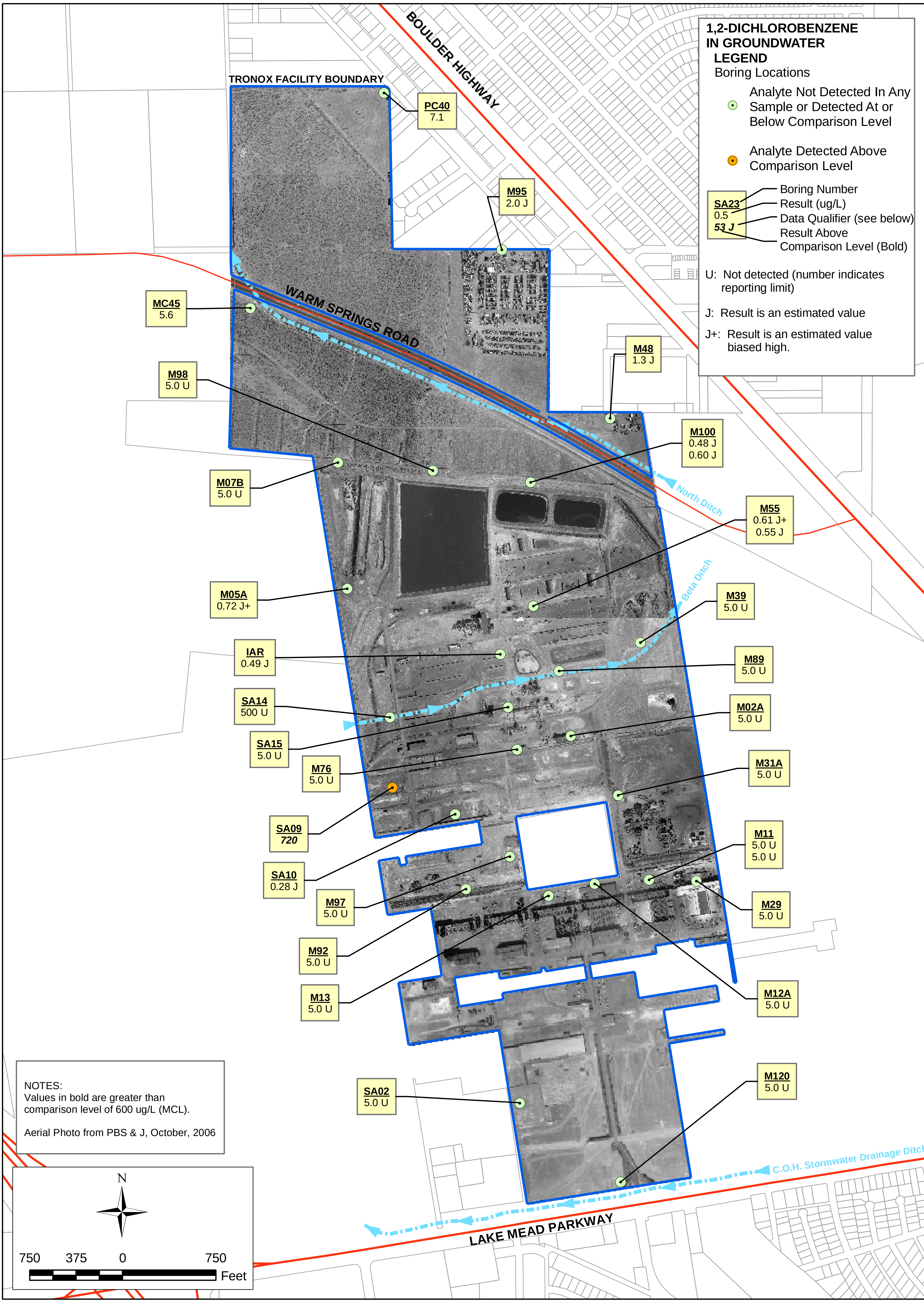

X	SHEET NUMBER:	5-61 FIGURE NUMBER:

1,2-DICHLOROBENZENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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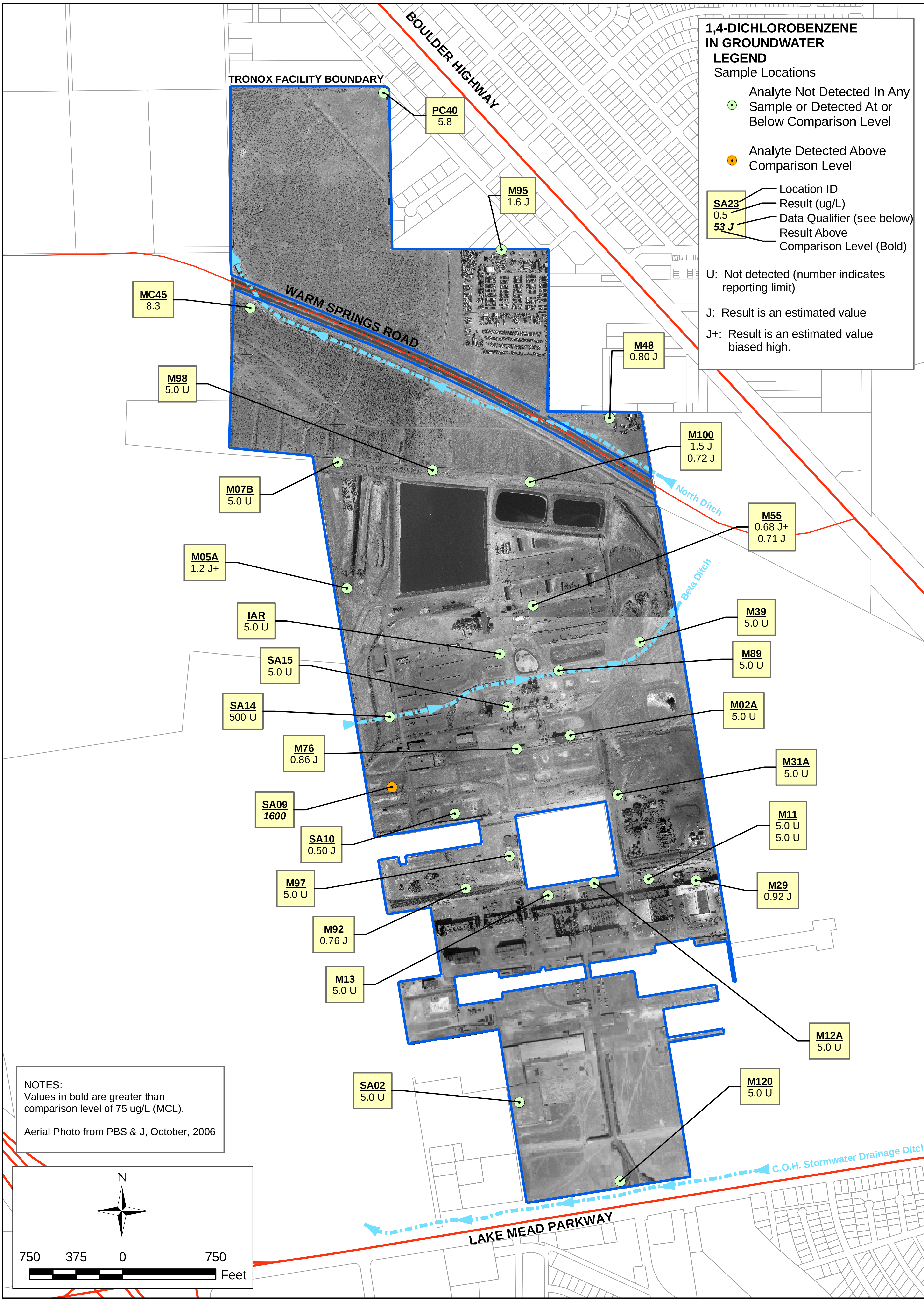

X

SHEET NUMBER:

5-62

FIGURE NUMBER:

1,4-DICHLOROBENZENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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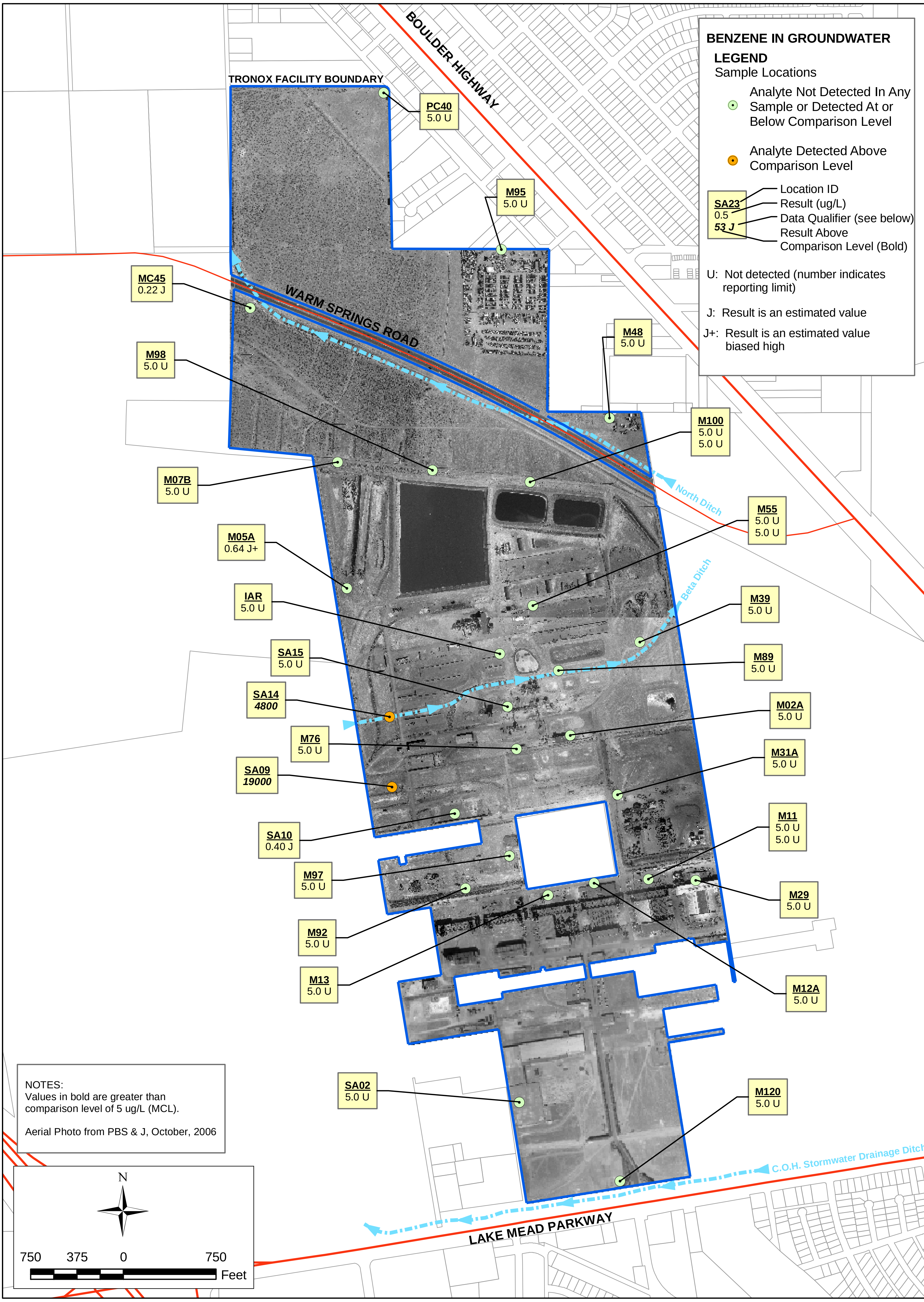

X	SHEET NUMBER:	5-63	FIGURE NUMBER:

BENZENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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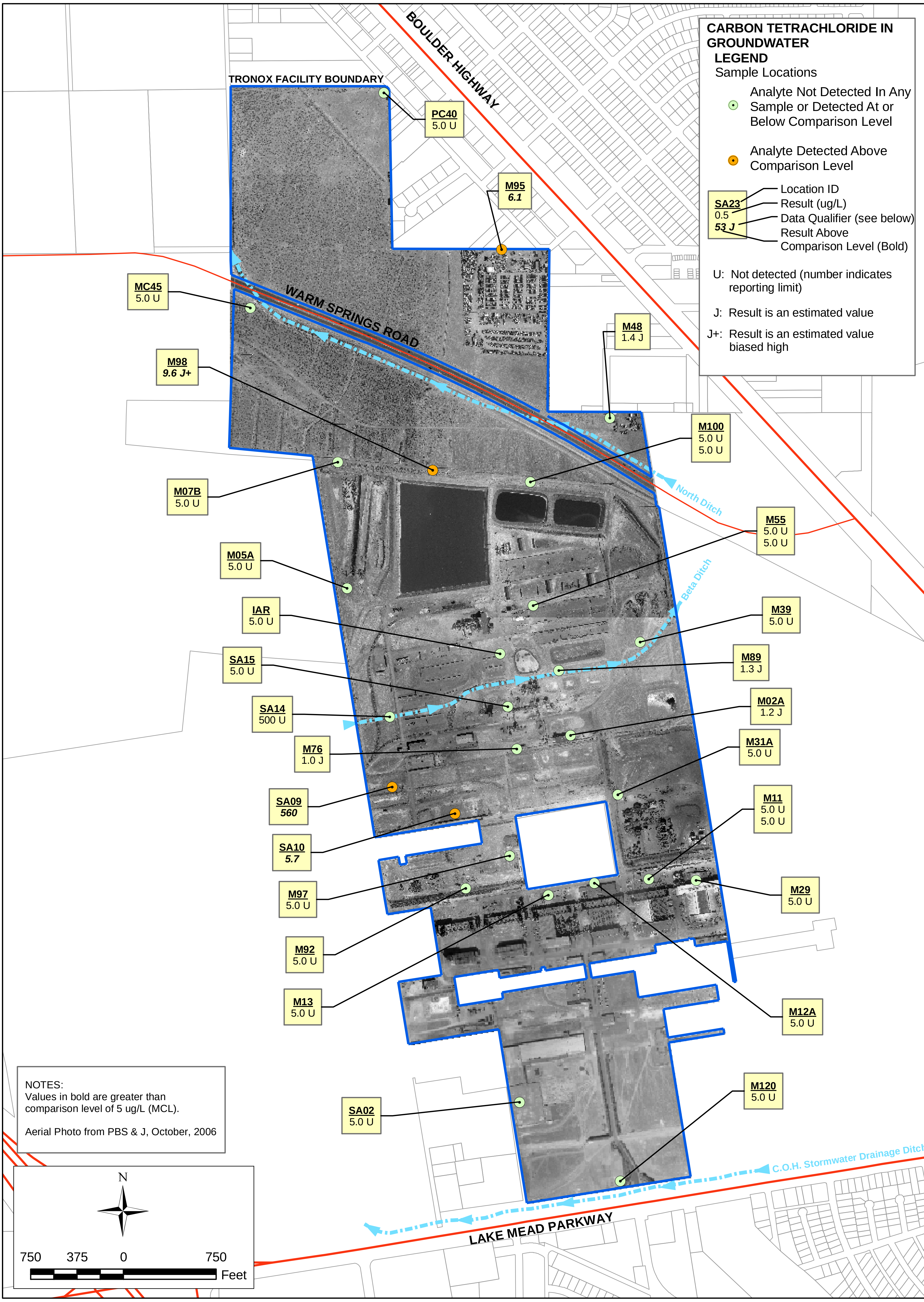

SHEET NUMBER:	X
FIGURE NUMBER:	5-64

CARBON TETRACHLORIDE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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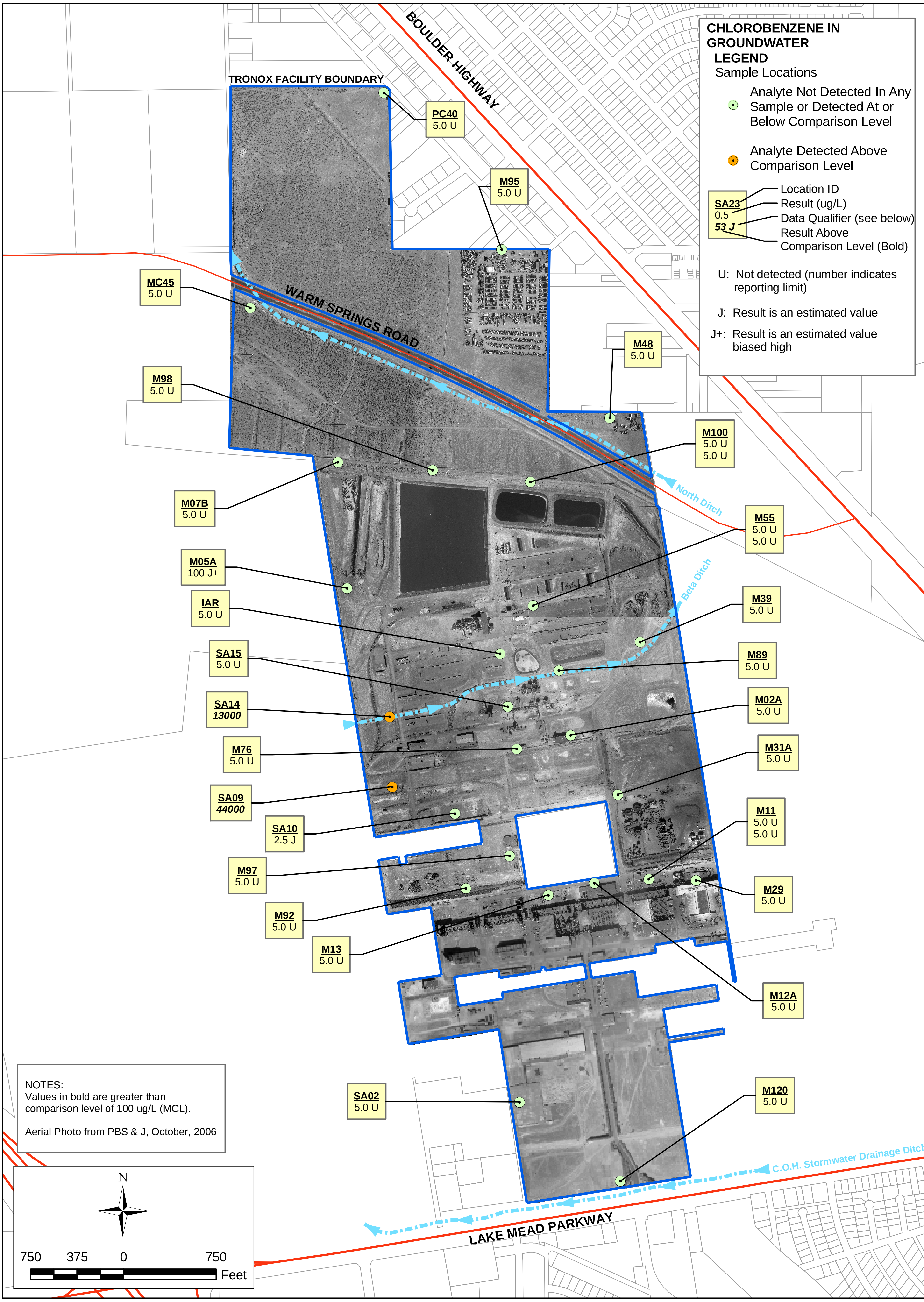

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SHEET NUMBER:

5-65

FIGURE NUMBER:

CHLOROBENZENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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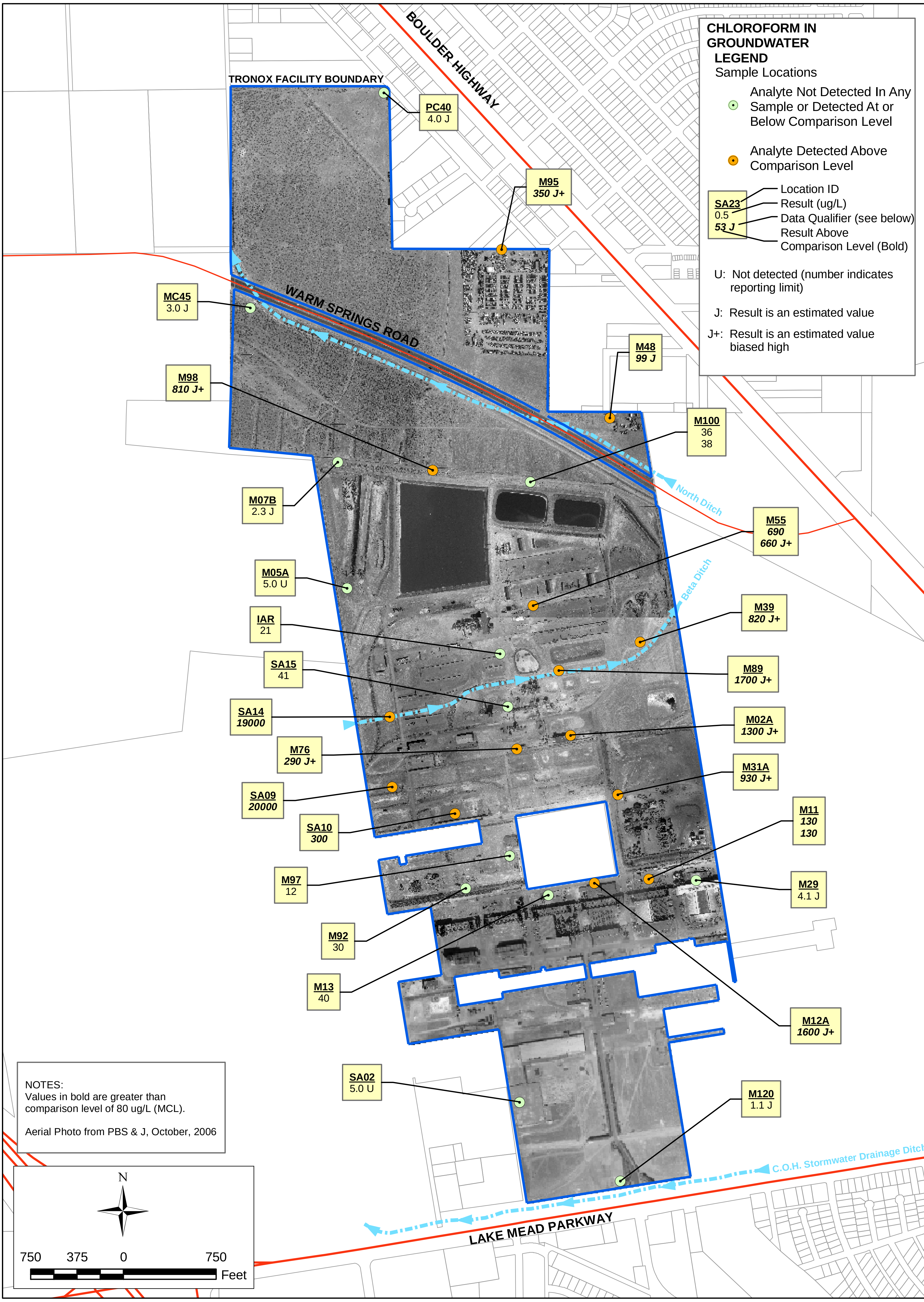

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SHEET NUMBER:

5-66

FIGURE NUMBER:

CHLOROFORM IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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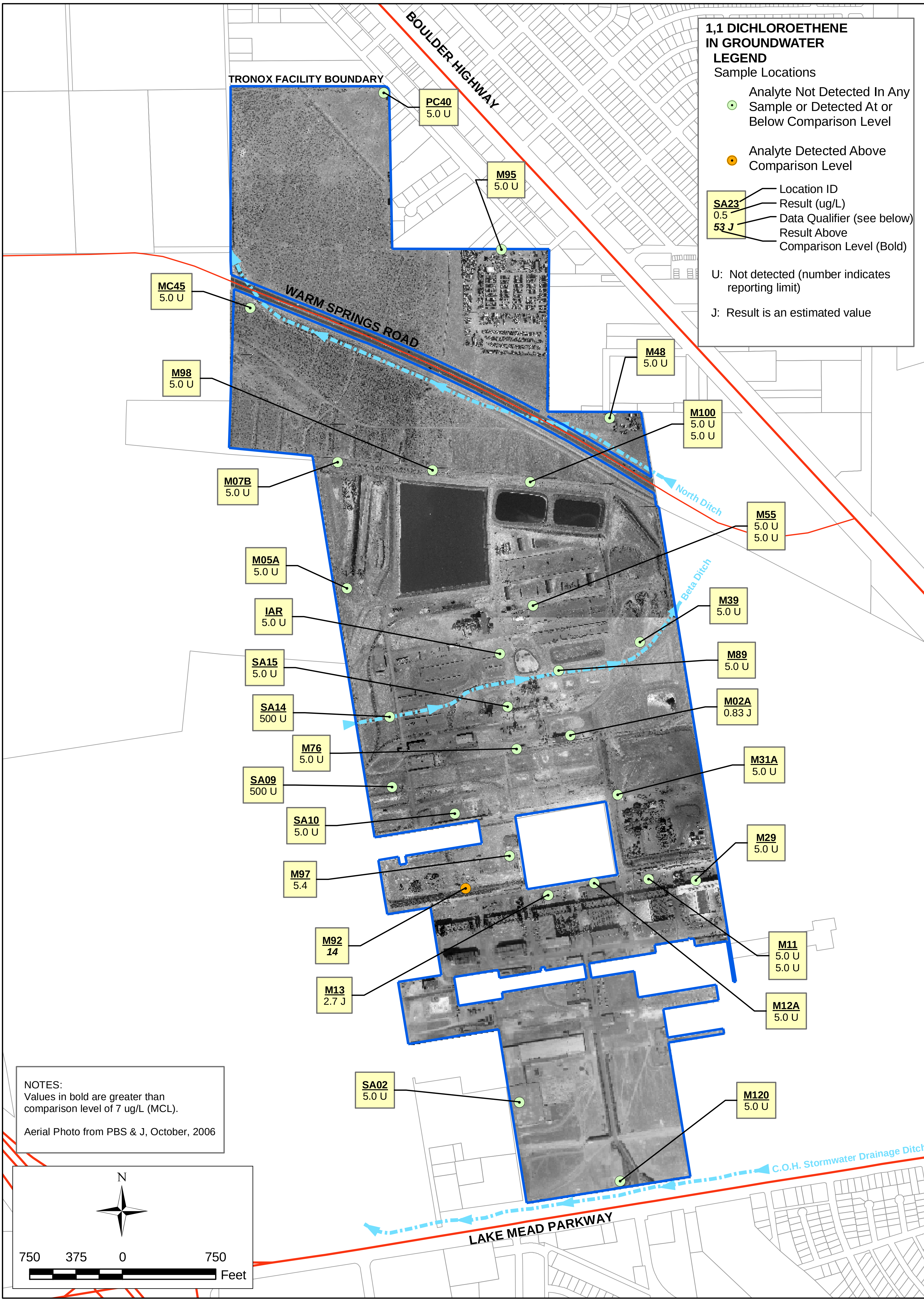

X	SHEET NUMBER:	5-67 FIGURE NUMBER:

1,1 DICHLOROETHENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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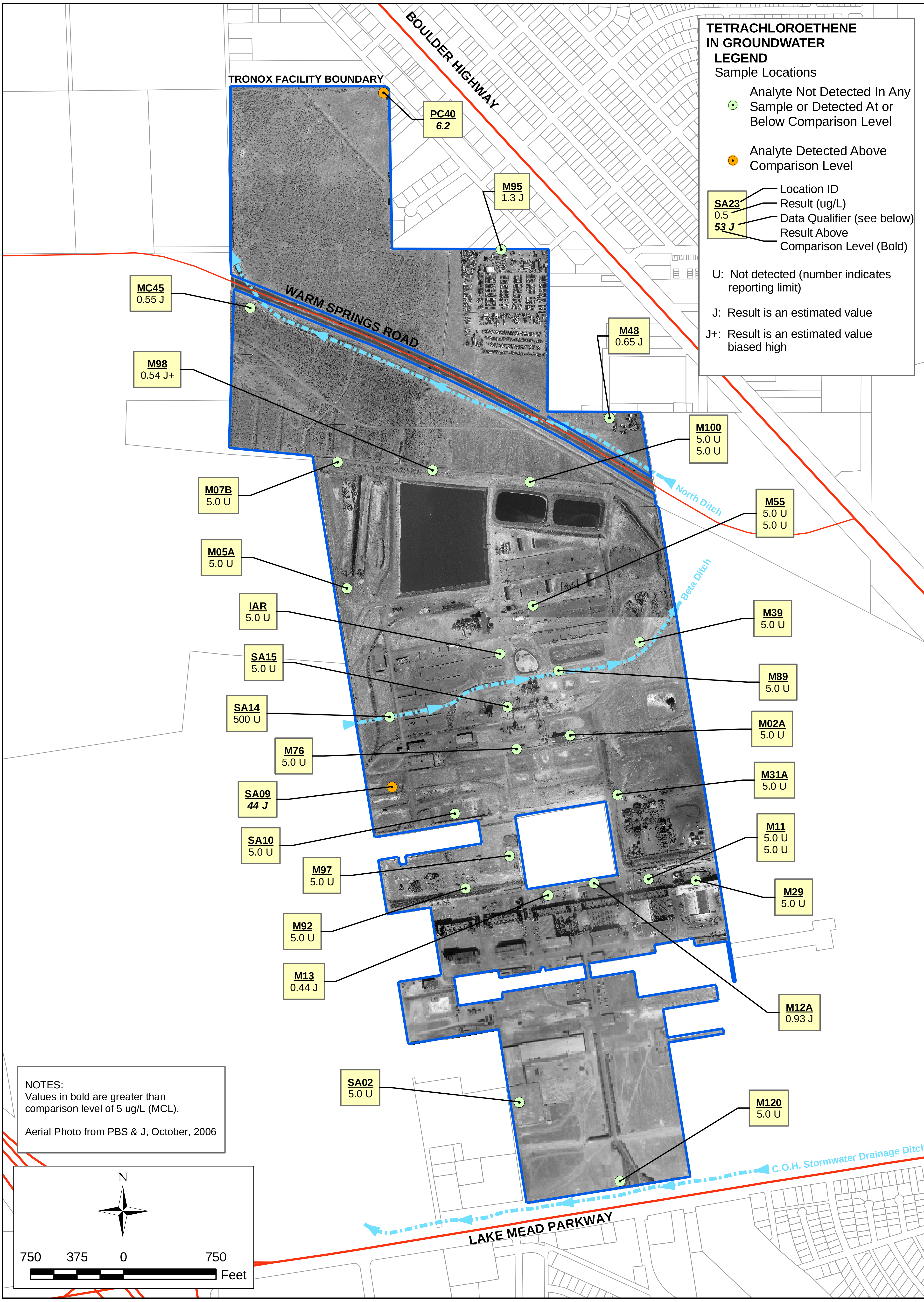

SHEET NUMBER:	X
FIGURE NUMBER:	5-68

TETRACHLOROETHENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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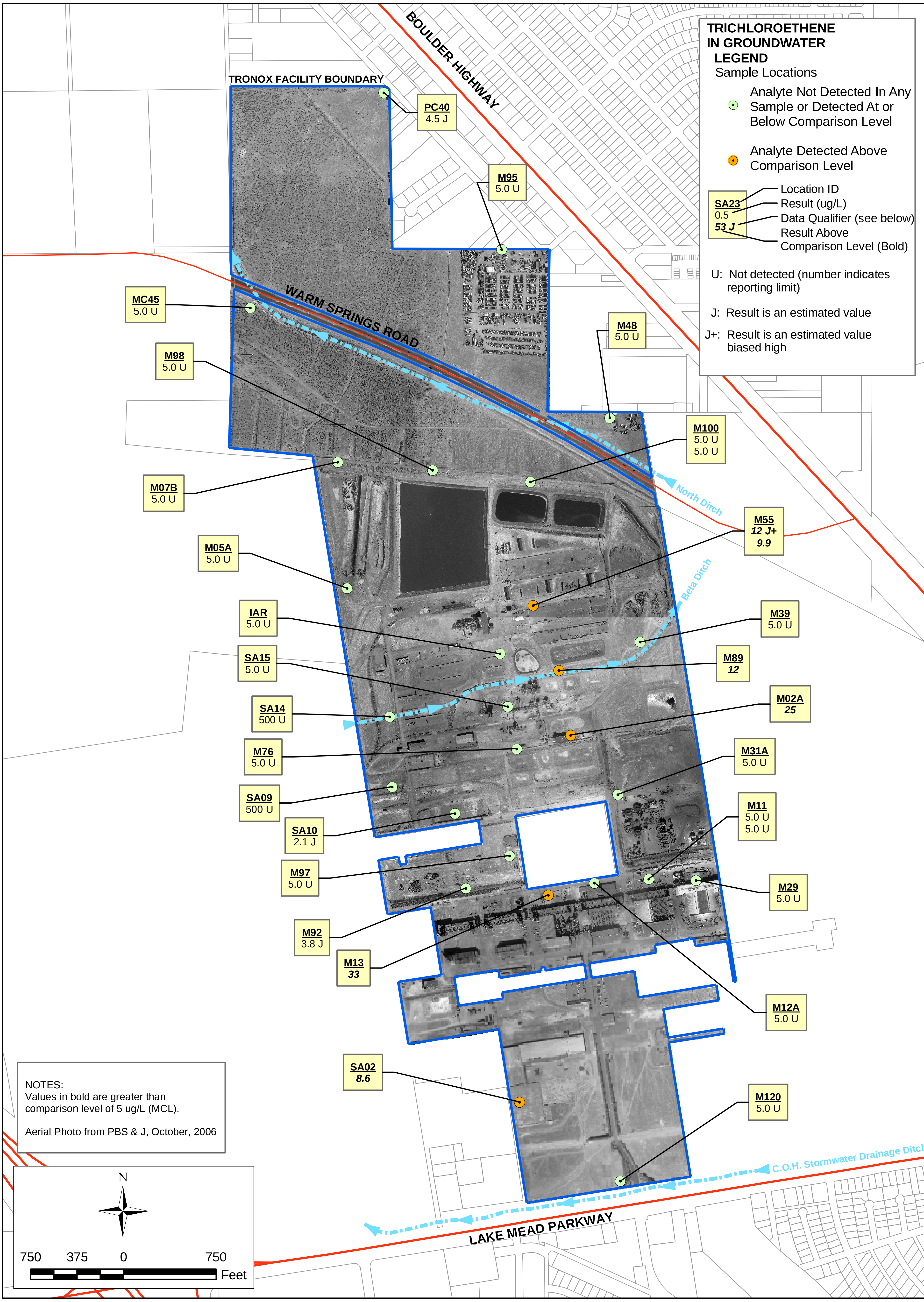

TRICHLOROETHENE IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	6/15/2007	04020-023-402

FIGURE NUMBER: 5-69

SHEET NUMBER: X

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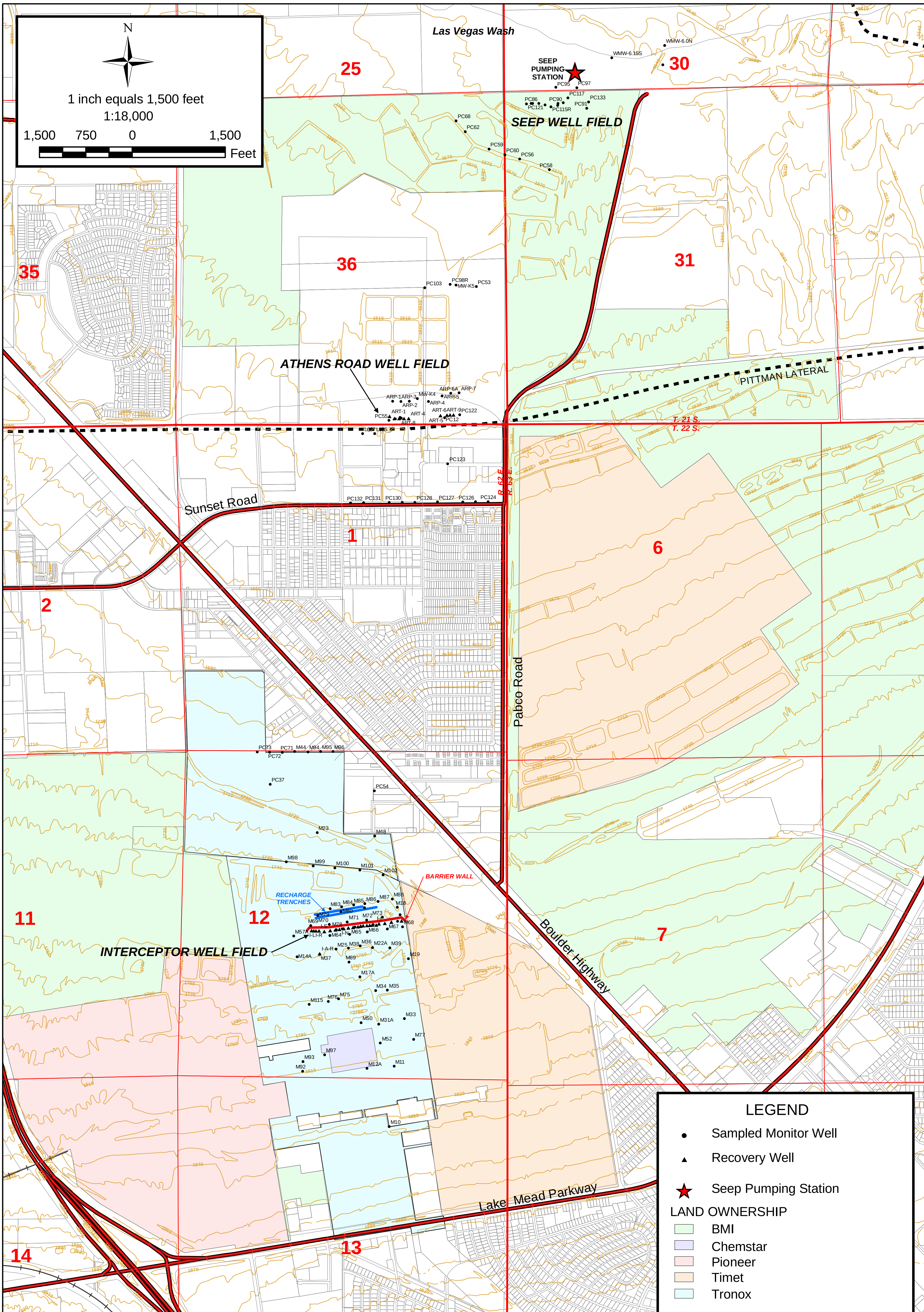

SHEET NUMBER:	FIGURE NUMBER:
1	5-70

GROUNDWATER RECOVERY SYSTEM

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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E. Krish				
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D. Gerry				

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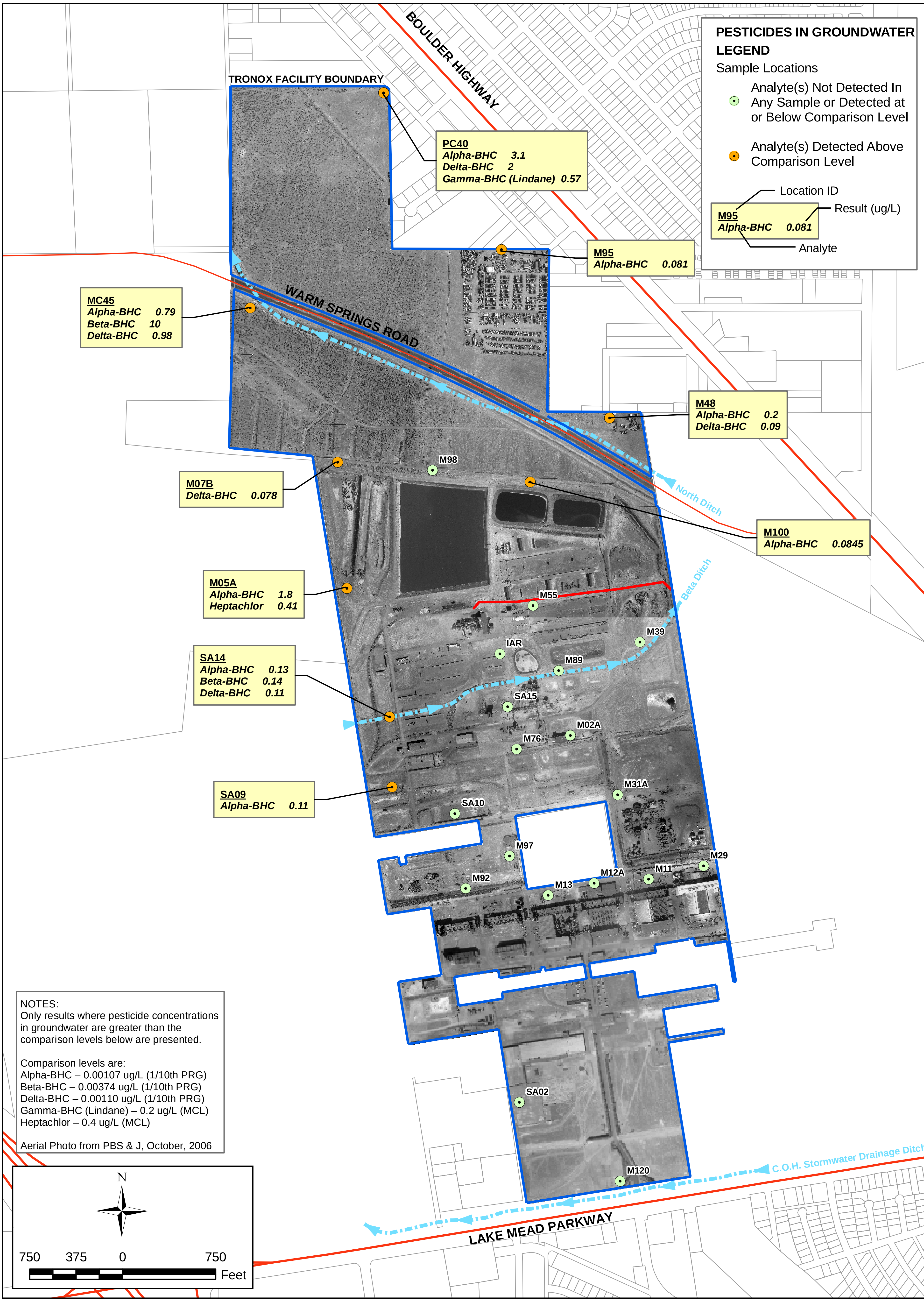

X
SHEET NUMBER:

5-71
FIGURE NUMBER:

PESTICIDES IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
1:9,000	6/15/2007	04020-023-402

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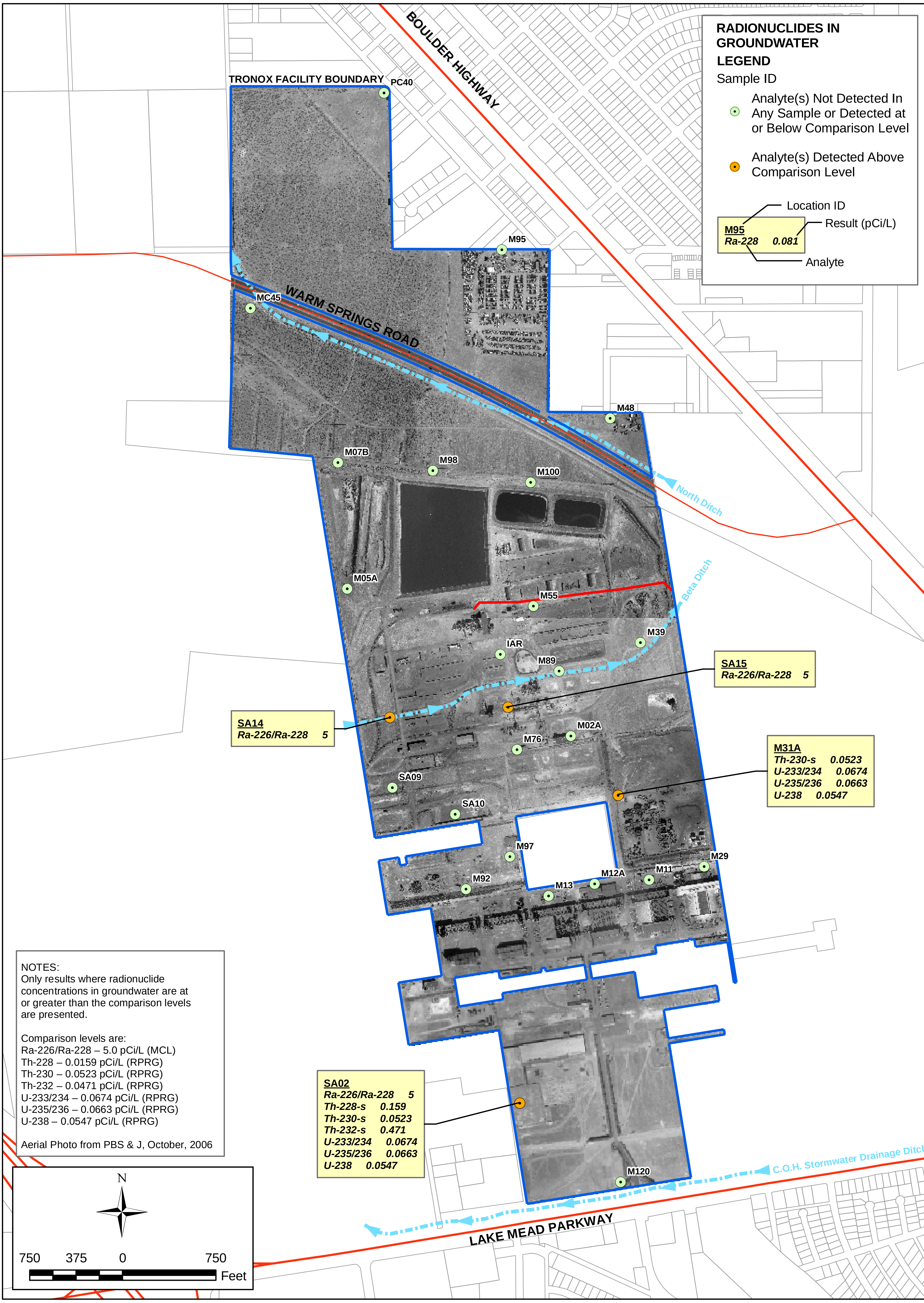

SHEET NUMBER:	FIGURE NUMBER:
X	5-72

RADIONUCLIDES IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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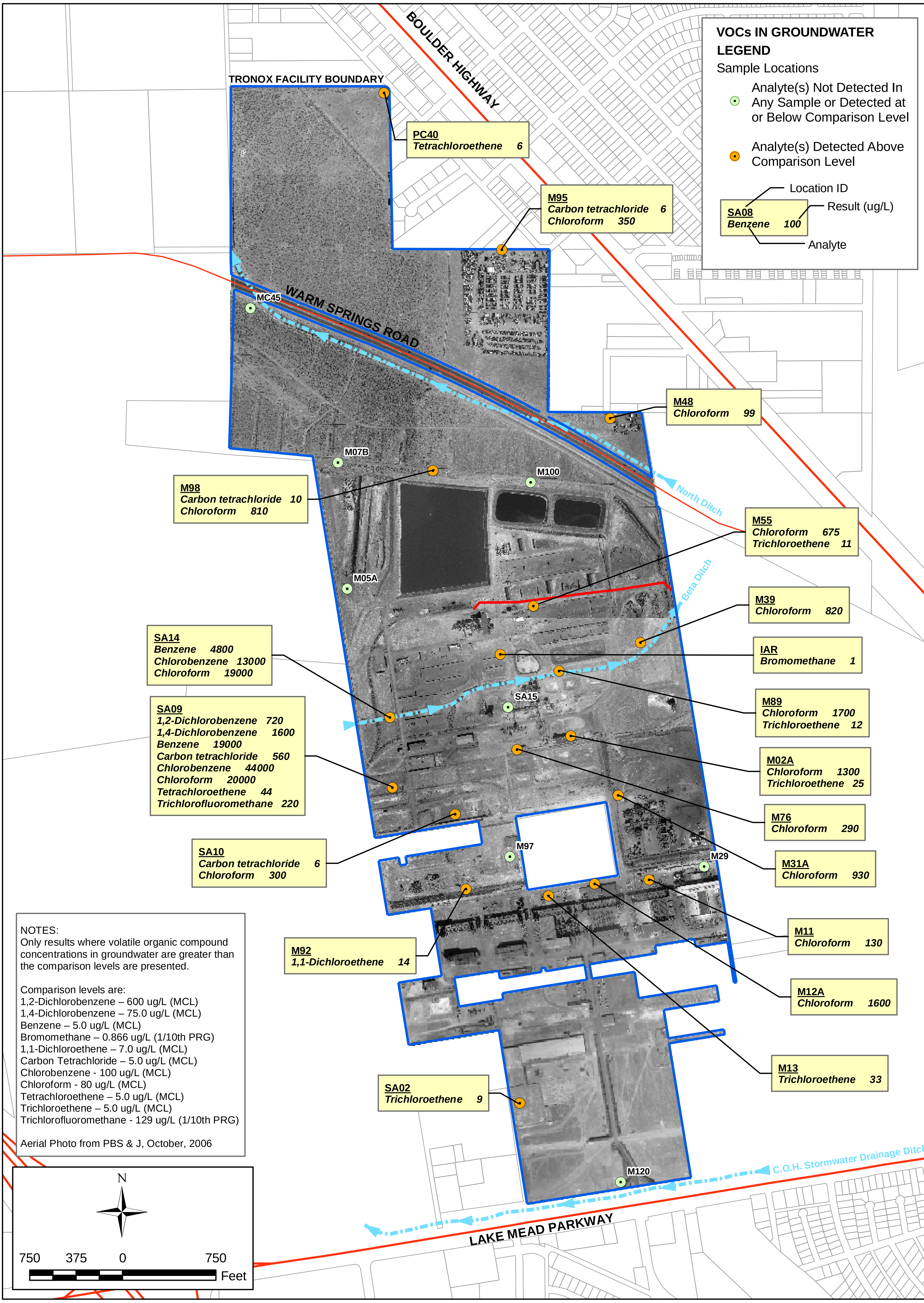

SHEET NUMBER:	X
FIGURE NUMBER:	5-73

VOCs IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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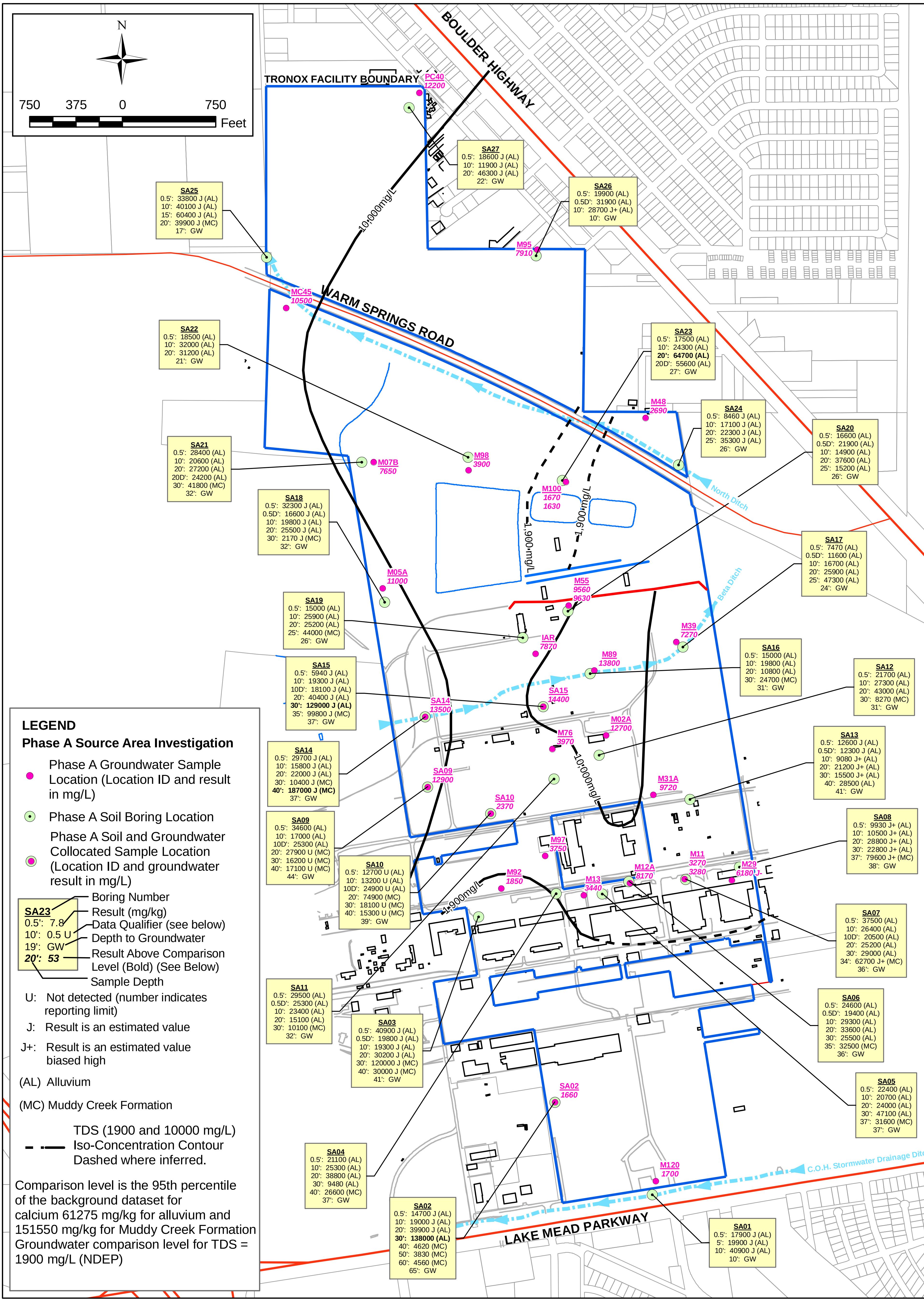

LEGEND

Phase A Source Area Investigation

Phase A Groundwater Sample Location (Location ID and result in mg/L)

Phase A Soil Boring Location

Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in mg/L)

SA23 — Boring Number
0.5': 7.8 — Result (mg/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below)
Sample Depth

U: Not detected (number indicates reporting limit)

J: Result is an estimated value

J+: Result is an estimated value biased high

(AL) Alluvium

(MC) Muddy Creek Formation

TDS (1900 and 10000 mg/L) Iso-Concentration Contour Dashed where inferred.

Comparison level is the 95th percentile of the background dataset for calcium 61275 mg/kg for alluvium and 151550 mg/kg for Muddy Creek Formation Groundwater comparison level for TDS = 1900 mg/L (NDEP)

SHEET NUMBER:	FIGURE NUMBER:
X	5-74

TDS IN GROUNDWATER AND CALCIUM IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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T MCADAM				
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B HO				
APPROVED BY:				
D GERRY				

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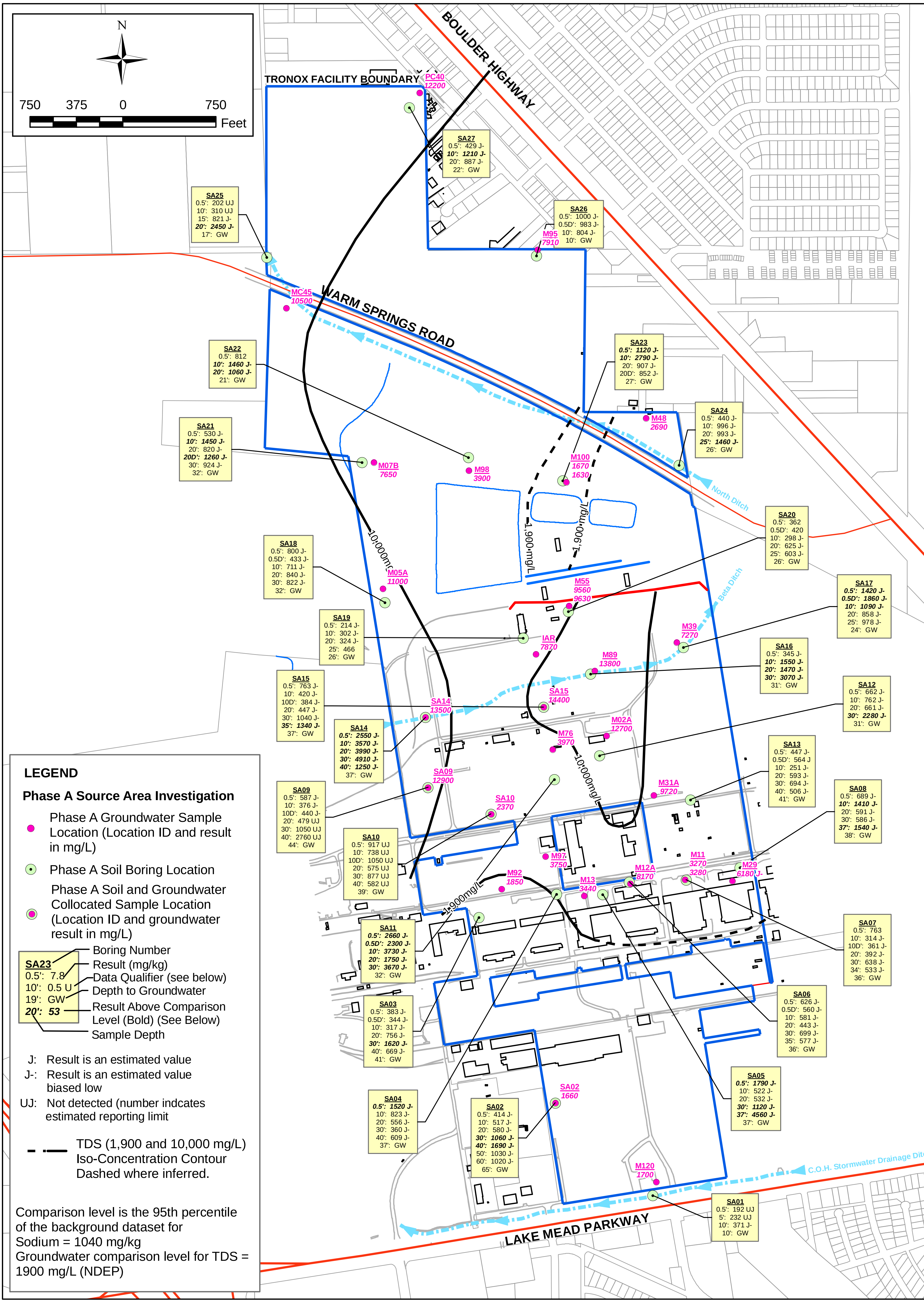

TDS IN GROUNDWATER AND SODIUM IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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FIGURE NUMBER: 5-75

SHEET NUMBER: X

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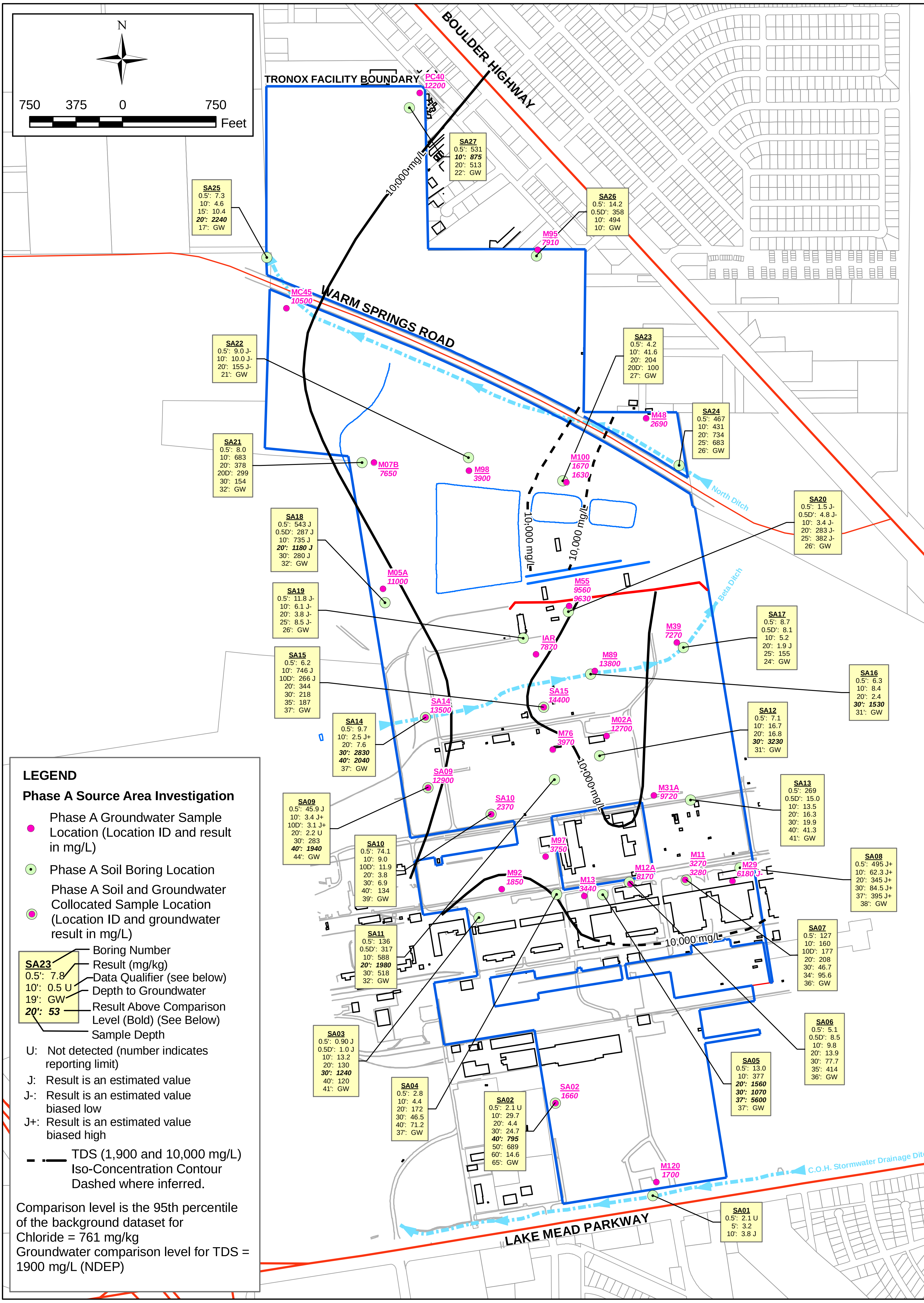

LEGEND

Phase A Source Area Investigation

- Phase A Groundwater Sample Location (Location ID and result in mg/L)
- Phase A Soil Boring Location
- Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in mg/L)

SA23 — Boring Number
0.5': 7.8 — Result (mg/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below)
Sample Depth

U: Not detected (number indicates reporting limit)
J: Result is an estimated value
J-: Result is an estimated value biased low
J+: Result is an estimated value biased high

TDS (1,900 and 10,000 mg/L) Iso-Concentration Contour Dashed where inferred.

Comparison level is the 95th percentile of the background dataset for Chloride = 761 mg/kg
Groundwater comparison level for TDS = 1900 mg/L (NDEP)

SHEET NUMBER:	X
FIGURE NUMBER:	5-76

TDS IN GROUNDWATER AND CHLORIDE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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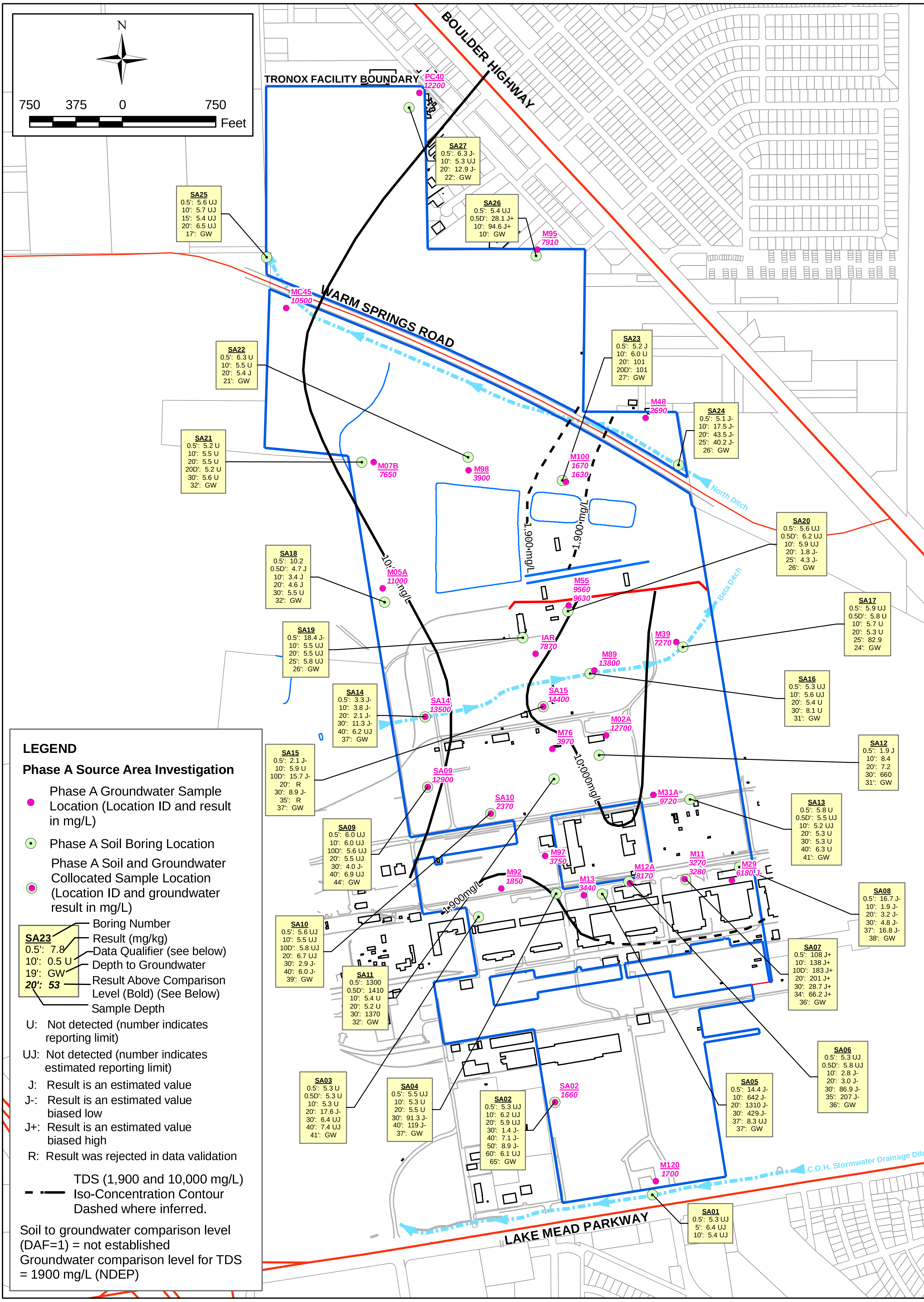

LEGEND

Phase A Source Area Investigation

- Phase A Groundwater Sample Location (Location ID and result in mg/L)
- Phase A Soil Boring Location
- Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in mg/L)

SA23 — Boring Number
0.5': 7.8 — Result (mg/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below)
Sample Depth

U: Not detected (number indicates reporting limit)
UJ: Not detected (number indicates estimated reporting limit)
J: Result is an estimated value
J-: Result is an estimated value biased low
J+: Result is an estimated value biased high
R: Result was rejected in data validation

TDS (1,900 and 10,000 mg/L) Iso-Concentration Contour Dashed where inferred.

Soil to groundwater comparison level (DAF=1) = not established
Groundwater comparison level for TDS = 1900 mg/L (NDEP)

SHEET NUMBER: X

FIGURE NUMBER: 5-77

TDS IN GROUNDWATER AND CHLORATE IN SOIL

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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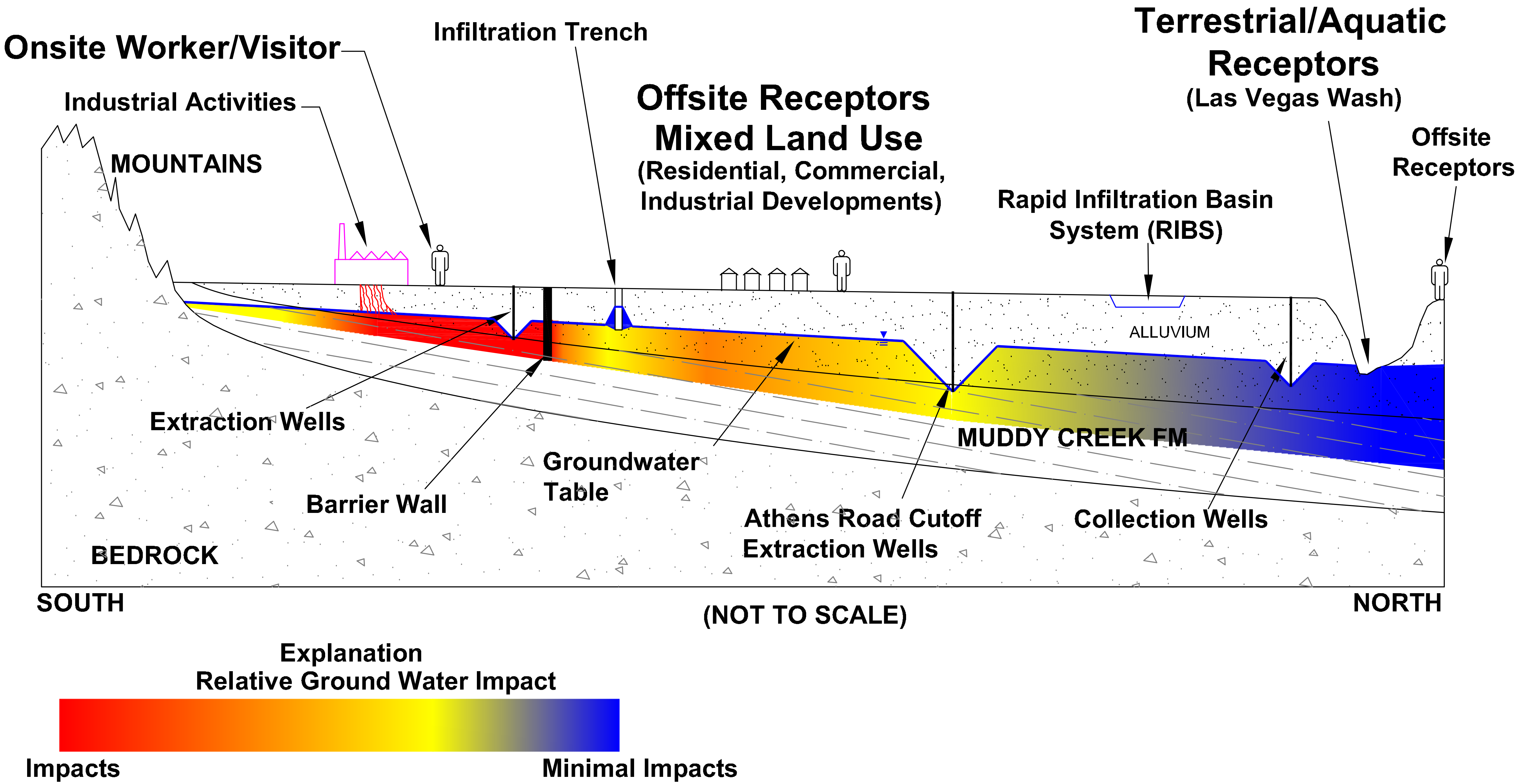

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CONCEPTUAL SITE MODEL
SOURCE AREA INVESTIGATION
PHASE A
TRONOX FACILITY
HENDERSON, NEVADA

PROJECT NUMBER: 04020-023-402
DATE: 8/24/2007
SCALE: NTS

FIGURE NUMBER:
6-1
SHEET NUMBER:
X

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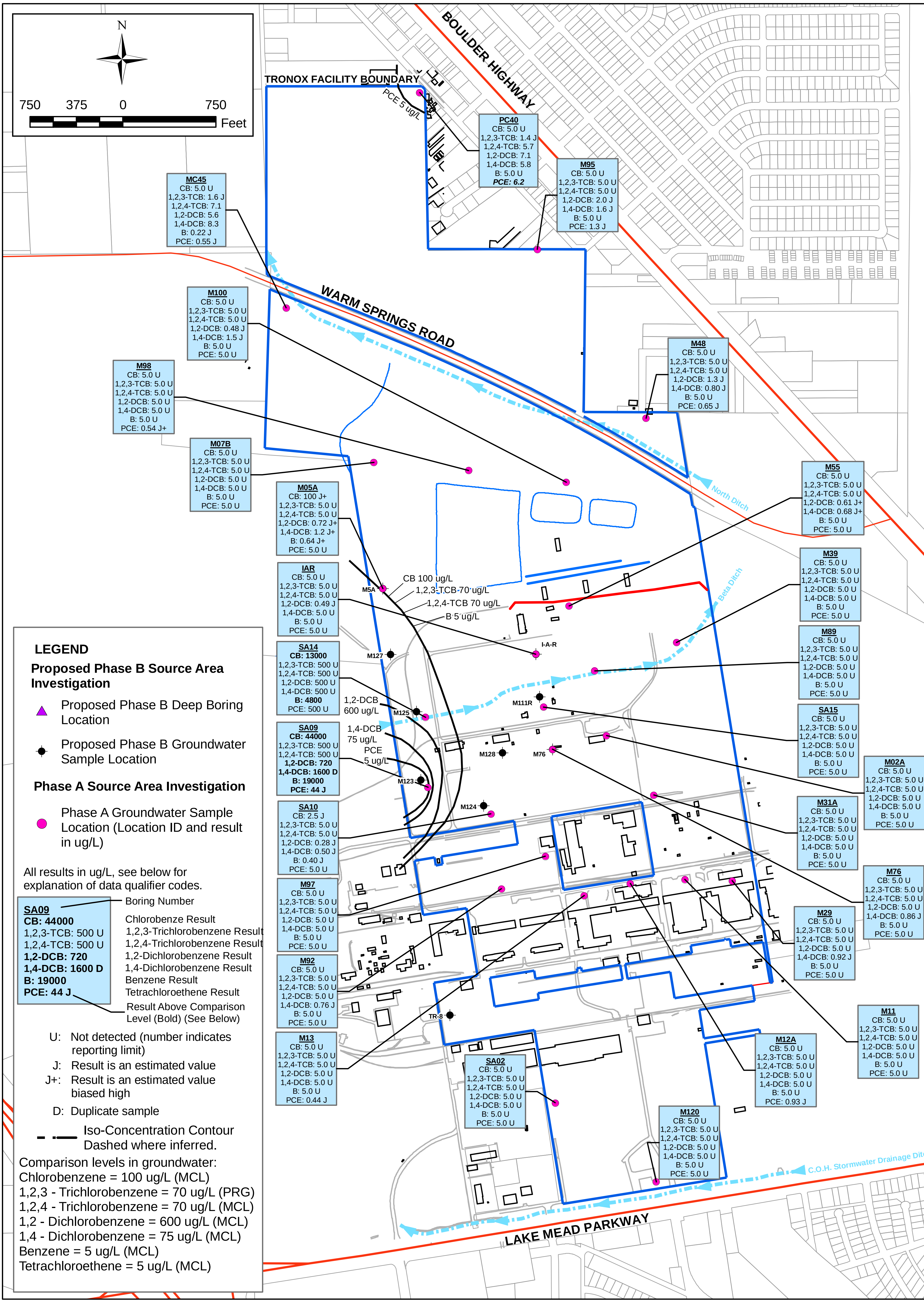

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SHEET NUMBER:
6-2
FIGURE NUMBER:

SELECT VOCs IN GROUNDWATER

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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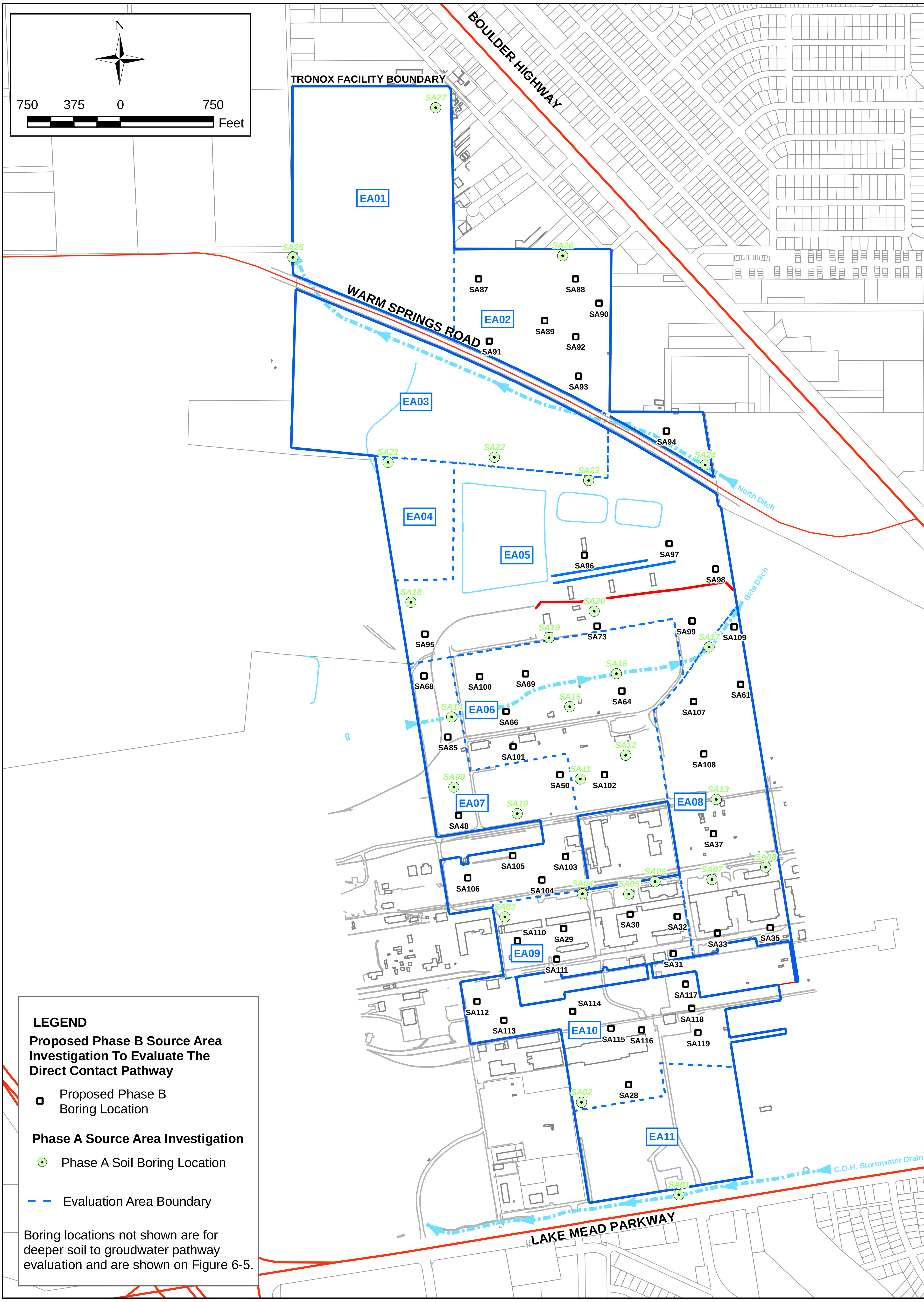

SHEET NUMBER:	FIGURE NUMBER:
X	6-3

EVALUATION AREAS AND PROPOSED PHASE B SOIL SAMPLE LOCATIONS TO EVALUATE THE DIRECT CONTACT PATHWAY

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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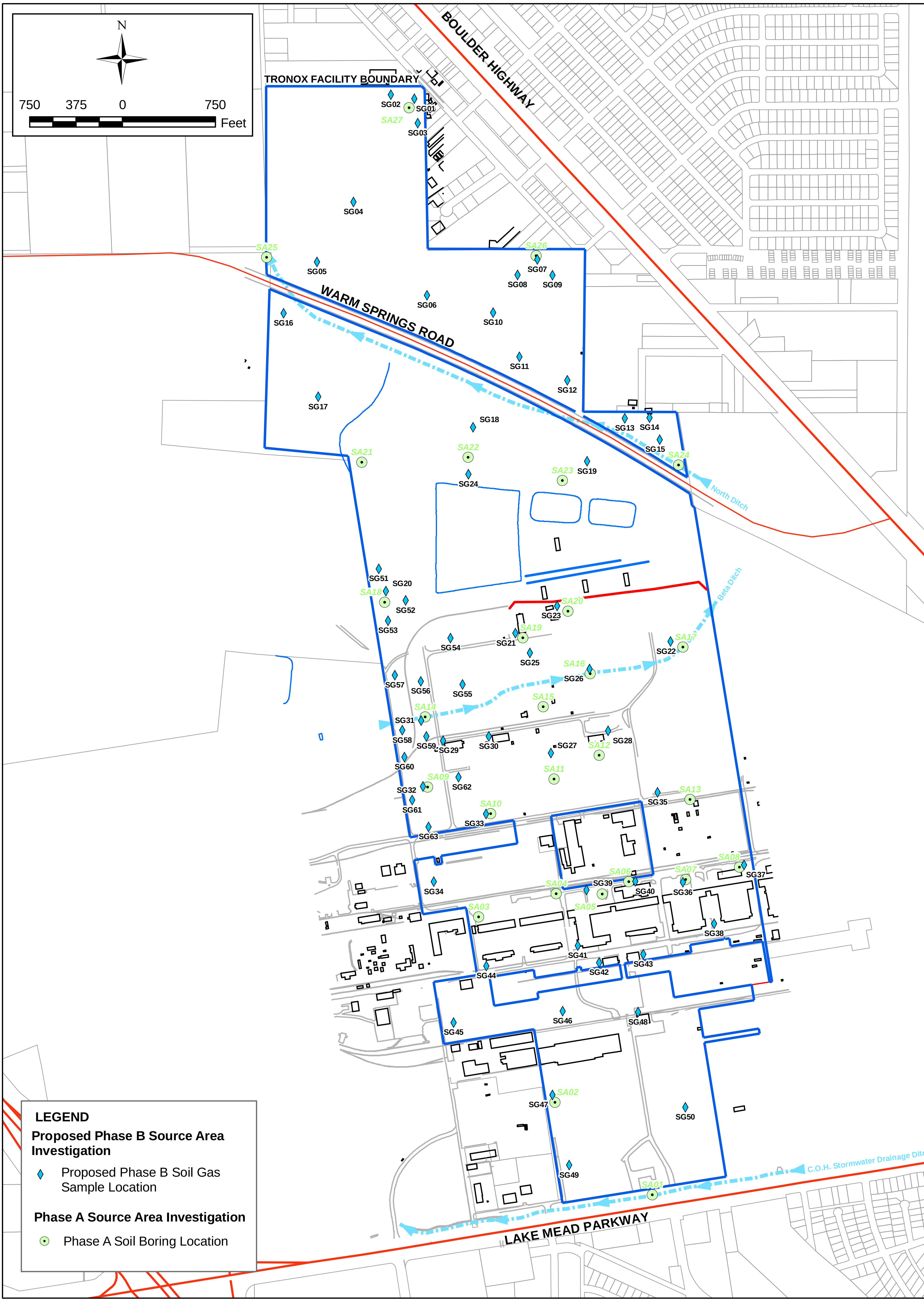

SHEET NUMBER:	FIGURE NUMBER:
X	6-4

PROPOSED PHASE B SOIL GAS SAMPLE LOCATIONS TO EVALUATE VAPOR INTRUSION PATHWAY

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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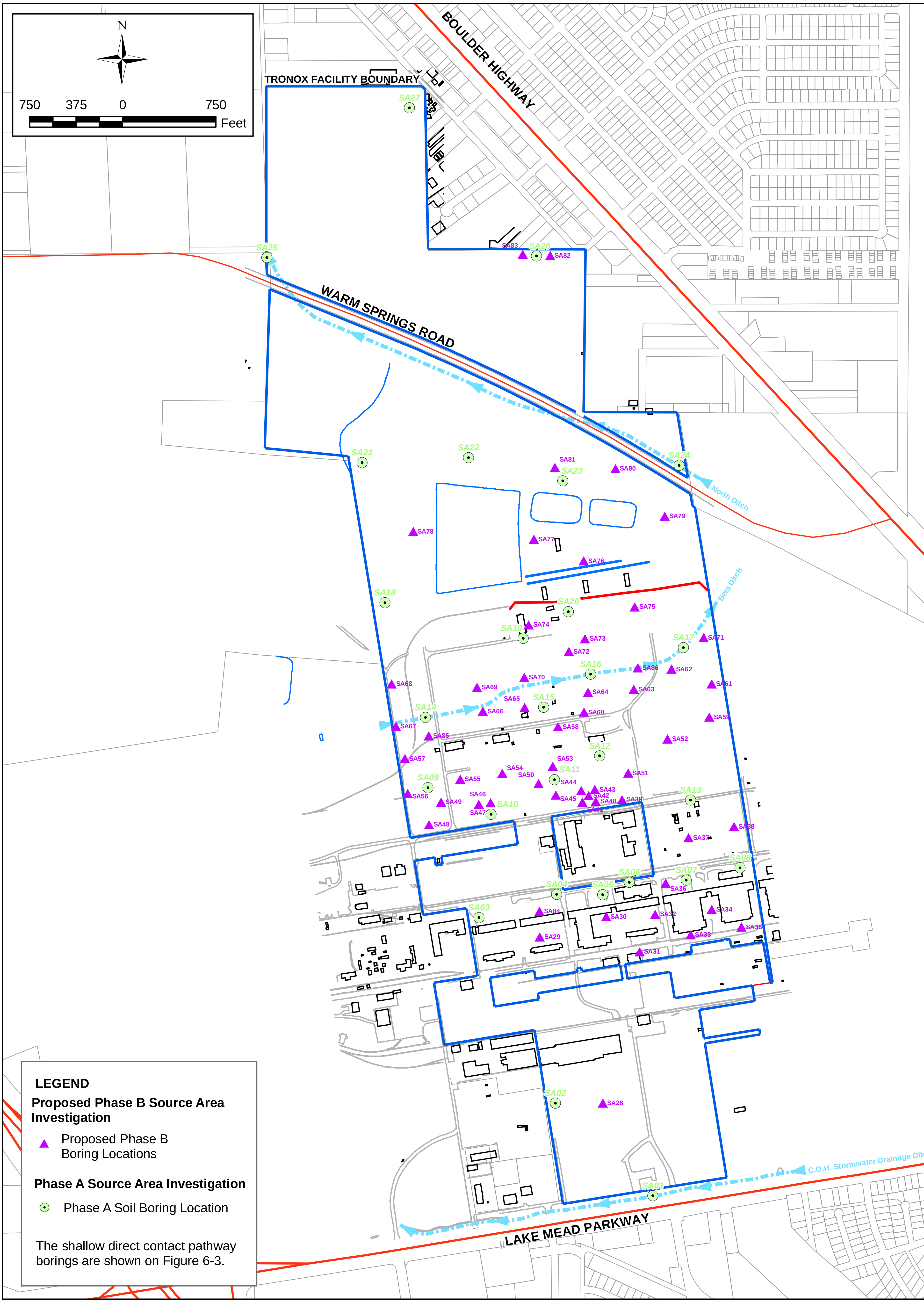

SHEET NUMBER:	FIGURE NUMBER:
X	6-5

SITEWIDE COMPILATION OF PROPOSED BORING LOCATIONS TO EVALUATE POTENTIAL SOURCE AREAS AND SRCs ALONG THE SOIL TO GROUNDWATER PATHWAY

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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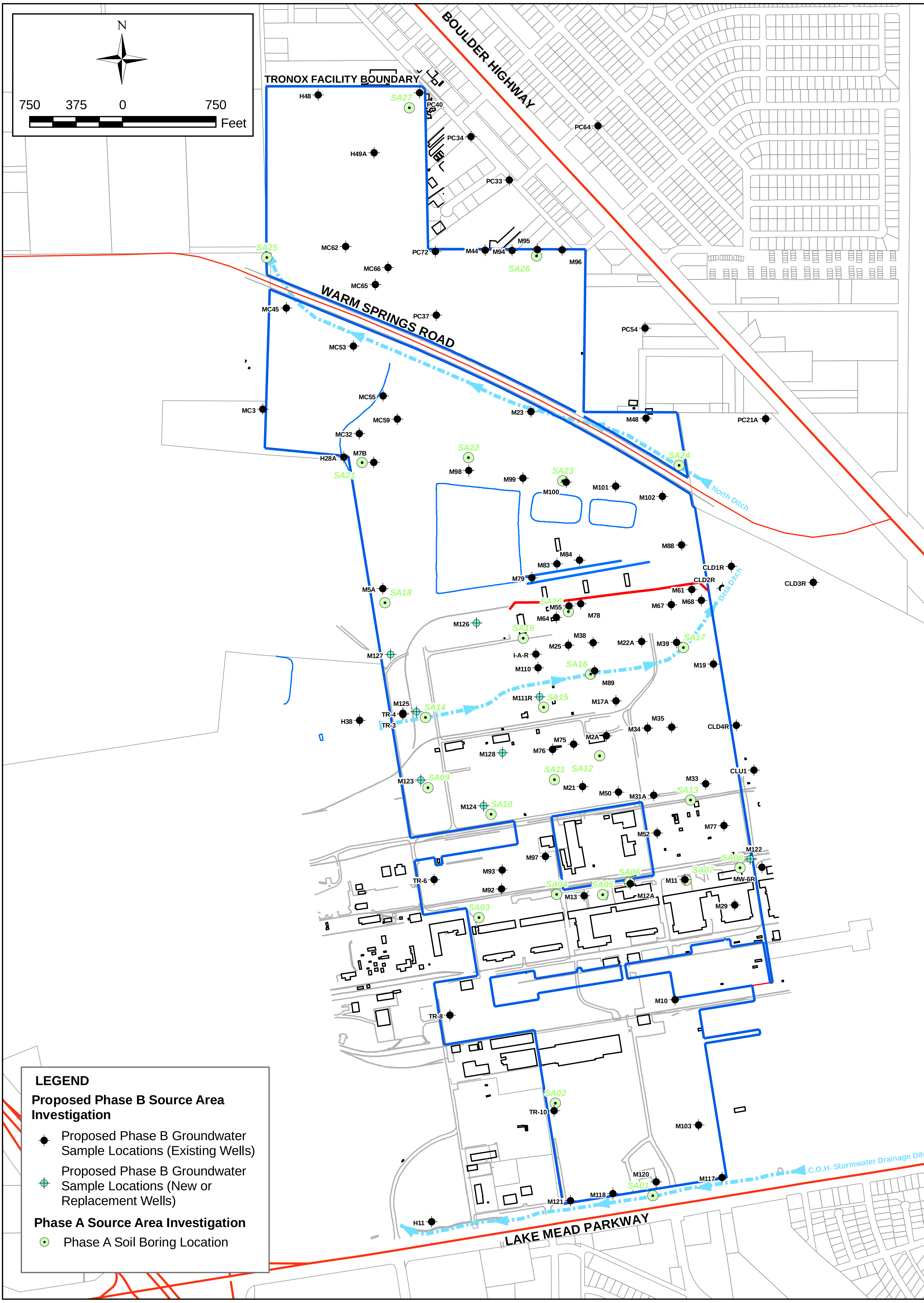

SITEWIDE PROPOSED PHASE B GROUNDWATER SAMPLE LOCATIONS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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FIGURE NUMBER: 6-6

SHEET NUMBER: X

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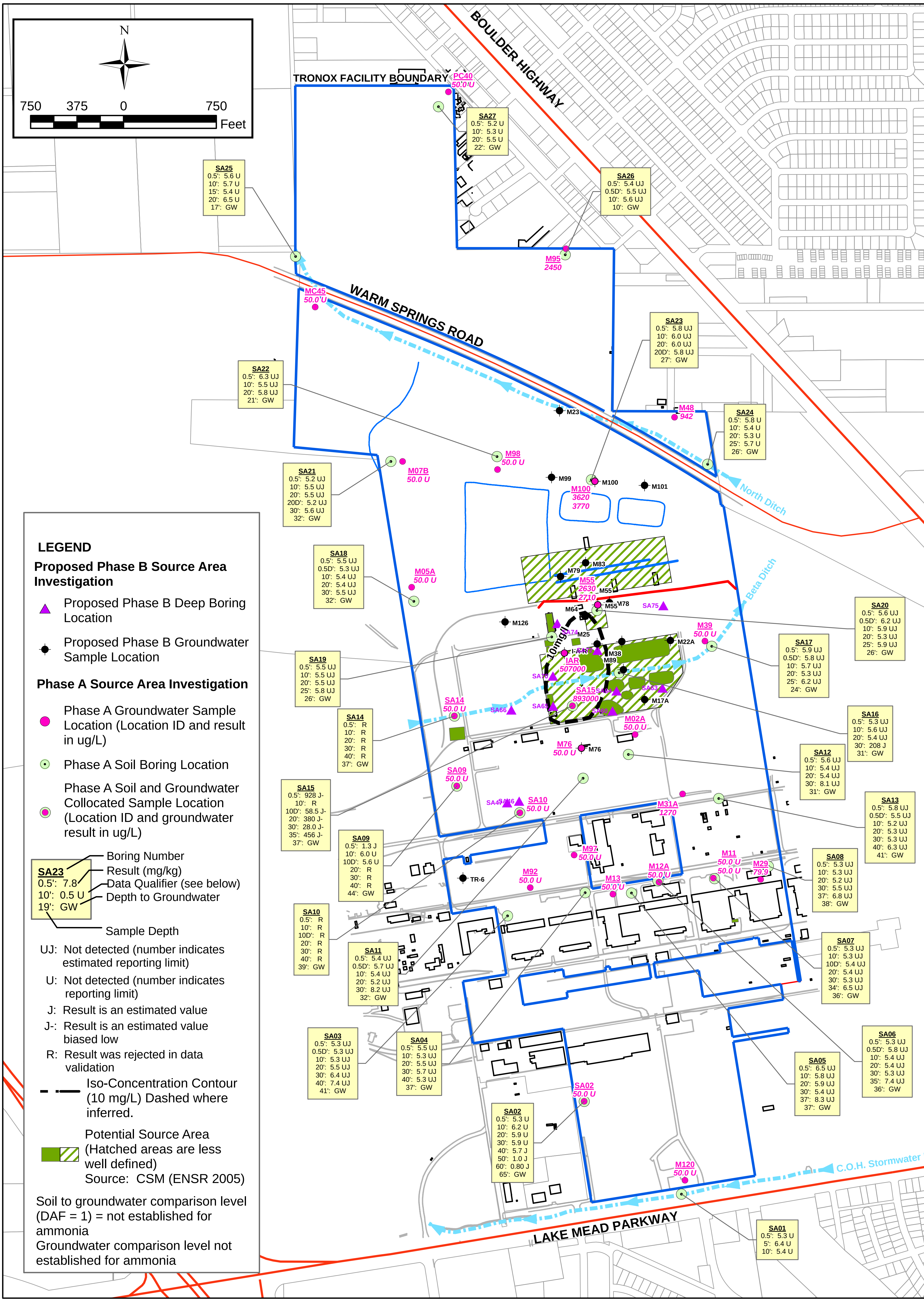

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SHEET NUMBER:

6-7

FIGURE NUMBER:

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL AMMONIA SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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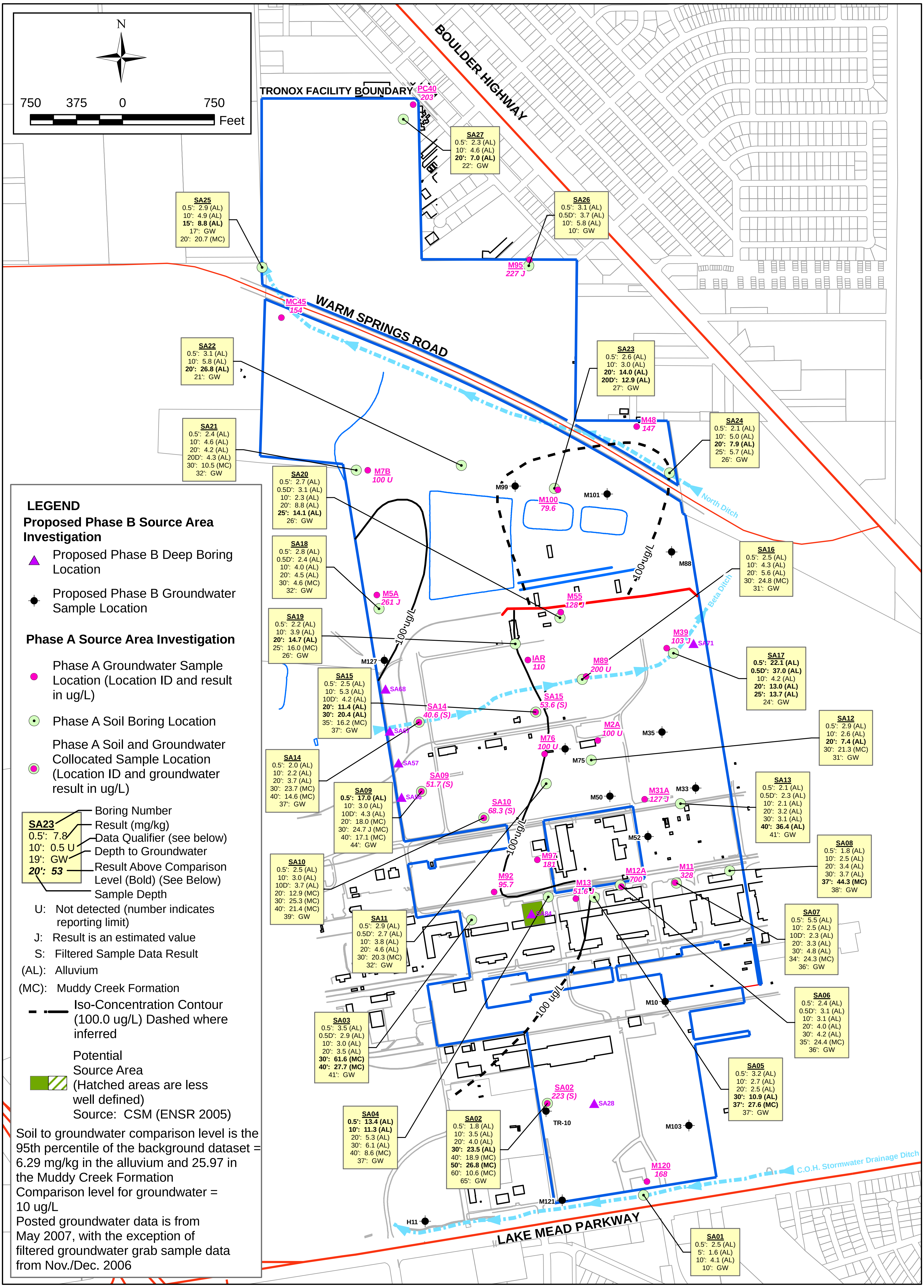

SHEET NUMBER: X	FIGURE NUMBER: 6-8	

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL ARSENIC SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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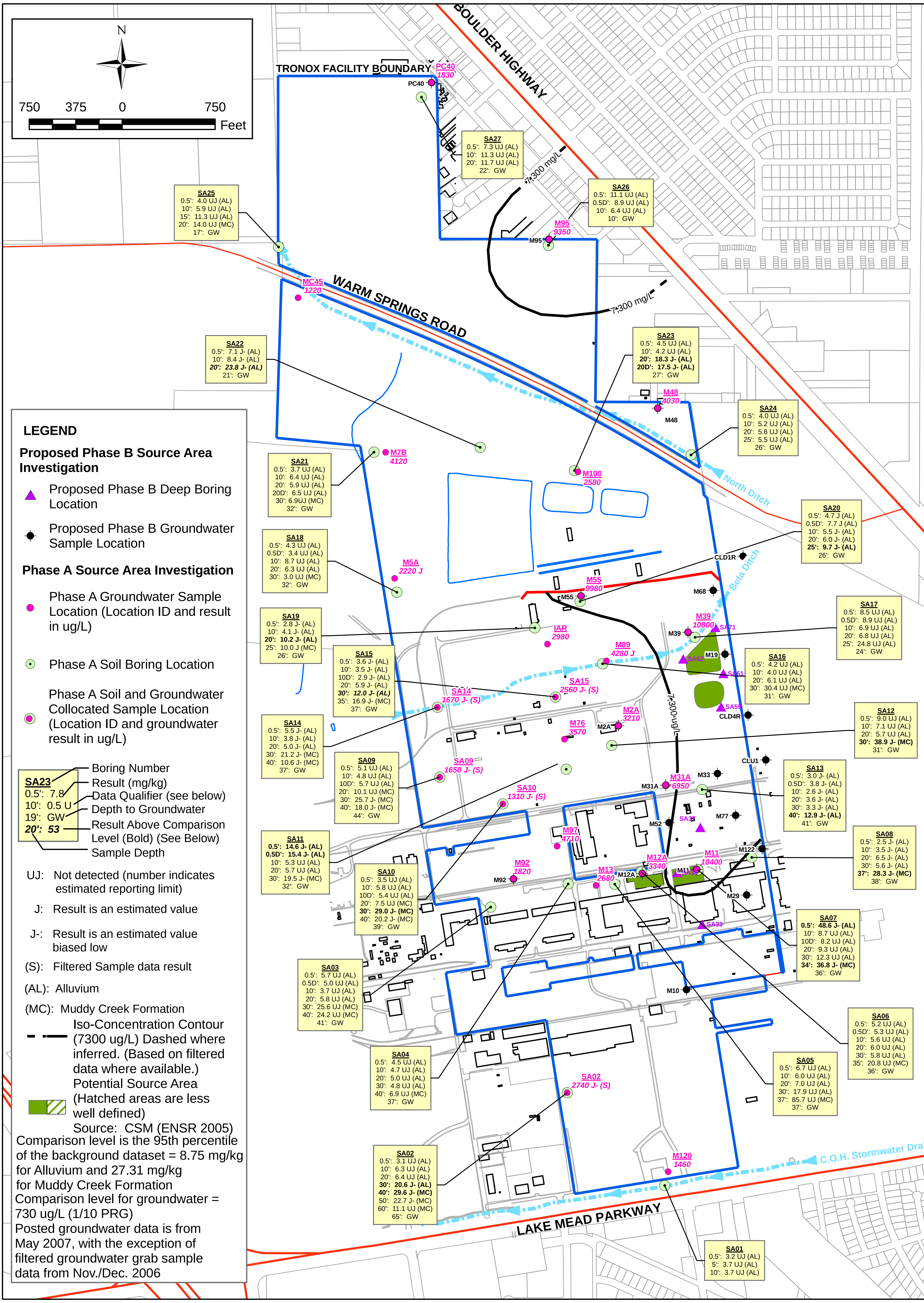

LEGEND

Proposed Phase B Source Area Investigation

- Proposed Phase B Deep Boring Location
- Proposed Phase B Groundwater Sample Location

Phase A Source Area Investigation

- Phase A Groundwater Sample Location (Location ID and result in ug/L)
- Phase A Soil Boring Location
- Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in ug/L)

SA23 — Boring Number
0.5': 7.8 — Result (mg/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below)
Sample Depth

UJ: Not detected (number indicates estimated reporting limit)

J: Result is an estimated value

J-: Result is an estimated value biased low

(S): Filtered Sample data result

(AL): Alluvium

(MC): Muddy Creek Formation

Iso-Concentration Contour (7300 ug/L) Dashed where inferred. (Based on filtered data where available.)

Potential Source Area (Hatched areas are less well defined) Source: CSM (ENSR 2005)

Comparison level is the 95th percentile of the background dataset = 8.75 mg/kg for Alluvium and 27.31 mg/kg for Muddy Creek Formation

Comparison level for groundwater = 730 ug/L (1/10 PRG)

Posted groundwater data is from May 2007, with the exception of filtered groundwater grab sample data from Nov./Dec. 2006

SHEET NUMBER: X

FIGURE NUMBER: 6-9

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL BORON SOURCE AREAS
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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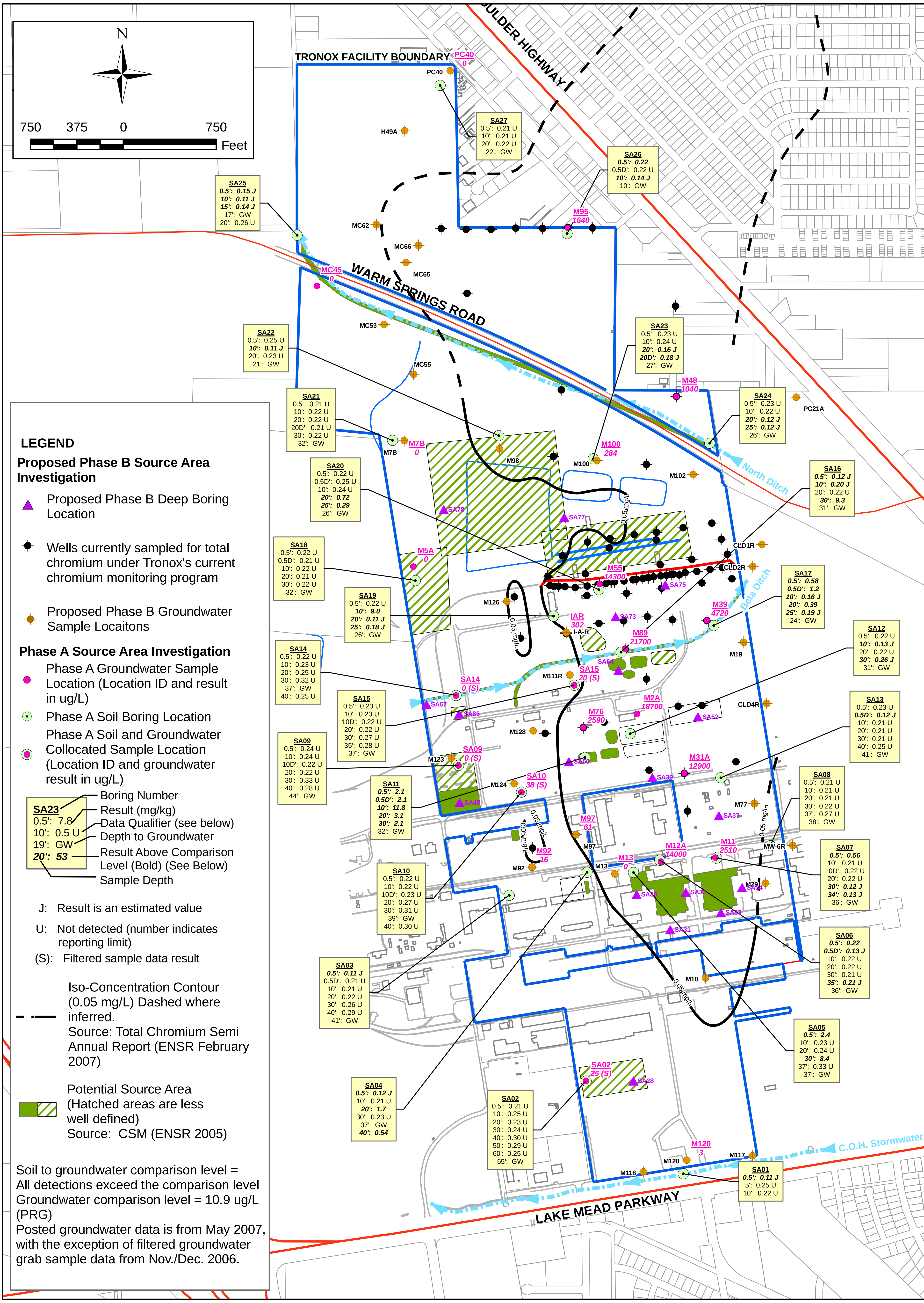

SHEET NUMBER:	X
FIGURE NUMBER:	6-10

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL HEXAVALENT CHROMIUM SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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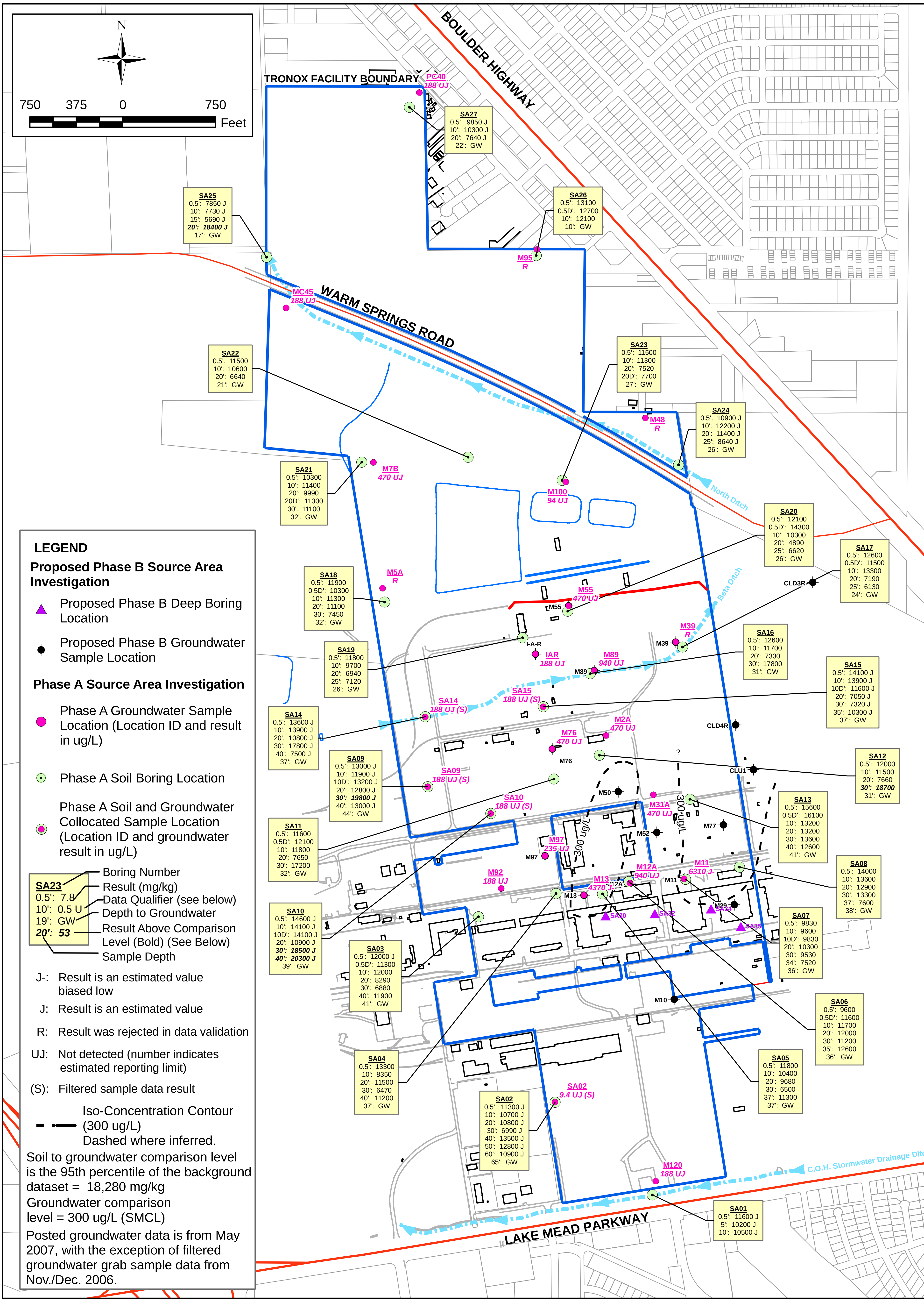

SHEET NUMBER: X

FIGURE NUMBER: 6-11

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL IRON SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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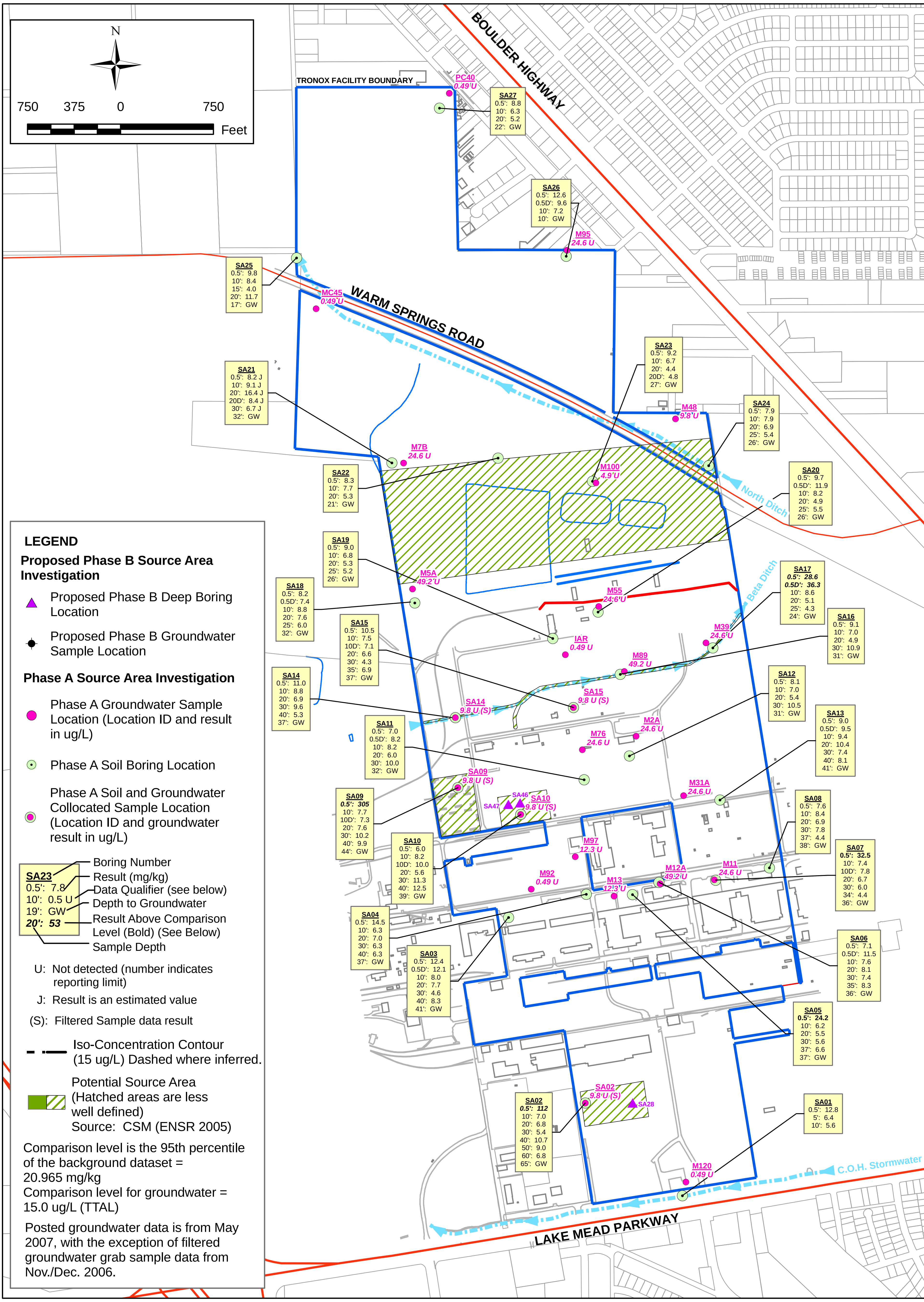

LEGEND

Proposed Phase B Source Area Investigation

Proposed Phase B Deep Boring Location

Proposed Phase B Groundwater Sample Location

Phase A Source Area Investigation

Phase A Groundwater Sample Location (Location ID and result in ug/L)

Phase A Soil Boring Location

Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in ug/L)

SA23 — Boring Number
0.5': 7.8 — Result (mg/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below)
Sample Depth

U: Not detected (number indicates reporting limit)

J: Result is an estimated value

(S): Filtered Sample data result

Iso-Concentration Contour (15 ug/L) Dashed where inferred.

Potential Source Area (Hatched areas are less well defined) Source: CSM (ENSR 2005)

Comparison level is the 95th percentile of the background dataset = 20.965 mg/kg
Comparison level for groundwater = 15.0 ug/L (TTAL)

Posted groundwater data is from May 2007, with the exception of filtered groundwater grab sample data from Nov./Dec. 2006.

SHEET NUMBER:	X
FIGURE NUMBER:	6-12

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL LEAD SOURCE AREAS
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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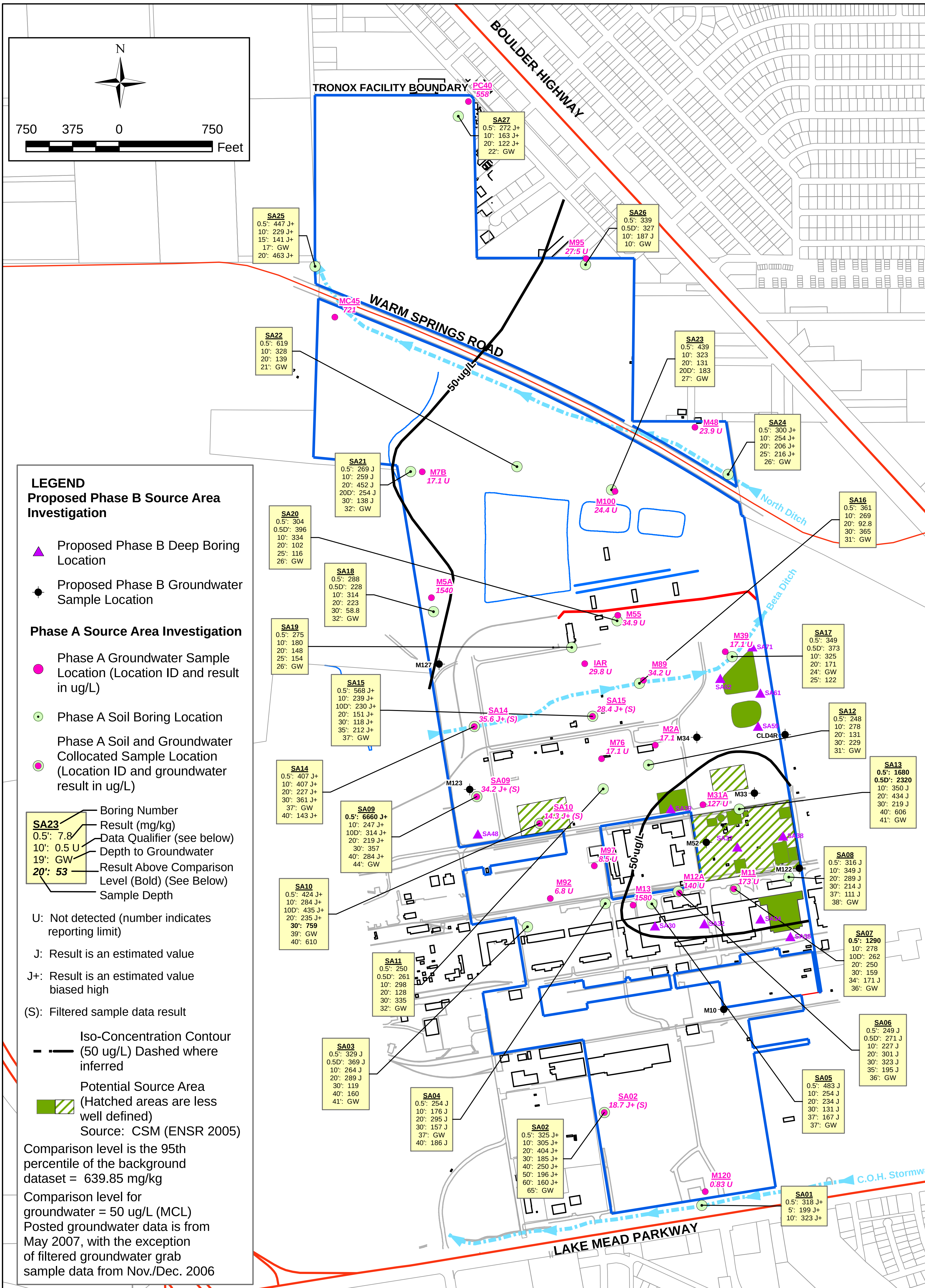

LEGEND
Proposed Phase B Source Area Investigation

- Proposed Phase B Deep Boring Location
- Proposed Phase B Groundwater Sample Location

Phase A Source Area Investigation

- Phase A Groundwater Sample Location (Location ID and result in ug/L)
- Phase A Soil Boring Location
- Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in ug/L)

SA23 — Boring Number
0.5': 7.8 — Result (mg/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below); Sample Depth

U: Not detected (number indicates reporting limit)

J: Result is an estimated value

J+: Result is an estimated value biased high

(S): Filtered sample data result

Iso-Concentration Contour (50 ug/L) Dashed where inferred

Potential Source Area (Hatched areas are less well defined)
Source: CSM (ENSR 2005)

Comparison level is the 95th percentile of the background dataset = 639.85 mg/kg

Comparison level for groundwater = 50 ug/L (MCL)
Posted groundwater data is from May 2007, with the exception of filtered groundwater grab sample data from Nov./Dec. 2006

SHEET NUMBER:	FIGURE NUMBER:
X	6-13

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL MANGANESE SOURCE AREAS
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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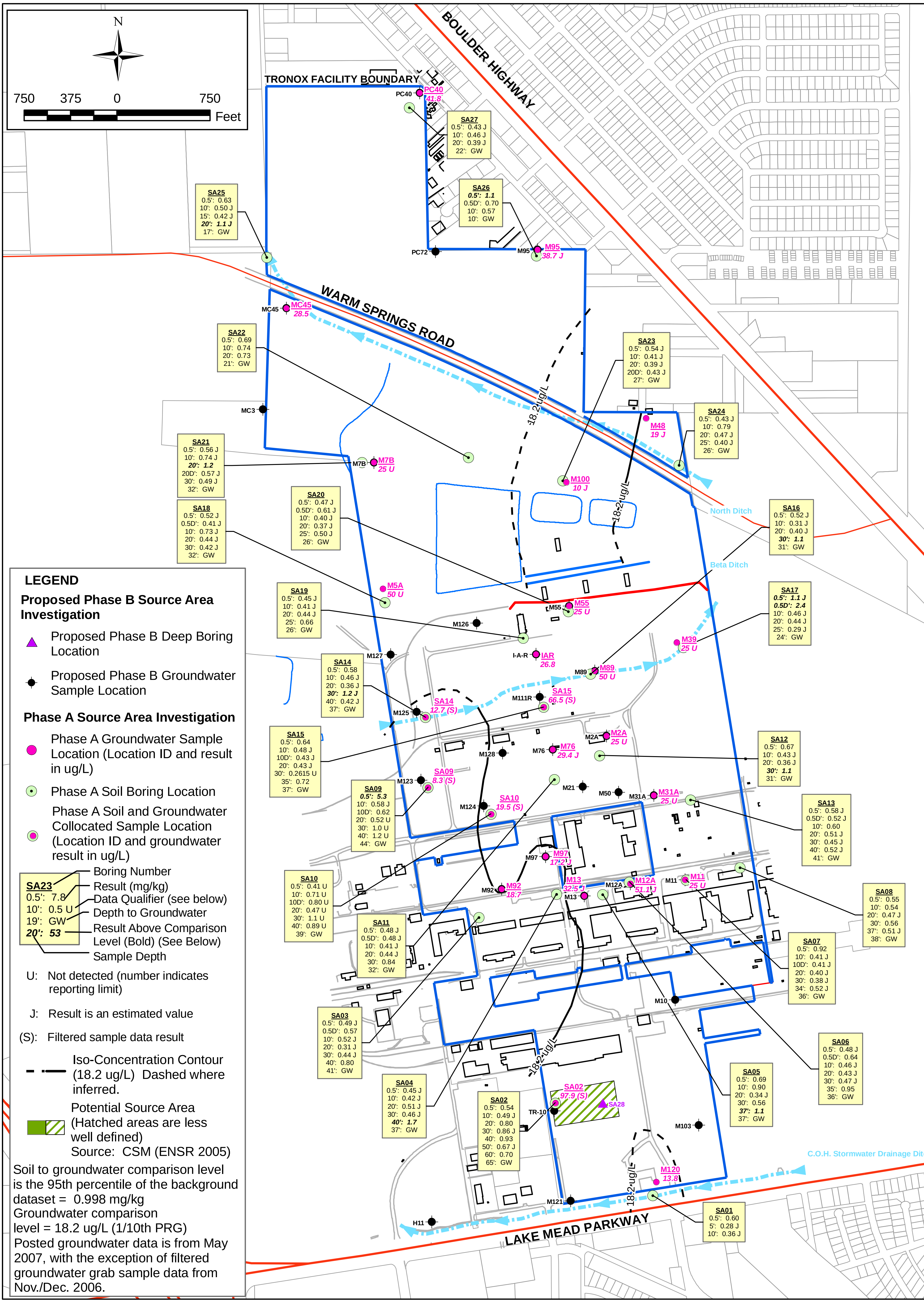

SHEET NUMBER: X

FIGURE NUMBER: 6-14

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL MOLYBDENUM SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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B HO				
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D GERRY				

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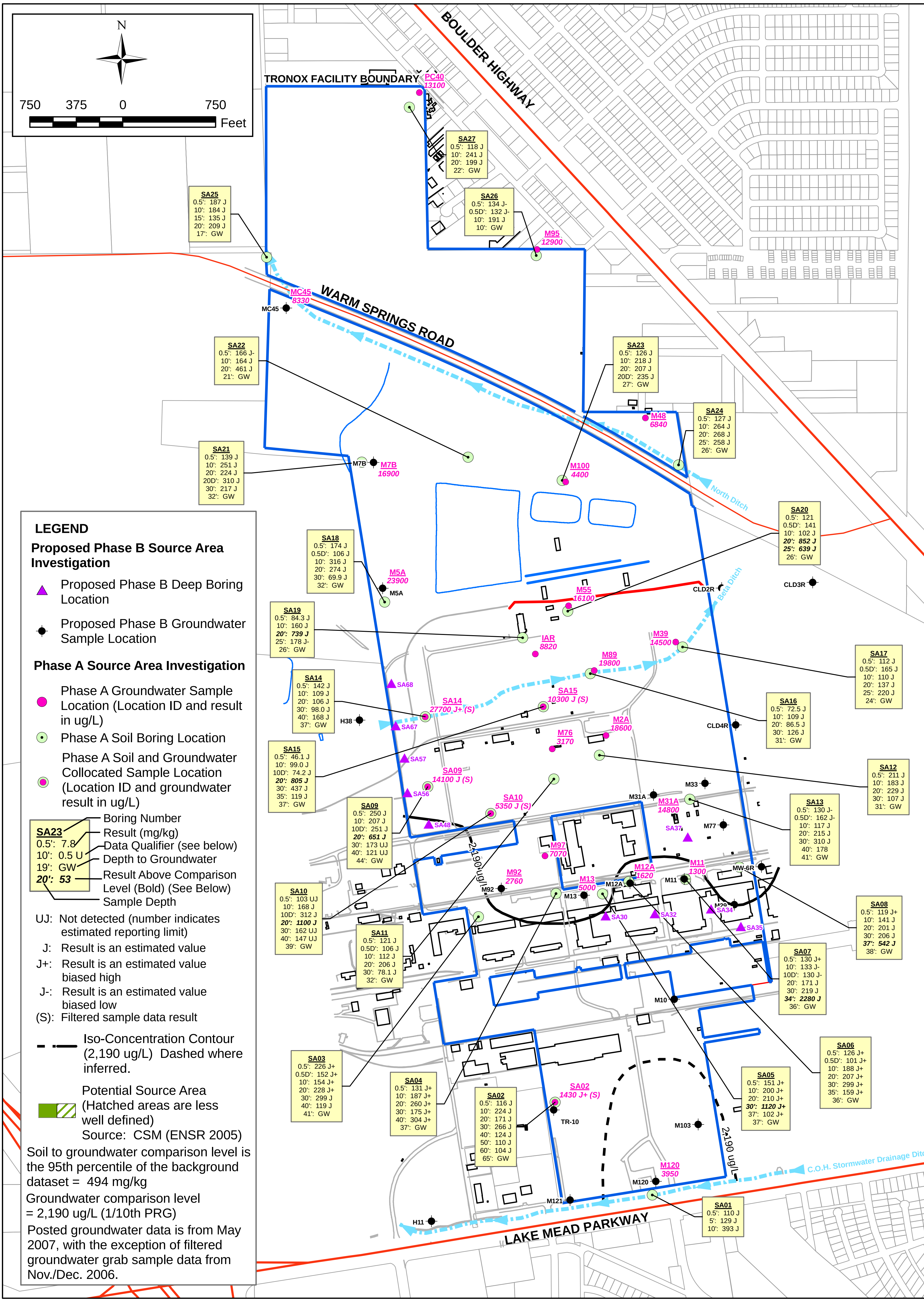

SHEET NUMBER:	FIGURE NUMBER:
X	6-15

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL STRONTIUM SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
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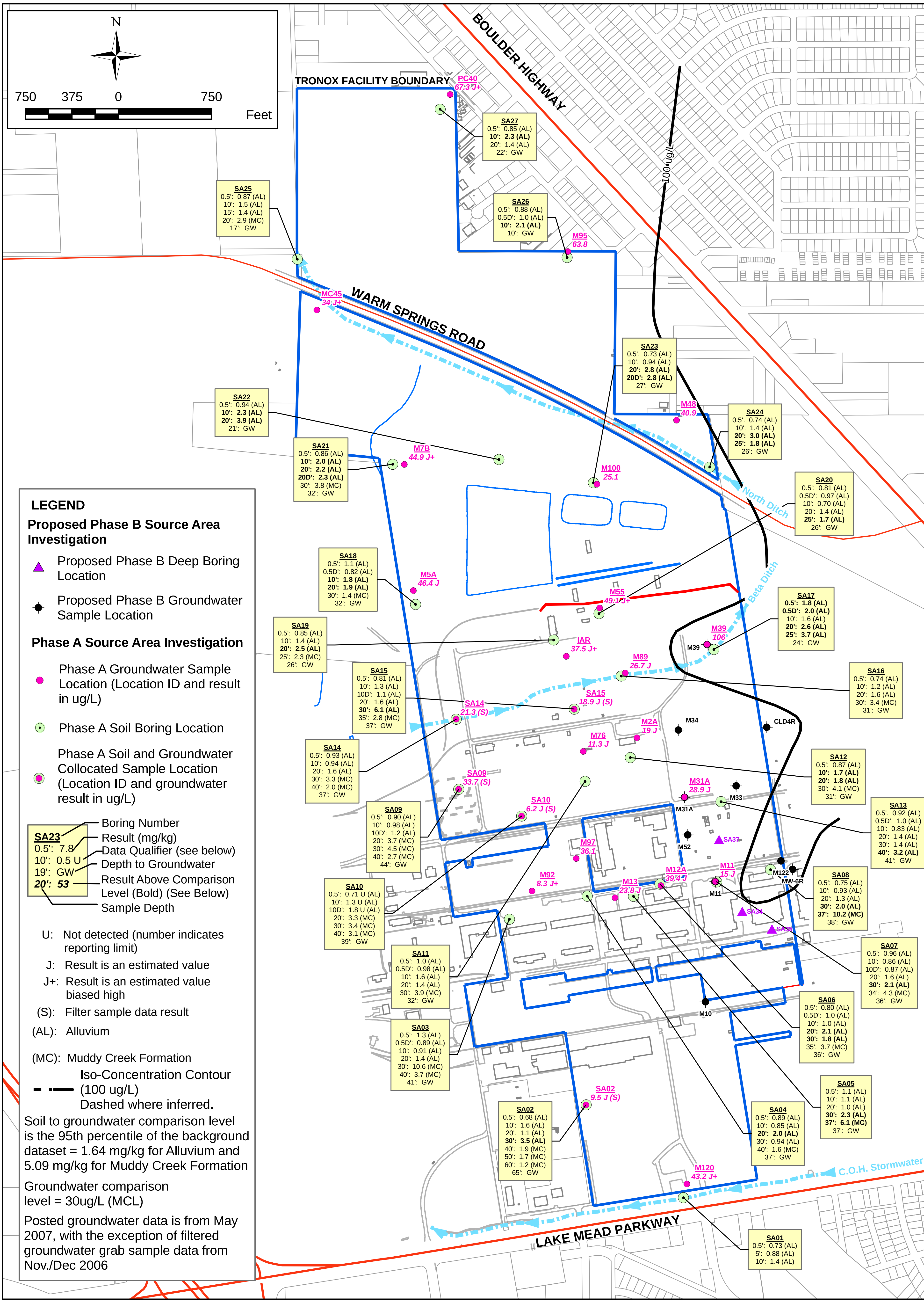

SHEET NUMBER:	FIGURE NUMBER:
X	6-16

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL URANIUM SOURCE AREAS
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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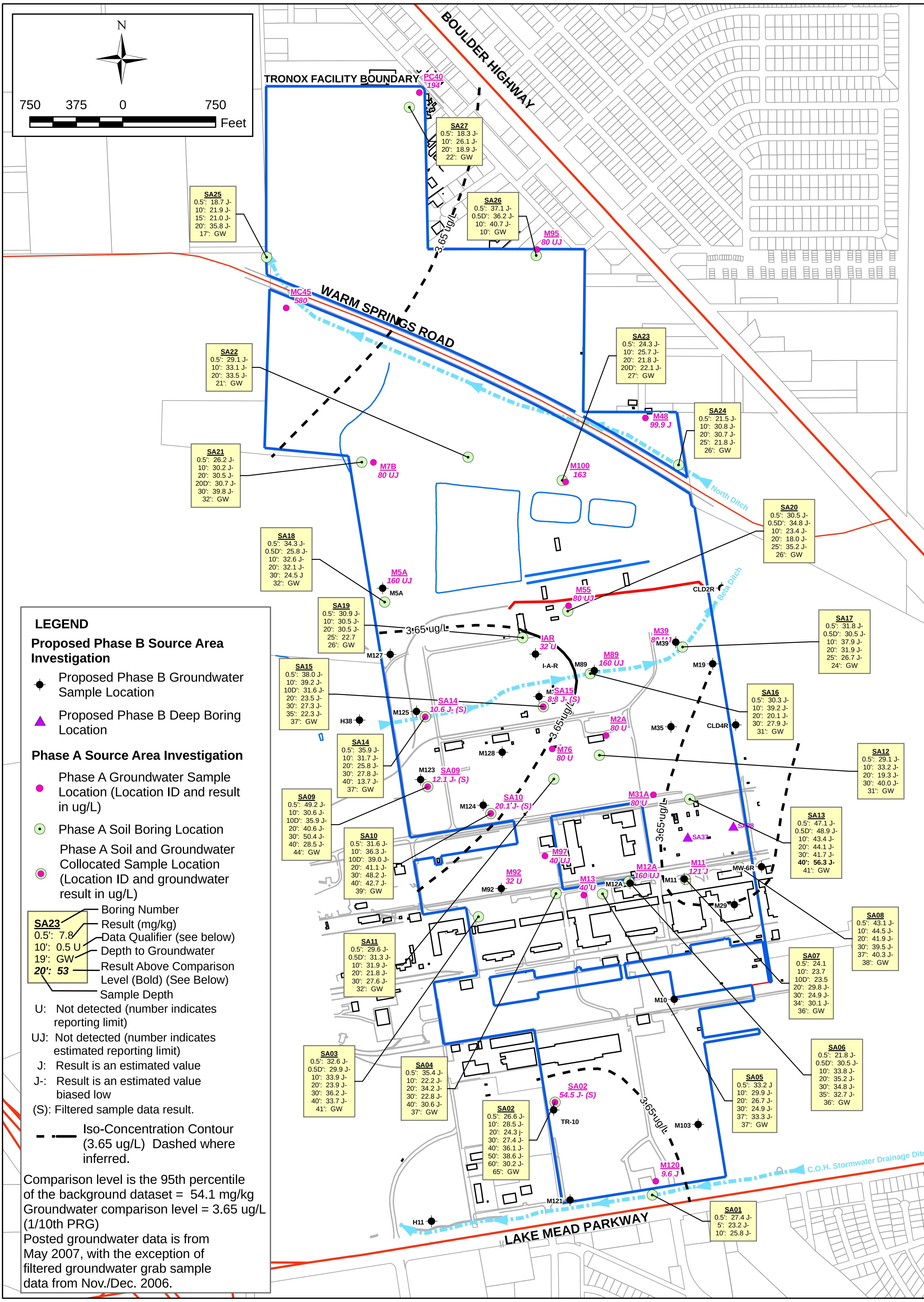

SHEET NUMBER:	X
FIGURE NUMBER:	6-17

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL VANADIUM SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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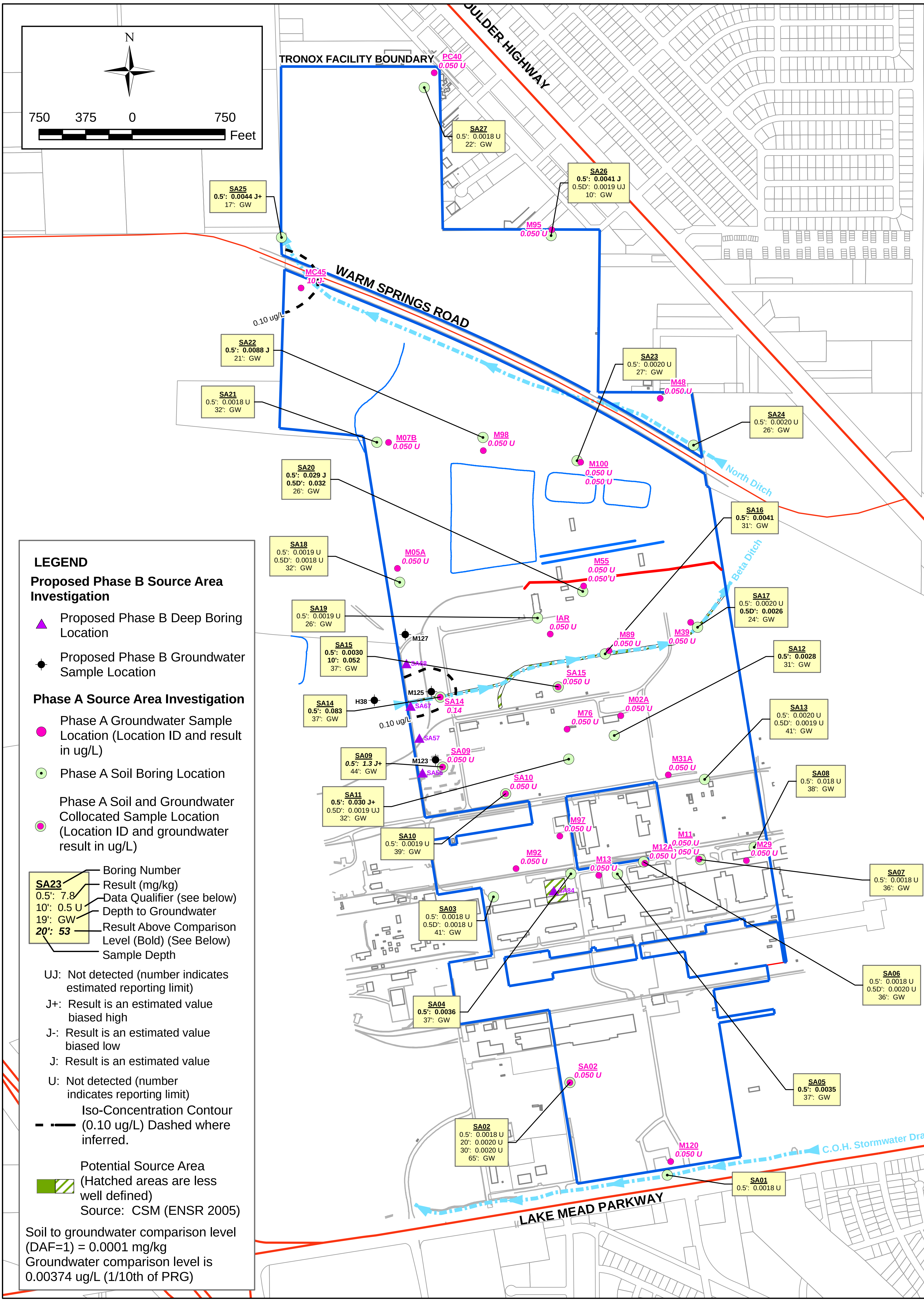

SHEET NUMBER: X

FIGURE NUMBER: 6-18

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL BETA-BHC SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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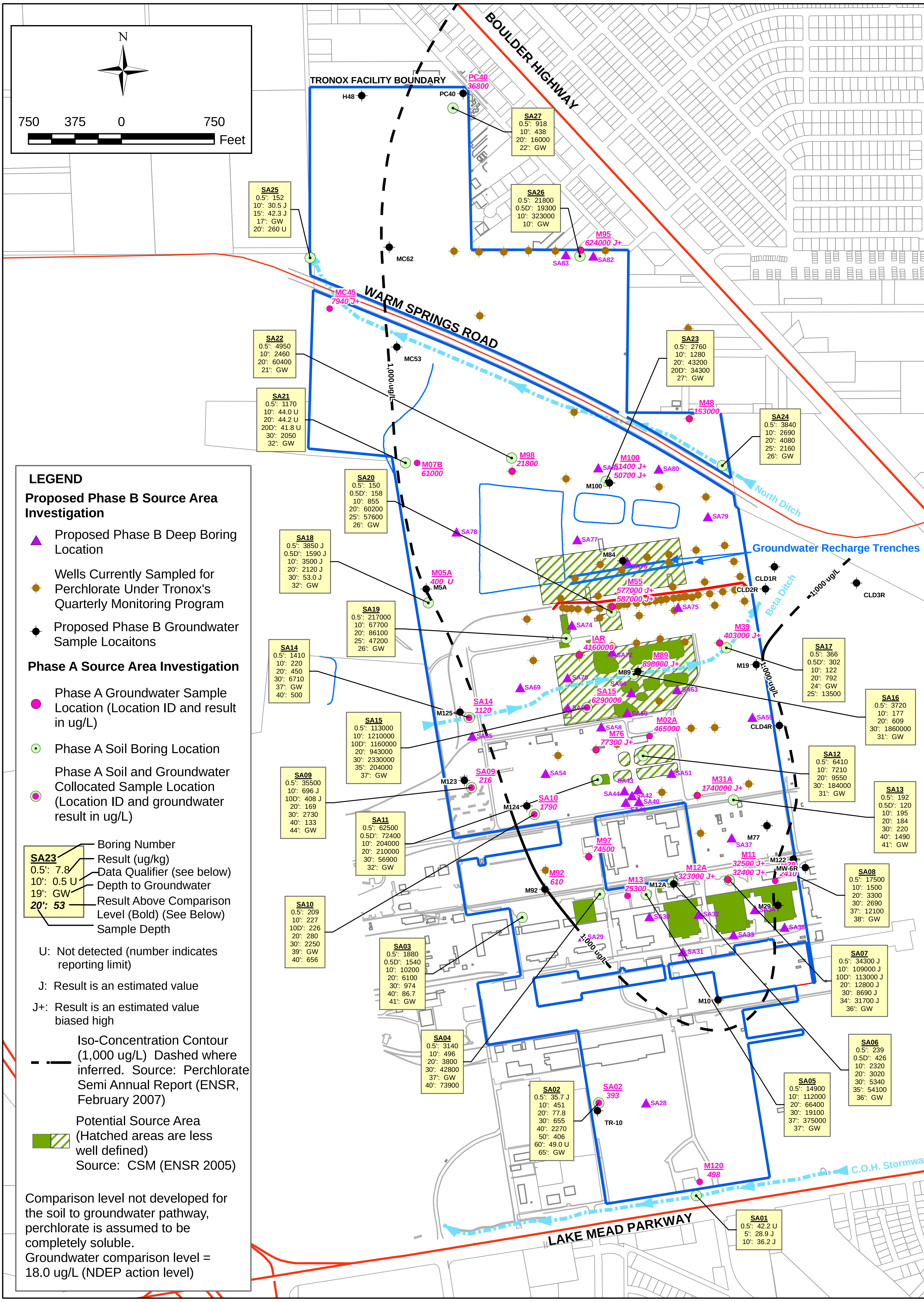

X	SHEET NUMBER:	6-19	FIGURE NUMBER:

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL PERCHLORATE SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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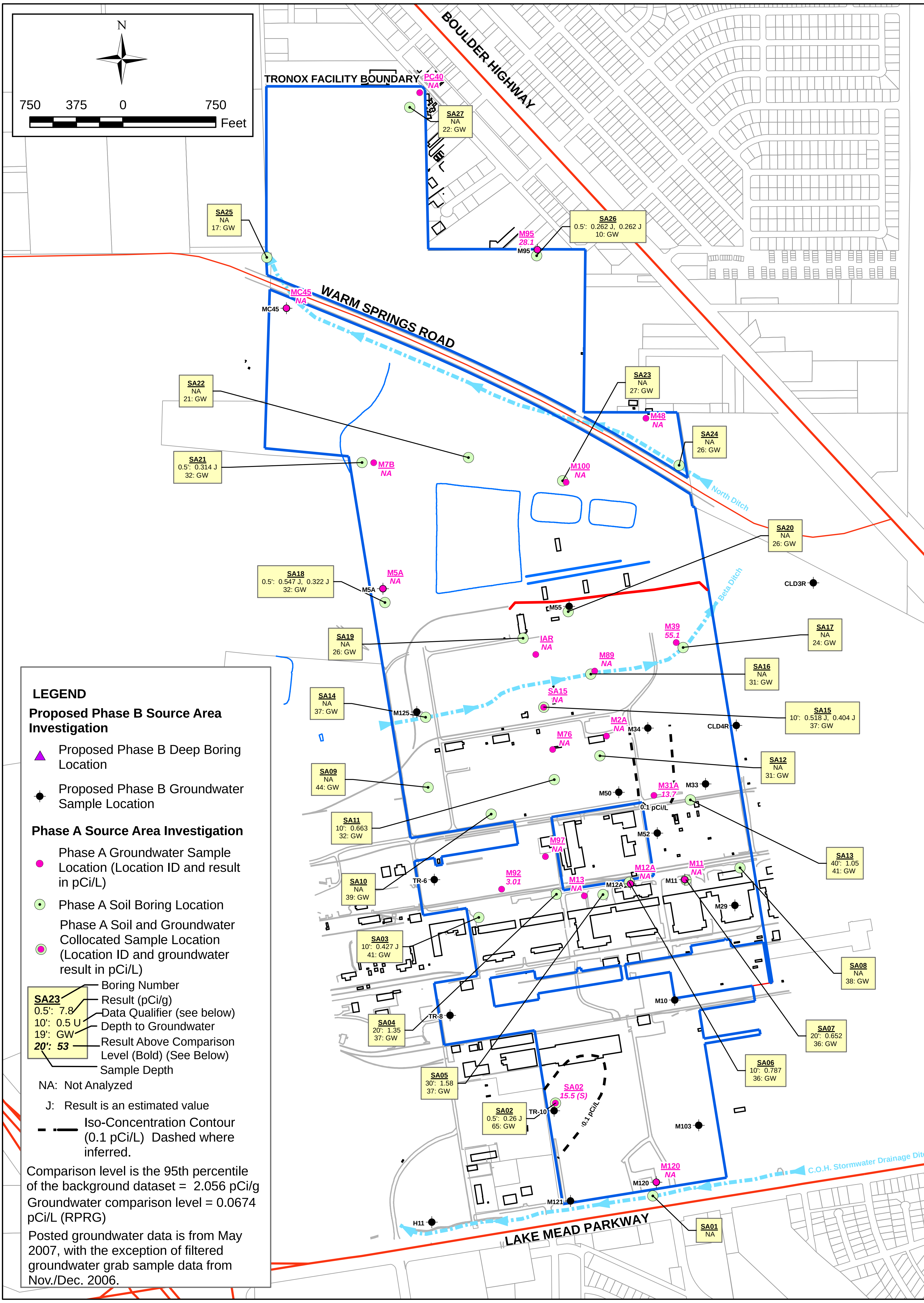

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SHEET NUMBER:

6-20

FIGURE NUMBER:

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL URANIUM-233/234 SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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B HO				
APPROVED BY:				
D GERRY				

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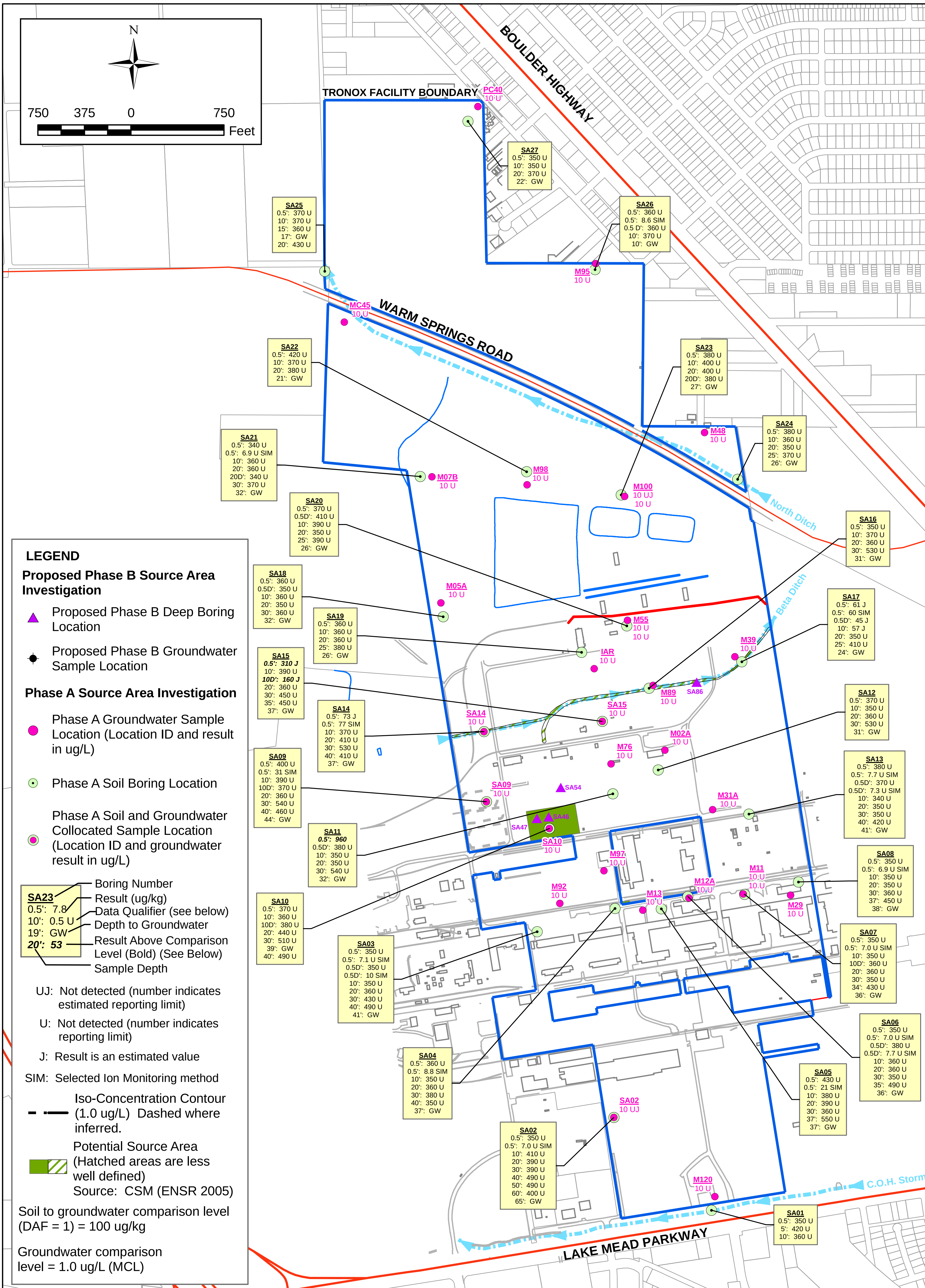

LEGEND

Proposed Phase B Source Area Investigation

- Proposed Phase B Deep Boring Location
- Proposed Phase B Groundwater Sample Location

Phase A Source Area Investigation

- Phase A Groundwater Sample Location (Location ID and result in ug/L)
- Phase A Soil Boring Location
- Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in ug/L)

SA23 — Boring Number
0.5': 7.8 — Result (ug/kg)
10': 0.5 U — Data Qualifier (see below)
19': GW — Depth to Groundwater
20': 53 — Result Above Comparison Level (Bold) (See Below)
Sample Depth

UJ: Not detected (number indicates estimated reporting limit)

U: Not detected (number indicates reporting limit)

J: Result is an estimated value

SIM: Selected Ion Monitoring method

Iso-Concentration Contour (1.0 ug/L) Dashed where inferred.

Potential Source Area (Hatched areas are less well defined)
Source: CSM (ENSR 2005)

Soil to groundwater comparison level (DAF = 1) = 100 ug/kg

Groundwater comparison level = 1.0 ug/L (MCL)

X | SHEET NUMBER: | 6-21 | FIGURE NUMBER:

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL HEXACHLOROBENZENE SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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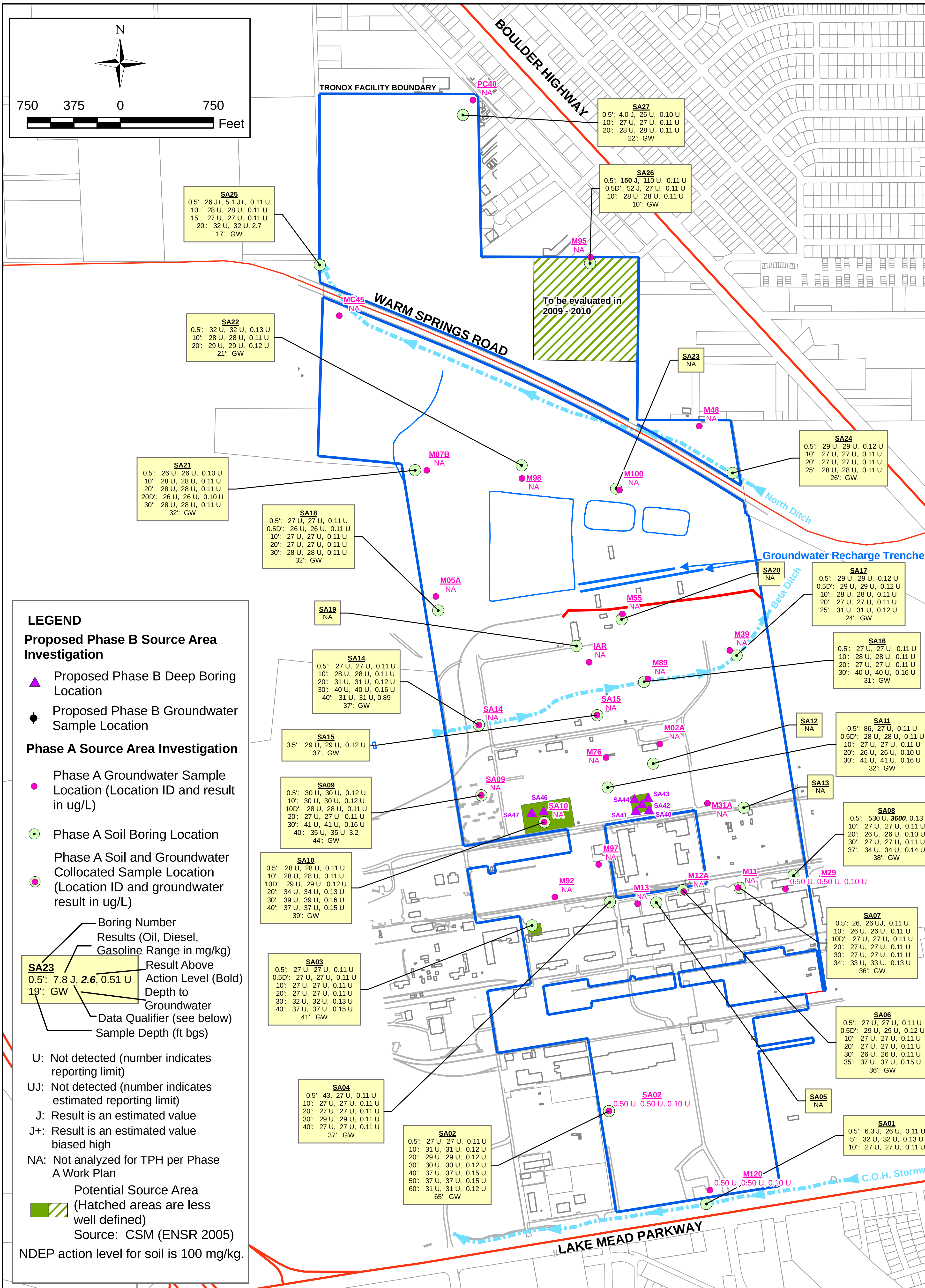

X	SHEET NUMBER:	6-22	FIGURE NUMBER:

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL TPH SOURCE AREAS
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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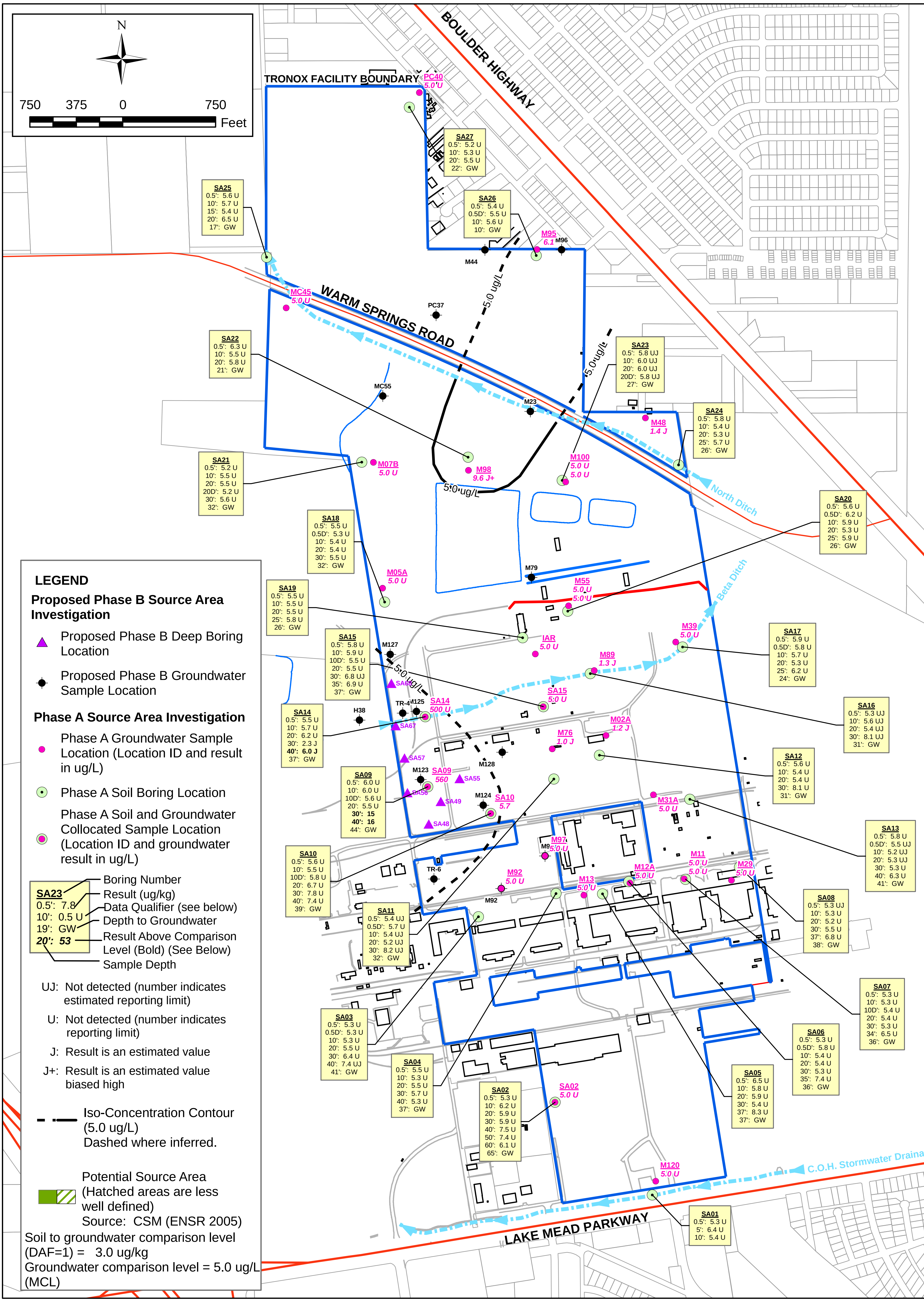

SHEET NUMBER:	FIGURE NUMBER:
X	6-23

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL CARBON TETRACHLORIDE SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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B HO				
APPROVED BY:				
D GERRY				

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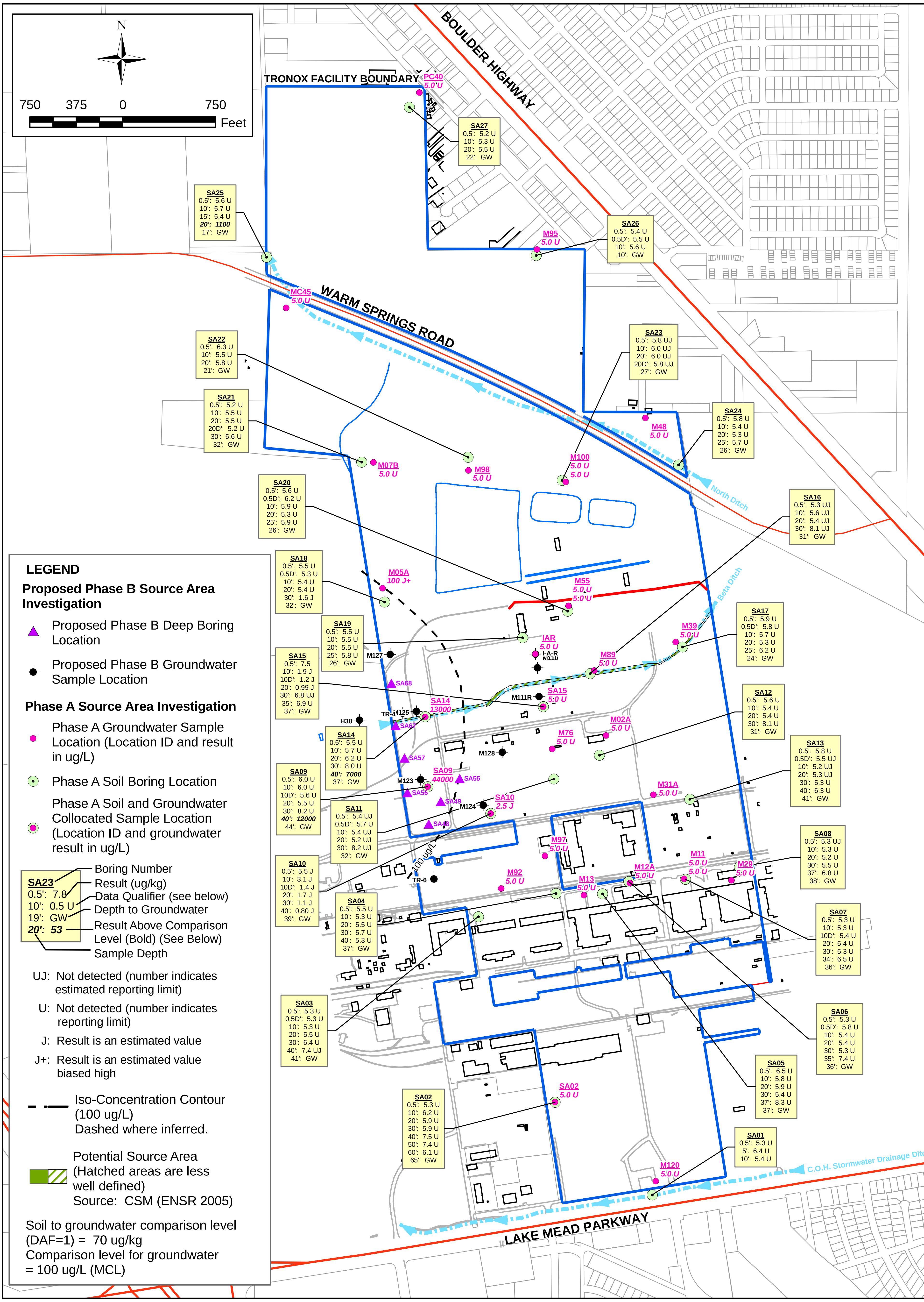

SHEET NUMBER: X

FIGURE NUMBER: 6-24

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL CHLOROBENZENE SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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APPROVED BY:				
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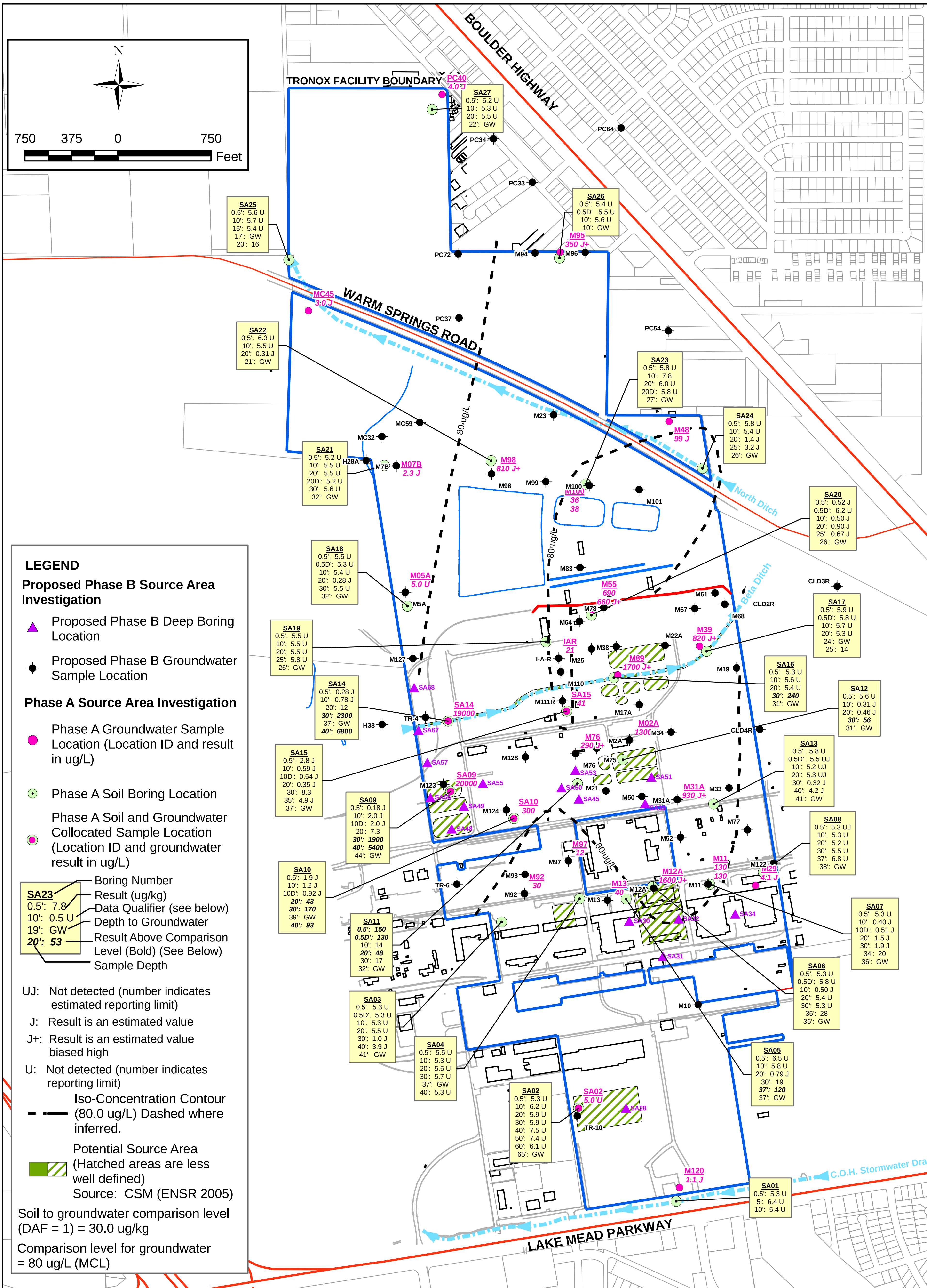

LEGEND

Proposed Phase B Source Area Investigation

- Proposed Phase B Deep Boring Location
- Proposed Phase B Groundwater Sample Location

Phase A Source Area Investigation

- Phase A Groundwater Sample Location (Location ID and result in ug/L)
- Phase A Soil Boring Location
- Phase A Soil and Groundwater Collocated Sample Location (Location ID and groundwater result in ug/L)

SA23	
0.5': 7.8	Boring Number
10': 0.5 U	Result (ug/kg)
19': GW	Data Qualifier (see below)
20': 53	Depth to Groundwater
	Result Above Comparison Level (Bold) (See Below)
	Sample Depth

UJ: Not detected (number indicates estimated reporting limit)

J: Result is an estimated value

J+: Result is an estimated value biased high

U: Not detected (number indicates reporting limit)

Iso-Concentration Contour (80.0 ug/L) Dashed where inferred.

Potential Source Area (Hatched areas are less well defined)
Source: CSM (ENSR 2005)

Soil to groundwater comparison level (DAF = 1) = 30.0 ug/kg

Comparison level for groundwater = 80 ug/L (MCL)

X

SHEET NUMBER:

FIGURE NUMBER: 6-25

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL CHLOROFORM SOURCE AREAS
PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

SCALE:	DATE:	PROJECT NUMBER:
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T.M.				
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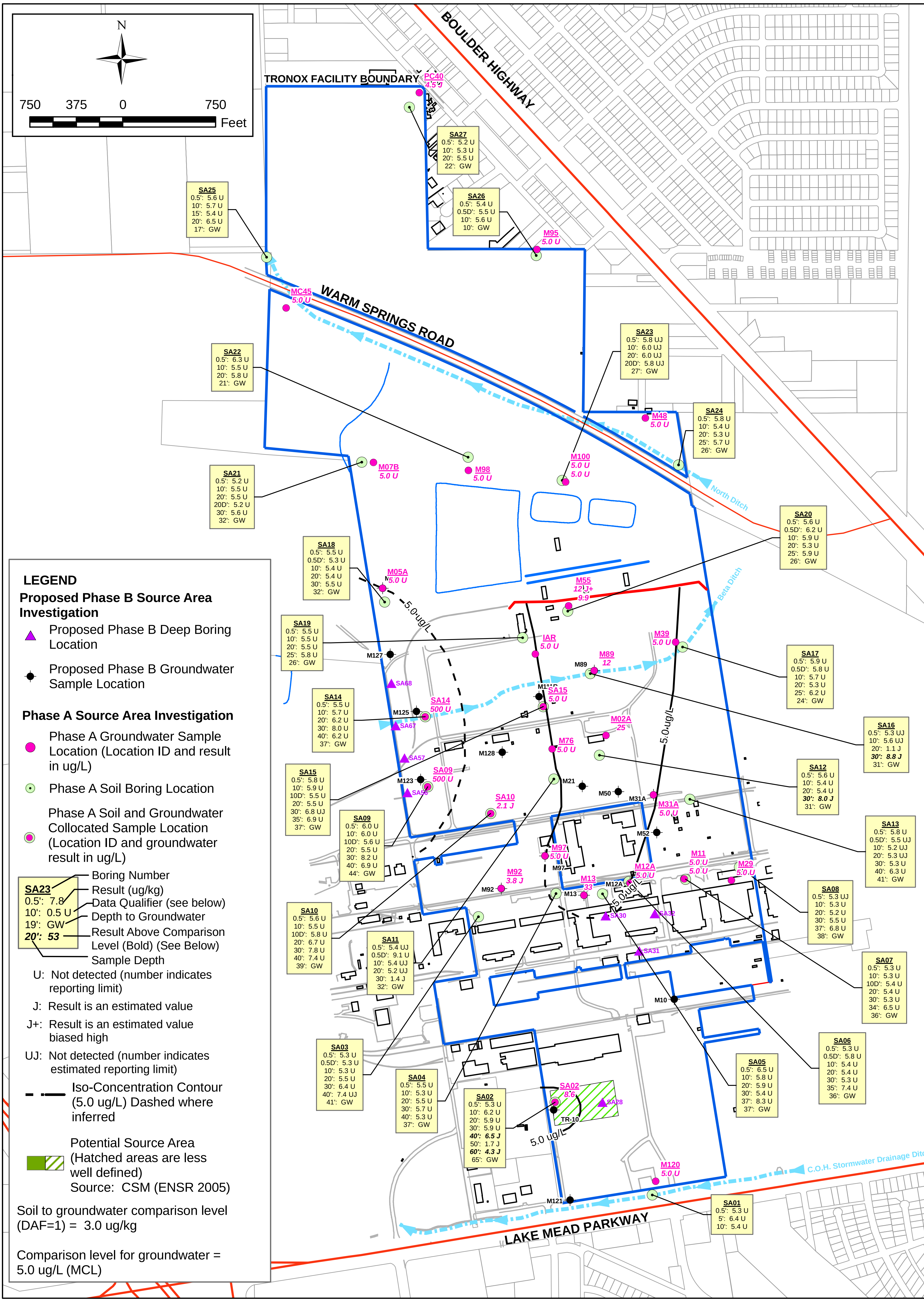

SHEET NUMBER:	FIGURE NUMBER:
X	6-26

PROPOSED PHASE B SAMPLE LOCATIONS AND POTENTIAL TCE SOURCE AREAS

PHASE A SOURCE AREA INVESTIGATION
TRONOX FACILITY
HENDERSON, NEVADA

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D GERRY				

Tables

Table 1-1
LOUs and Known and/or Postulated Site Related Chemicals
Phase A Source Area Investigation, Tronox Facility -
Henderson, Nevada

LOU Number	Name of LOU	Description of Chemicals Identified	Metals	VOCs	SVOCs	PCBs	TPH	Rad	Perchlorate	Pesticides	General Chemistry [1]	Ethylene Glycol	Dioxin/furan	Asbestos
1	Trade Effluent Settling Ponds	Acid waste neutralized with caustic liquor, hydrochloric acid, sodium hydroxide. The area of the former TE ponds is now occupied by the closed hazardous waste landfill, surface impoundments WC-East and WC-West addressed as separate LOUs. Chemicals mentioned included Silvex. Previously tested for RCRA metals.	X							X (this area will also be tested for herbicides because Silvex is a herbicide)	X			
2	Open Area Due South of "Trade Effluent Disposal Ponds"	Identified in LOU as "poorly defined historic disposal area."	X							X	X			
3	Air Pollution Emissions Associated with Industrial Processes	Particulates.	X		X								X	
4	Hardesty Chemical Company Site (prior to J. B. Kelley Operations)	Muriatic acid, synthetic hydrochloric acid, monochlorobenzene, peradichlorobenzene, orthodichlorobenzene, DDT, and soda arsenite solution, two underground storage tanks for kerosene and benzene.	X	X	X		X			X	X			
5	On-Site Portion of Beta Ditch, Including "Small Diversion Ditch" Northwest of Pond C-1	VOCs, SVOCs, pesticides/ polychlorinated biphenyls (PCBs), metals, cyanide, chlorate, pH, asbestos and radionuclides.	X	X	X	X	X	X	X	X	X			X
6	Unnamed Drainage Ditch Segment (BMI Landfill)	Wastewater and stormwater.	X	X	X		X			X				
7	Old P-2 Pond and Associated Conveyance Facilities	Old P-2 Pond received chlorate process liquids which contained hexavalent chromium, sodium chloride, sodium chlorate, and sodium perchlorate. The latter compound was from the caustic scrubber solution generated at the AP plant.	X						X		X			
8	Old P-3 Pond and Associated Conveyance Facilities	Ammonium perchlorate and chromium.	X						X		X			
9	New P-2 Pond and Associated Piping	Ammonium perchlorate and chromium.	X						X		X			
10	On-Site Hazardous Waste Landfill (Closed)	Hazardous Waste.	X	X	X	X	X	X	X	X	X			
11	Sodium Chlorate Filter Cake Holding Area	Filter Cake Drying Pad was used to dry particulate material removed from the sodium chlorate process; chromium, chlorate and TDS.	X						X		X			
12	Hazardous Waste Storage Area	Container for waste from the sodium chlorate process.	X						X		X			
13	Pond S-1	Liquids from the sodium chlorate, sodium perchlorate, potassium perchlorate, sodium perchlorate, and boron manufacturing processes. Cooling tower and reboiler wastes from the boron trichloride process were also discharged to Pond S-1.	X						X		X			
14	Pond P-1 and Associated Conveyance Piping	Liquids from the sodium chlorate, sodium perchlorate, potassium perchlorate, and boron manufacturing processes. Cooling tower and reboiler wastes from the boron trichloride process were also discharged to Pond P-1. Liquors, residual salt solutions, and rinsates from decommissioning and closure of Pond S-1 and from the decommissioning of potassium perchlorate manufacturing process.	X						X		X			
15	Platinum Drying Unit	Platinum, sodium perchlorate byproducts, chromium.	X						X					
16 & 17	Ponds AP-1, AP-2, and AP-3 and Associated Transfer Lines	Nitrate, nitrite, chromium.	X						X		X			
18	Pond AP-4	Ammonium perchlorate and chromium.	X						X		X			
19	Pond AP-5	Ammonium perchlorate and chromium.	X						X		X			
20	Pond C-1 and Associated Piping	Used to evaporate non-hazardous process water, primarily from steam production, but at times also from the boron and manganese dioxide processes.	X								X			
21	Mn-1 and Associated Piping	The manganese pond received non-hazardous process water wastes, including filter wash water and cathode wash water. The pond contents contain manganese as well as high TDS.	X								X			
22	Pond WC-1 and Associated Piping	Process water. Sodium hypochlorite and other water treatment chemicals, were placed in WC-East pond (WC-2)	X						X		X			
23	Pond WC-2 and Associate Piping	Process water. Sodium hypochlorite and other water treatment chemicals, were placed in WC-East pond (WC-2).	X						X		X			
24	Leach Beds, Associated Conveyance Facilities, and Mn Tailings Area	Tailings from the beneficiation of manganese dioxide ores were transported as a slurry to unlined surface impoundments/leach beds to the west of the current tailings area; demolition debris was also put into the tailings piles.	X											
25	Process Hardware Storage Area	Used to store process hardware, scrap metal parts and equipment from decommissioning of the former sodium chlorate and perchlorate processes, equipment was rinsed prior to placement.	X						X		X			
26	Trash Storage Area	Two asphalt areas were used to store trash from the sodium chlorate and sodium perchlorate process. Common trash was placed in 55 gallon drums then shipped to Beatty, Nevada as a precautionary measure.	X						X		X			
27	PCB Storage Area	A concrete and plastic lined area received PCB waste.		X	X	X	X							
28	Hazardous Waste Storage Area	Hazardous and non hazardous waste was stored in drums in this area including used oil and flammable maintenance parts washing wastes. The concrete pad and 4 feet of soil were removed. TPH was discovered in the soil and removed in 1994.	X	X	X	X	X		X					
29	Solid Waste Dumpsters	Open metal dumpsters were placed on concrete surfaces separated by gravel covered soil. The dumpsters contained common trash, recyclable steel and other recyclable metals. Scrap metal was washed before being placed in this area.	X	X	X	X	X		X		X			X

Table 1-1
LOUs and Known and/or Postulated Site Related Chemicals
Phase A Source Area Investigation, Tronox Facility -
Henderson, Nevada

LOU Number	Name of LOU	Description of Chemicals Identified	Metals	VOCs	SVOCs	PCBs	TPH	Rad	Perchlorate	Pesticides	General Chemistry [1]	Ethylene Glycol	Dioxin/furan	Asbestos
30	AP Area-Pad 35	Used for the accumulation of trash potentially contaminated with perchlorate and other industrial wastes, such as cooling tower sludge, and iron oxide sludge.	X	X	X	X	X		X		X			
31	Drum Recycling Area	Drums from the ammonium perchlorate production were emptied and rinsed prior to delivery to this area.	X						X					
32	Ground Water Remediation Unit	This LOU includes the treatment system, the extraction wells and the recharge trenches. The treatment system reduces chromium and other heavy metals from impacted groundwater. The recharge trenches became plugged and discharged treated water to the shallow soils.	X						X					
33	Sodium Perchlorate Platinum By-Product Filter, Unit 5	A sodium perchlorate platinum recovery filter press with a sump that collected and contained process liquids and wash down water.	X						X					
34	Former Manganese Tailings Area	Tailings from the beneficiation of manganese dioxide ores were transported as a slurry to unlined surface impoundments/leach beds to the west of the current tailings area, demolition debris was also put into the tailings piles.	X											
35	Truck Emptying/Dumping Site	"Unknown" waste materials disposed in this area. Analytical results detected metals and TPH. One soil sample contained 2.4 ug/kg of 1,1,-trichloroethane (estimated value below PQL).	X	X	X		X							
36	Former Satellite Accumulation Point, Unit 3, Maintenance Shop	Accumulation point includes a parts washer and storage of lead acid batteries and waste from the parts washer. Solvent-based and caustic detergent was used for washing. Waste stored included drums of oil and grease, solvents (mainly 1,1,1-trichloroethane), sludge, caustic detergent and metal parts.	X	X	X	X	X				X			
37	Former Satellite Accumulation Point, Unit 6, Maintenance Shop	Area included a parts washer and the drum for temporary storage of parts washer waste. Solvent-based washer and caustic detergent was used for washing. Waste stored in this area included drums of oil and grease, solvents (mainly 1,1,1-trichloroethane), sludge, caustic detergent and metal parts.	X	X	X	X	X				X			
38	Former Satellite Accumulation Point, AP-Laboratory	Hazardous chemicals (flammable liquids) used in the on-site laboratory were stored in this area.	X	X					X					
39	Satellite Accumulation Point-AP Maintenance Shop	TPH in the range of motor oil and diesel were detected.	X		X		X		X					
40	PCB Transformer Spill	Approximately 1.75 lbs of PCB-containing fluid was released.				X	X							
41	Unit 1 Tenant Stains	TPH in the range of motor oil and diesel were detected.	X		X		X							
42	Unit 2 Salt Redler	Sodium chlorate spillage to the ground occurred during transfer from storage in Unit 2 to the conveyor feed hopper.	X								X			
43	Unit 4 and 5 Basements	Soil beneath units may be impacted with concentrations of sodium perchlorate, sodium chlorate, or sodium dichromate (hexavalent chromium) from electrolytic processes.	X						X		X			
44	Unit 6 Basement	High-purity, battery-active manganese dioxide has been produced in electrolytic cells in Unit 6. Process spillage and wash water was identified as a source of soil and groundwater impact.	X						X		X			
45	Diesel Storage Tank	Diesel range TPH.	X	X	X		X							
46	Former Old Main Cooling Tower and Recirculation Lines	Several recirculation water upsets, which resulted in discharge of high-conductivity water to the Beta ditch, were reported. Chromium was added as a treatment chemical in the cooling tower.	X								X			
47	Leach Plant Area Manganese Ore Piles	Manganese ore was stored at this site. The dust is composed of 55 percent by weight of manganese dioxide.	X											
48	Leach Plant Analyte Tanks	A variety of process equipment is used to beneficiate the manganese dioxide ore and produce high-quality, battery-grade manganese dioxide. A manganese sulfate solution and sulfuric acid were contained in tanks.	X								X			
49	Leach Plant Area Sulfuric Acid Storage Tanks	A variety of process equipment is used to beneficiate the manganese dioxide ore and produce high-quality, battery-grade manganese dioxide. A manganese sulfate solution and sulfuric acid were contained in tanks.	X								X			
50	Leach Plant Area Leach Tanks	A variety of process equipment is used to beneficiate the manganese dioxide ore and produce high-quality, battery-grade manganese dioxide. A manganese sulfate solution and sulfuric acid were contained in tanks.	X								X			
51	Leach Plant Area Transfer Lines	A variety of process equipment is used to beneficiate the manganese dioxide ore and produce high-quality, battery-grade manganese dioxide. A manganese sulfate solution and sulfuric acid were contained in tanks.	X								X			
52	AP Plant Area Screening Building, Dryer Building and Associated Sump	The sump collected wash-down water. Soil exhibiting white stains was collected and recycled for perchlorate recovery.	X						X					
53	AP Plant Area Tank Farm	Contained a number of vertical open-top and closed-top tanks used for process solution storage.	X						X		X			
54	AP Plant Area Change House/ Laboratory Septic Tank	Wastewater effluent from the change house showers, restrooms, and laboratory sinks discharged to a septic system with an associated leach field. Hazardous solutions were collected and shipped to an appropriate disposal facility.	X						X					
55	Area Affected by July 1990 Fire	Ammonium perchlorate impacted soil around the fire area.	X						X					
56	AP Plant Area Old Building D-1- Washdown	Wash-down water contained dissolved ammonium perchlorate.	X						X					
57 58	AP Plant Area New Building D-1- Washdown and AP Plant Transfer Lines to Sodium Chlorate Process, AP Plant SI's and Transfer Lines	Ammonium perchlorate was transferred from the AP process to the sodium chlorate ponds.	X						X		X			

Table 1-1
LOUs and Known and/or Postulated Site Related Chemicals
Phase A Source Area Investigation, Tronox Facility -
Henderson, Nevada

LOU Number	Name of LOU	Description of Chemicals Identified	Metals	VOCs	SVOCs	PCBs	TPH	Rad	Perchlorate	Pesticides	General Chemistry [1]	Ethylene Glycol	Dioxin/furan	Asbestos
59	Storm Sewer System	Between 1941 and 1976, storm sewer system conveyed storm water and process effluent. After 1976, process solutions were controlled in vessels or in lined surface impoundments.	X	X		X			X		X			
60	Acid Drain System	System used to collect acid effluent from throughout the BMI complex. Acid drains in the non-operating portions of the facility (Units 1 and 2) have been filled with concrete debris and soil.	X	X	X		X				X			
61	Old Sodium Chlorate Plant Decommissioning	The process liquids contained primarily sodium chlorate with sodium dichromate as a process chemical additive.	X						X		X			
62	State Industries, Inc. Site, Including Impoundments and Catch Basin	Used acid drain system to convey various process wastes to the Beta Ditch. Monthly discharges of process waste averaged ~35,000-gallons and included spent sulfuric acid, borax, soda ash and phosphate chemicals. Liquid waste containing spent cyanide was periodically discharged. Two surface impoundments, "western" and "eastern" received spent pickling process wastes which included spent sulphuric acid, borax soda ash (anhydrous sodium carbonate) and phosphates (chemical combinations), and TURCO II H.T.C. soap. Low levels of lead and molybdenum were found. VOCs were also detected.	X	X	X		X			X	X			
63	J. B. Kelley, Inc. Trucking Site	Trucking activities included the washing of truck exteriors and interiors, vehicle fueling (from 10,000-gallon fiberglass UST), and minor repair work including oil changes. Toluene, TCA, acetone, and total chromium were identified at the site. TPH was not detected.	X	X	X	X	X			X	X	X		
64	Koch Materials Company Site	Area used as an asphalt emulsion batch plant. Soil samples were analyzed for VOCs, SVOCs, metals, and confirmatory TPH analysis.	X	X	X	X	X							
65	Nevada Precast Concrete Products, Green Ventures International, Buckles Construction Company and Ebony Construction Sites	TPH in the range of motor oil, diesel range was detected. TPH in the gasoline range was not detected above the PQL of 29 mg/kg. TPH heavier than diesel was detected at 100 mg/kg.	X	X	X		X							
66	Above-Ground Diesel Storage Tank Leased by Flintkote Co.	Diesel tank located near the southwest corner of the Chemstar property.	X		X		X							
67	Delbert Madsen and Estate of Delbert Madsen Site	Property was used as a storage and salvage yard. Material and trash was removed and disposed of at the Silver State Landfill in Apex, Nevada.	X	X	X	X	X					X		
68	Southern Nevada Auto Parts Site (Pick A Part)	The leased property was used to store wrecked, impounded and repossessed vehicles. Stained soil was present in some areas.	X	X	X	X	X					X		
69	Dillon Potter Site	The area was used for livestock management and to store approximately 25 vehicles.	X				X				X			
NA	U. S. Vanadium	Production of tungsten.	X											

LOU = Site identified in Letter of Understanding dated August 15, 1994.
PCBs = Polychlorinated biphenyls.
PQL = practical quantitation limit.
SVOCs = Semi-volatile organic compounds.
TDS = Total dissolved solids.
TPH = Total petroleum hydrocarbons.
VOCs = Volatile organic compounds.
1 = Includes general wet chemistry parameters listed on Table 3-2.
NA = Not applicable (not a LOU identified in 1994).
Yellow highlight indicates LOU where no further action was specified in the past.

Table 3-1
Rationale for Phase A Borings and Monitoring Wells Sampled
Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada

Boring ID	Characterized Areas & Location Rationale	Total Depth (ft. bgs)	GW Sample Location
SA01	South Stormwater Drainage Channel - channel bottom sediment (adjacent to M120 which was sampled for SRC at depth)	10	M120
SA-2	LOU 62 (State Industries) - former surface impoundment	70	Grab Sample GWSA3
SA03	LOU 41, 59, 60 & 65 - Immediately downgradient of Unit 1 former leased area including soil stained area	50	M92
SA04	LOU 4, 27, 59 & 60 and possibly 26 and 28 - Immediately downgradient of Unit 2 former leased area, former buried tanks and PCB waste staging areas	45	M97
SA05	LOU 11, 12, 59 & 60 - Immediately downgradient of Unit 3 activities and drilled through waste staging area	40	M13
SA06	LOU 43, 59, 60 & 61 - Immediately downgradient of Unit 4 activities, including the basement's liquid storage	41.5	M12A
SA07	LOU 43, 59, 60 & 61 - Immediately downgradient of Unit 5 activities, including historic chlorate, perchlorate and current manganese dioxide production operations	40	M11
SA08	LOU 44, 59 & 60 - Immediately downgradient of Unit 6 activities, including manganese dioxide production	47	GWSA08
SA09	LOU 35 - stained soil from trucking activity	50	Grab Sample GWSA9
SA-10	LOU 64 - Koch Materials Company Site	50	Grab Sample GWSA10
SA-11	LOU 8 - floor of closed P-3 surface impoundment	35	M76
SA-12	LOU 13 - floor of closed S-1 surface impoundment	31.5	M2A
SA-13	LOU 48, 49 & 50 - Downgradient of manganese ore leaching area and in vicinity of manganese tailings	41.5	M31A
SA-14	LOU 5 - Entrance of Beta Ditch onto Site and downgradient of the lab septic leach bed and lab satellite waste storage area	50	Grab Sample GWSA14
SA-15	LOU 57 AP Process Cooling Tower - Site of AP process liquor cooling tower and adjacent to dryer building sump	40	M111* / Grab Sample GWSA15
SA-16	LOU 5, 16 & 17 - Floor of Beta Ditch mid-way across property and downgradient of AP-1, AP-2 and AP-3 surface impoundments	31.5	M89

Table 3-1
Rationale for Phase A Borings and Monitoring Wells Sampled
Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada

Boring ID	Characterized Areas & Location Rationale	Total Depth (ft. bgs)	GW Sample Location
SA-17	LOU 5 - Exit of Beta Ditch from Site and downgradient of C-1 and Mn-1 ponds	30	M39
SA-18	LOU 2 - Disturbed area	40	M5A
SA-19	LOU 56, 57 & 58 - Vicinity of D-1 (old and new) AP blending area including washdown areas - this boring is above an area of elevated perchlorate concentrations in groundwater	30	IAR
SA-20	LOU 30 & 55 - Vicinity of AP drum storage pad 35, drum pad burn area	30	M55
SA-21	LOU 1 & 10 - Immediately downgradient of closed hazardous waste landfill and former trade effluent ponds	40	M7B
SA-22	LOU 1 & GW-11 Pond - Downgradient of former trade effluent ponds and GW-11 pond	30	M98
SA-23	LOU 1, 22 & 23 - Downgradient of trade effluent ponds and WC-West	31.5	M100
SA-24	NW Drainage Ditch - floor of ditch entering property	30	M48
SA-25	NW Drainage Ditch - floor of ditch exiting property	21.5	MC-45
SA-26	LOU 68 - Auto salvage yard soil stain	15	M95
SA-27	LOU 67 - Recycle / salvage yard soil stain	25	PC-40
	Manganese Dioxide Ore		Grab sample
	Manganese Dioxide Tailings		Grab sample

Notes:

Soil samples were analyzed from the following depths until groundwater was encountered (unless otherwise indicated) 0.5, 10, 20, 30, 40, 50, 60 ft. bgs.
ft. bgs = feet below ground surface
est. = estimated

* At the onset of Phase A field activities, it was discovered that on-going demolition of the infrastructure in the vicinity of SA15 / M111 had inadvertently damaged M111 such that groundwater was no longer accessible in M111. A groundwater grab sample (GWSA15) was collected from the SA15 open borehole.

Table 3-2
Site-Related Chemical List and Analytical Methods Identification for Soil and Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	Chemical Abstracts Service Number	Analytical Method Water/Soil	Site-Related Chemical? (Yes or No)
Wet Chemistry			
Alkalinity (total, CO3--, HCO3-)		EPA 310.1	Yes
Ammonia	7664-41-7	EPA 350.1	Yes
Asbestos	132207-33-1	EPA/540/R-97/028 modified	Yes
Bromide	24959-67-9	EPA 9056A	Yes
Chlorate	7790-93-4	EPA 9056A	Yes
Chloride	16887-00-6	EPA 9056A	Yes
Conductivity		EPA 9050A	Yes
Cyanide (total)	57-12-5	EPA 9012A	Yes
Nitrate	NO3	EPA 9056A	Yes
Nitrite	14797-65-0	EPA 9056A	Yes
Percent Moisture		EPA 160.3	No
Perchlorate	14797-73-0	EPA 314.0	Yes
pH		EPA 9040/9045C	Yes
Phosphate (ortho)		EPA 9056A	Yes
Sulfate	14808-79-8	EPA 9056A	Yes
Surfactants (MBAS)		EPA 425.1/SM 5540C	Yes
Total Dissolved Solids (TDS)	TDS	EPA 160.1	Yes
Total Organic Carbon (TOC)		EPA 9060	Yes
Total Suspended Solids (TSS)		EPA 160.2	Yes
Dioxins and Furans			
PCDD/PCDFs total TEQ as 2,3,7,8-TCDD	TCDF2378	EPA 8290 (full & screen)	Yes
1,2,3,4,6,7,8,9-Ocatchlorodibenzofuran	39001-02-0	EPA 8290 (full & screen)	Yes
1,2,3,4,6,7,8,9-Ocatchlorodibenzo-p-dioxin	3268-87-9	EPA 8290 (full & screen)	Yes
1,2,3,4,6,7,8-Heptatchlorodibenzofuran	67562-39-4	EPA 8290 (full & screen)	Yes
1,2,3,4,6,7,8-Heptatchlorodibenzo-p-dioxin	35822-46-9	EPA 8290 (full & screen)	Yes
1,2,3,4,7,8,9-Heptatchlorodibenzofuran	55673-89-7	EPA 8290 (full & screen)	Yes
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	EPA 8290 (full & screen)	Yes
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	EPA 8290 (full & screen)	Yes
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	EPA 8290 (full & screen)	Yes
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	EPA 8290 (full & screen)	Yes
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	EPA 8290 (full & screen)	Yes
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	EPA 8290 (full & screen)	Yes
1,2,3,7,8-Pentachlorodibenzof-p-dioxin	40321-76-4	EPA 8290 (full & screen)	Yes
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	EPA 8290 (full & screen)	Yes
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	EPA 8290 (full & screen)	Yes
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	EPA 8290 (full & screen)	Yes
2,3,7,8-Tetrachlorodibenzofuran	TCDF2378	EPA 8290 (full & screen)	Yes
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	EPA 8290 (full & screen)	Yes
Metals			
Aluminum	7429-90-5	EPA 6020	Yes
Antimony	7440-36-0	EPA 6020	Yes
Arsenic	7440-38-2	EPA 6020	Yes
Barium	7440-39-3	EPA 6020	Yes
Beryllium	7440-41-7	EPA 6020	Yes
Boron	7440-42-8	EPA 6020	Yes
Cadmium	7440-73-9	EPA 6020	Yes
Calcium	7440-70-2	EPA 6020	Yes
Chromium (hexavalent)	18540-29-9	EPA 7199/3060A+7199	Yes
Chromium (total)	7440-47-3	EPA 6020	Yes

Analyte	Chemical Abstracts Service Number	Analytical Method Water/Soil	Site-Related Chemical? (Yes or No)
Cobalt	7440-48-4	EPA 6020	Yes
Copper	7440-50-8	EPA 6020	Yes
Iron	7439-89-6	EPA 6020	Yes
Lead	7439-92-1	EPA 6020	Yes
Magnesium	7439-95-4	EPA 6020	Yes
Manganese	7439-96-5	EPA 6020	Yes
Mercury	7439-97-6	EPA 7470A/7471A	Yes
Molybdenum	7439-98-7	EPA 6020	Yes
Nickel	7440-02-0	EPA 6020	Yes
Platinum	7440-06-4	EPA 6020	Yes
Potassium	7440-09-7	EPA 6020	Yes
Selenium	7782-49-2	EPA 6020	Yes
Silver	7440-22-4	EPA 6020	Yes
Sodium	7440-23-5	EPA 6020	Yes
Strontium	7440-24-6	EPA 6020	Yes
Thallium	7440-28-0	EPA 6020	Yes
Tin	7440-31-5	EPA 6020	Yes
Titanium	7440-32-6	EPA 6020	Yes
Tungsten	7440-33-7	EPA 6020	Yes
Uranium	7440-61-1	EPA 6020	Yes
Vanadium	7440-62-2	EPA 6020	Yes
Zinc	7440-66-6	EPA 6020	Yes
Organochlorine Pesticides (OCPs)			
4,4'-DDD	72-54-8	EPA 8081A	Yes
4,4'-DDE	72-55-9	EPA 8081A	Yes
4,4'-DDT	50-29-3	EPA 8081A	Yes
Aldrin	309-00-2	EPA 8081A	Yes
alpha-BHC	319-84-6	EPA 8081A	Yes
alpha-Chlordane	5103-71-9	EPA 8081A	Yes
beta-BHC	319-85-7	EPA 8081A	Yes
Chlordane, technical	12789-03-6	EPA 8081A	Yes
delta-BHC	319-86-8	EPA 8081A	Yes
Dieldrin	60-57-1	EPA 8081A	Yes
Endosulfan I	959-98-8	EPA 8081A	Yes
Endosulfan II	33213-65-9	EPA 8081A	Yes
Endosulfan sulfate	1031-07-8	EPA 8081A	Yes
Endrin	72-20-8	EPA 8081A	Yes
Endrin aldehyde	7421-93-4	EPA 8081A	Yes
Endrin Ketone	53494-70-5	EPA 8081A	Yes
gamma-BHC (Lindane)	58-89-9	EPA 8081A	Yes
gamma-Chlordane	12789-03-6	EPA 8081A	Yes
Heptachlor	76-44-8	EPA 8081A	Yes
Heptachlor epoxide	1024-57-3	EPA 8081A	Yes
Methoxychlor	72-43-5	EPA 8081A	Yes
Toxaphene	8001-35-2	EPA 8081A	Yes
Organophosphorus Pesticides (OPPs)			
Azinphos-methyl	86-50-0	EPA 8141A	Yes
Bolstar	35400-43-2	EPA 8141A	Yes
Chlorpyrifos	2921-88-2	EPA 8141A	Yes

Analyte	**Chemical Abstracts Service Number**	**Analytical Method Water/Soil**	**Site-Related Chemical? (Yes or No)**
Coumaphos	56-72-4	EPA 8141A	Yes
Demeton-O	298-03-3	EPA 8141A	Yes
Demeton-S	126-75-0	EPA 8141A	Yes
Diazinon	333-41-5	EPA 8141A	Yes
Dichlorvos	62-73-7	EPA 8141A	Yes
Dimethoate	60-51-5	EPA 8141A	Yes
Disulfoton	298-04-4	EPA 8141A	Yes
EPN (Ethyl p-nitrophenyl phenylphosphorothioate)	2104-64-5	EPA 8141A	Yes
Ethoprop	13194-48-4	EPA 8141A	Yes
Famphur	52-85-7	EPA 8141A	Yes
Fensulfothion	115-90-2	EPA 8141A	Yes
Fenthion	55-38-9	EPA 8141A	Yes
Malathion	121-75-5	EPA 8141A	Yes
Merphos	150-50-5	EPA 8141A	Yes
Mevinphos	7786-34-7	EPA 8141A	Yes
Naled	300-76-5	EPA 8141A	Yes
Parathion-ethyl (Ethyl Parathion)	56-38-2	EPA 8141A	Yes
Parathion-methyl (Methyl Parathion)	298-00-0	EPA 8141A	Yes
Phorate	298-02-2	EPA 8141A	Yes
Ronnel	299-84-3	EPA 8141A	Yes
Stirphos		EPA 8141A	Yes
Sulfotepp (Tetraethyldithiopyrophosphate)	3689-24-5	EPA 8141A	Yes
Thionazin	297-97-2	EPA 8141A	Yes
Tokuthion	34643-46-4	EPA 8141A	Yes
Trichloronate	327-98-0	EPA 8141A	Yes
Organochlorine Herbicides			
Silvex (2-(2,4,5-trichlorophenoxy) propionic acid)	93-72-1	EPA 8151A	Yes
Polychlorinated Biphenyl (PCB) Compounds			
Aroclor 1016	12674-11-2	EPA 8082	Yes
Aroclor 1221	11104-28-2	EPA 8082	Yes
Aroclor 1232	11141-16-5	EPA 8082	Yes
Aroclor 1242	53469-21-9	EPA 8082	Yes
Aroclor 1248	12672-29-6	EPA 8082	Yes
Aroclor 1254	11097-69-1	EPA 8082	Yes
Aroclor 1260	11096-82-5	EPA 8082	Yes
Radionuclides			
Radium 226	Ra-226	EPA 903.1/EML HASL 300 (gamma)	Yes
Radium 228	Ra-228	EPA 904.0/EML HASL 300 (gamma)	Yes
Thorium 230	Th-230	EML HASL 300 (alpha)	Yes
Thorium 232	Th-232	EML HASL 300 (alpha)	Yes
Uranium 234	U-234 SOL	EML HASL 300 (alpha)	Yes
Uranium 235	U-235 SOL	EML HASL 300 (alpha)	Yes
Uranium 238	U-238 SOL	EML HASL 300 (alpha)	Yes
Semi-Volatile Organic Compounds (SVOCs)			
1,4-Dioxane	123-91-1	EPA 8270C	Yes
2-Methylnaphthalene	91-57-6	EPA 8270C (and SIM)	Yes
Acenaphthene	83-32-9	EPA 8270C (and SIM)	Yes
Acenaphthylene	208-96-8	EPA 8270C (and SIM)	Yes
Anthracene	120-12-7	EPA 8270C (and SIM)	Yes

Table 3-2
Site-Related Chemical List and Analytical Methods Identification for Soil and Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	Chemical Abstracts Service Number	Analytical Method Water/Soil	Site-Related Chemical? (Yes or No)
Benzo(a)anthracene	56-55-3	EPA 8270C (and SIM)	Yes
Benzo(a)pyrene	50-32-8	EPA 8270C (and SIM)	Yes
Benzo(b)fluoranthene	205-99-2	EPA 8270C (and SIM)	Yes
Benzo(g,h,i)perylene	191-24-2	EPA 8270C (and SIM)	Yes
Benzo(k)fluoranthene	207-08-9	EPA 8270C (and SIM)	Yes
Bis(2-ethylhexyl)phthalate	117-81-7	EPA 8270C	Yes
Butylbenzylphthalate	85-68-7	EPA 8270C	Yes
Chrysene	218-01-9	EPA 8270C (and SIM)	Yes
Dibenzo(a,h)anthracene	53-70-3	EPA 8270C (and SIM)	Yes
Diethylphthalate	84-66-2	EPA 8270C	Yes
Dimethylphthalate	131-11-3	EPA 8270C	Yes
Di-n-butylphthalate	84-74-2	EPA 8270C	Yes
Di-n-octylphthalate	117-84-0	EPA 8270C	Yes
Fluoranthene	206-44-0	EPA 8270C (and SIM)	Yes
Fluorene	86-73-7	EPA 8270C (and SIM)	Yes
Hexachlorobenzene	118-74-1	EPA 8270C (and SIM)	Yes
Indeno(1,2,3-cd)pyrene	193-39-5	EPA 8270C (and SIM)	Yes
Naphthalene	91-20-3	EPA 8270C (and SIM)	Yes
Nitrobenzene	98-95-3	EPA 8270C	Yes
Octachlorostyrene	29082-74-4	EPA 8270C	Yes
Phenanthrene	85-01-8	EPA 8270C (and SIM)	Yes
Pyrene	129-00-0	EPA 8270C (and SIM)	Yes
Pyridine	110-86-1	EPA 8270C	Yes
Total Petroleum Hydrocarbons (TPH) and fuel alcohols			
GRO(C6 -C10)		EPA 8015B	Yes
DRO(C10 -C28)		EPA 8015B	Yes
ORO (C28 -C38)		EPA 8015B	Yes
Methanol	67-56-1	EPA 8015B	Yes
Ethanol	64-17-5	EPA 8015B	Yes
Ethylene glycol	107-21-1	EPA 8015B	Yes
Volatile Organic Compounds (VOCs)			
1,1,1,2-Tetrachloroethane	630-20-6	EPA 8260B	No
1,1,1-Trichloroethane	71-55-6	EPA 8260B	Yes
1,1,2,2-Tetrachloroethane	79-34-5	EPA 8260B	No
1,1,2-Trichloroethane	79-00-5	EPA 8260B	No
1,1-Dichloroethane	75-34-3	EPA 8260B	No
1,1-Dichloroethene	75-35-4	EPA 8260B	No
1,1-Dichloropropene	563-58-6	EPA 8260B	No
1,2,3-Trichlorobenzene	87-61-6	EPA 8260B	No
1,2,3-Trichloropropane	96-18-4	EPA 8260B	No
1,2,4-Trichlorobenzene	120-82-1	EPA 8260B	No
1,2,4-Trimethylbenzene	95-63-6	EPA 8260B	Yes
1,2-Dibromo-3-chloropropane	96-12-8	EPA 8260B	No
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	EPA 8260B	No
1,2-Dichlorobenzene	95-50-1	EPA 8260B	Yes
1,2-Dichloroethane	107-06-2	EPA 8260B	No
1,2-Dichloropropane	78-87-5	EPA 8260B	No
1,3,5-Trimethylbenzene	108-67-8	EPA 8260B	Yes
1,3-Dichlorobenzene	541-73-1	EPA 8260B	Yes
1,3-Dichloropropane	142-28-9	EPA 8260B	No

Table 3-2
Site-Related Chemical List and Analytical Methods Identification for Soil and Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	**Chemical Abstracts Service Number**	**Analytical Method Water/Soil**	**Site-Related Chemical? (Yes or No)**
1,4-Dichlorobenzene	106-46-7	EPA 8260B	Yes
2,2-Dichloropropane	594-20-7	EPA 8260B	No
2-Butanone	78-93-3	EPA 8260B	Yes
2-Chlorotoluene	95-49-8	EPA 8260B	No
2-Hexanone	591-78-6	EPA 8260B	Yes
4-Chlorotoluene	106-43-4	EPA 8260B	No
4-Methyl-2-pentanone	108-10-1	EPA 8260B	Yes
Acetone	67-64-1	EPA 8260B	Yes
Benzene	71-43-2	EPA 8260B	Yes
Bromobenzene	108-86-1	EPA 8260B	No
Bromochloromethane	74-97-5	EPA 8260B	No
Bromodichloromethane	75-27-4	EPA 8260B	No
Bromoform	75-25-2	EPA 8260B	No
Bromomethane	74-83-9	EPA 8260B	No
Carbon Tetrachloride	56-23-5	EPA 8260B	No
Chlorobenzene	108-90-7	EPA 8260B	Yes
Chloroethane	75-00-3	EPA 8260B	No
Chloroform	67-66-3	EPA 8260B	Yes
Chloromethane	74-87-3	EPA 8260B	No
cis-1,2-Dichloroethene	156-59-2	EPA 8260B	No
cis-1,3-Dichloropropene	10061-01-5	EPA 8260B	No
Dibromochloromethane	124-48-1	EPA 8260B	No
Dibromomethane	74-95-3	EPA 8260B	No
Dichlorodifluoromethane	75-71-8	EPA 8260B	No
Diisopropyl ether (DIPE)	108-20-3	EPA 8260B	Yes
Ethylbenzene	100-41-4	EPA 8260B	Yes
Ethyl-tert-butyl ether (ETBE)	637-92-3	EPA 8260B	Yes
Hexachlorobutadiene	87-68-3	EPA 8260B	No
Isopropyl Benzene (Cumene)	98-82-8	EPA 8260B	Yes
Methylene Chloride	75-09-2	EPA 8260B	No
Methyl-tert-butyl ether (MTBE)	1634-04-4	EPA 8260B	Yes
Naphthalene	91-20-3	EPA 8260B	Yes
n-Butylbenzene	104-51-8	EPA 8260B	Yes
n-Propylbenzene	103-65-1	EPA 8260B	Yes
p-Isopropyltoluene	99-87-6	EPA 8260B	Yes
sec-Butylbenzene	135-98-8	EPA 8260B	Yes
Styrene	100-42-5	EPA 8260B	No
tert-Amyl-methyl ether (TAME)	994-05-8	EPA 8260B	Yes
tert-Butyl alcohol (TBA)	75-65-0	EPA 8260B	Yes
tert-Butylbenzene	98-06-6	EPA 8260B	Yes
Tetrachloroethene	127-18-4	EPA 8260B	Yes
Toluene	108-88-3	EPA 8260B	Yes
trans-1,2-Dichloroethene	156-60-5	EPA 8260B	No
trans-1,3-Dichloropropene	10061-02-6	EPA 8260B	No
Trichloroethene	79-01-6	EPA 8260B	Yes
Trichlorofluoromethane	75-69-4	EPA 8260B	No
Vinyl Chloride	75-01-4	EPA 8260B	No
Xylenes (total)	1330-20-7	EPA 8260B	Yes
Asbestos			
Asbestos		EPA Method 540/12-97/028	Yes

Notes:
SIM - Selected Ion Monitoring

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Units	Chemistry EPA 160.3 Percent moisture percent	Chemistry EPA 310.1 Alkalinity (as $CaCO_3$) mg/kg	Chemistry EPA 310.1 Bicarbonate mg/kg	Chemistry EPA 310.1 Total Alkalinity mg/kg	Chemistry EPA 350.1 Ammonia (as N) mg/kg	Chemistry EPA 9012A Cyanide mg/kg	Chemistry SM 5540C MBAS mg/kg	Chemistry SW 846 9045 pH (solid) none
Sample ID	Sample Date								
MN ORE	01/19/2007	**4.9**							
MN TAILINGS	01/19/2007	**19.5**							
SA1-0.5	11/03/2006	**5.1**	**63.9**	**628**	**692**	5.3 U	0.53 U	4.8 U	**9.8**
SA1-05	11/03/2006	**21.3**	**167**	**2090**	**2250**	6.4 U	0.64 U	4.6 U	**11.3**
SA1-10	11/03/2006	**7.8**	**252**	**1560**	**1810**	5.4 U	0.54 U	4.6 U	**9.9**
SA2-0.5	11/03/2006	**6.0**	**140**	**505**	**645**	5.3 U	0.53 U	4.8 U	**10**
SA2-10	11/03/2006	**19.4**	**251**	**2190**	**2440**	6.2 U	0.62 U	4.8 U	**11.2**
SA2-20	11/03/2006	**14.7**	**281**	**2700**	**2980**	5.9 U	0.59 U	4.8 U	**10.7**
SA2-30	11/06/2006	**15.3**	**274**	**978**	**1250**	5.9 U	0.59 U	5.5 U	**8.7**
SA2-40	11/06/2006	**33.1**	**166**	**521**	**687**	**5.7 J**	0.75 U	4.9 U	**8.7**
SA2-50	11/06/2006	**32.1**	73.6 U	73.6 U	**74.4**	**1.0 J**	0.74 U	5.3 U	**8.3**
SA2-60	11/06/2006	**18.4**	61.3 U	**136**	**136**	**0.80 J**	0.61 U	5.9 U	**9.2**
SA3-0.5	11/13/2006	**6.4**	**324**	**675**	**999**	5.3 UJ	R	2.2 U	**8.8**
SA3-0.5D	11/13/2006	**6.3**	**269**	**296**	**566**	5.3 UJ	R	2.2 U	**8.8**
SA3-10	11/13/2006	**6.3**	**162**	**916**	**1080**	5.3 UJ	R	2.1 U	**8.6**
SA3-20	11/13/2006	**8.9**	**134**	**476**	**611**	5.5 UJ	R	2.2 U	**8.8**
SA3-30	11/13/2006	**22.4**	64.4 U	**139**	**139**	6.4 UJ	R	2.8 U	**7.7**
SA3-40	11/13/2006	**32.1**	**451**	**1670**	**2120**	7.4 UJ	R	3.1 U	**8.5**
SA4-0.5	11/14/2006	**9.0**	**476**	**1480**	**1950**	5.5 UJ	R	2.2 U	**10**
SA4-10	11/14/2006	**6.0**	**437**	**1630**	**2070**	5.3 UJ	R	2.1 U	**7.8**
SA4-20	11/14/2006	**8.5**	**595**	**1740**	**2330**	5.5 UJ	R	2.2 U	**9.8**
SA4-30	11/14/2006	**12.3**	**278**	**723**	**1000**	5.7 UJ	R	**2.7 J**	**9.4**
SA4-40	11/14/2006	**5.9**	**77.5**	**149**	**227**	5.3 UJ	R	**2.8 J**	**8.4**
SA5-0.5	11/14/2006	**22.6**	**561**	**1400**	**1960**	6.5 UJ	R	**2.4 J**	**10.0**
SA5-10	11/14/2006	**14.2**	58.2 U	**861**	**874**	5.8 UJ	R	**2.5 J**	**7.9**
SA5-20	11/14/2006	**15.2**	**90.7**	**363**	**454**	5.9 UJ	R	2.1 U	**8.3**
SA5-30	11/14/2006	**7.6**	54.1 U	**301**	**314**	5.4 UJ	R	**2.5 J**	**8.3**
SA5-37	11/14/2006	**39.9**	83.2 U	**411**	**430**	8.3 UJ	R	**4.6 J**	**7.8**
SA6-0.5	11/14/2006	**5.8**	**637 J**	**2970 J**	**3610 J**	5.3 UJ	R	**2.4 J**	**9.6**
SA6-0.5D	11/14/2006	**13.8**	**352 J**	**1410 J**	**1760 J**	5.8 UJ	R	2.2 U	**9.5**
SA6-10	11/14/2006	**7.6**	**109 J**	**530 J**	**640 J**	5.4 UJ	R	2.2 U	**8.4**
SA6-20	11/14/2006	**7.7**	**131 J**	**690 J**	**821 J**	5.4 UJ	R	2.2 U	**9.0**
SA6-30	11/14/2006	**5.0**	52.6 UJ	**292 J**	**304 J**	5.3 UJ	R	2.2 U	**8.1**
SA6-35	11/14/2006	**32.6**	**148 J**	**387 J**	**536 J**	7.4 UJ	R	3.1 U	**7.9**
SA7-0.5	11/20/2006	**5.3**	**68.9**	**178**	**247**	5.3 UJ	R	4.2 U	**8.2**
SA7-10	11/20/2006	**5.6**	53.0 U	**212**	**249**	5.3 UJ	R	4.4 U	**7.9**
SA7-10D	11/20/2006	**7.1**	**70.2**	**193**	**263**	5.4 UJ	R	4.4 U	**8.0**
SA7-20	11/20/2006	**7.6**	**174**	**131**	**305**	5.4 UJ	R	4.4 U	**8.3**
SA7-30	11/20/2006	**6.3**	**158**	**340**	**497**	5.3 UJ	R	4.4 U	**8.5**
SA7-34	11/20/2006	**23.3**	65.2 U	**290**	**319**	6.5 UJ	R	5.0 U	**7.6**
SA8-0.5	11/17/2006	**4.8**	**134**	**358**	**492**	5.3 UJ	R	**5.9**	**8.4**
SA8-10	11/17/2006	**6.3**	53.4 U	**247**	**281**	5.3 UJ	R	4.2 U	**8.2**
SA8-20	11/17/2006	**4.7**	52.4 U	**293**	**333**	5.2 UJ	R	4.4 U	**8.5**
SA8-30	11/17/2006	**8.4**	**279**	**1050**	**1330**	5.5 UJ	R	4.3 U	**8.9**

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry
	Analytic Method	EPA 160.3	EPA 310.1	EPA 310.1	EPA 310.1	EPA 350.1	EPA 9012A	SM 5540C	SW 846 9045
	Chemical Name	Percent moisture	Alkalinity (as CaCO3)	Bicarbonate	Total Alkalinity	Ammonia (as N)	Cyanide	MBAS	pH (solid)
	Units	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	none
Sample ID	Sample Date								
SA8-37	11/17/2006	26.6	68.1 U	157	157	6.8 UJ	R	5.6 U	7.7
SA9-0.5	11/06/2006	16.8	121	728	849	1.3 J	0.60 U	4.9 U	8.4
SA9-10	11/06/2006	16.0	192	397	589	6.0 U	0.60 U	4.3 U	9.2
SA9-10D	11/06/2006	10.9	90.7	550	640	5.6 U	0.56 U	4.3 U	9.2
SA9-20	11/07/2006	8.3	54.5 U	226	226	R	0.55 U	4.5 U	8.2
SA9-30	11/07/2006	39.1	82.1 U	274	340	R	0.82 U	6.4 U	8.4
SA9-40	11/07/2006	27.6	69.0 U	153	153	R	0.69 U	5.9 U	8.5
SA10-0.5	11/07/2006	10.0	191	488	679	R	0.56 U	4.4 U	9.3
SA10-10	11/07/2006	9.5	78.1	385	463	R	0.55 U	4.5 U	8.6
SA10-10D	11/07/2006	13.2	57.6 U	494	518	R	0.58 U	4.5 U	8.9
SA10-20	11/07/2006	25.8	67.4 U	143	144	R	0.67 U	4.5 U	8.0
SA10-30	11/07/2006	35.6	77.6 U	77.6 U	125	R	0.78 U	6.1 U	8.2
SA10-40	11/07/2006	32.4	74.0 U	187	232	R	0.74 UJ	5.9 U	8.2
SA11-0.5	11/09/2006	7.6	339 J+	662 J+	1000 J+	5.4 UJ	0.54 UJ	2.6 U	9.8
SA11-0.5D	11/09/2006	12.0	402 J+	1100 J+	1500 J+	5.7 UJ	0.57 UJ	2.2 U	8.8
SA11-10	11/09/2006	6.9	97.6 J+	694 J+	792 J+	5.4 UJ	0.54 UJ	2.7 U	8.4
SA11-20	11/09/2006	4.6	52.4 UJ	222 J+	233 J+	5.2 UJ	0.52 UJ	2.8 U	8.4
SA11-30	11/09/2006	38.8	81.7 UJ	322 J+	355 J+	8.2 UJ	0.82 UJ	3.5 U	8.5
SA12-0.5	11/10/2006	10	337	72.9	409	5.6 UJ	0.56 UJ	2.1 U	8.1
SA12-10	11/10/2006	6.7	130	449	579	5.4 UJ	0.54 UJ	2.2 U	8.2
SA12-20	11/10/2006	7.6	284	1110	1390	5.4 UJ	0.54 UJ	3.2 J	8.4
SA12-30	11/10/2006	38.0	80.6 U	80.6 U	130	8.1 UJ	R	3.4 J	7.4
SA13-0.5	11/17/2006	14.1	58.2 UJ	279 J	279 J	5.8 UJ	R	4.2 U	7.4
SA13-0.5D	11/17/2006	9.6	235 J	1930 J	2170 J	5.5 UJ	R	4.3 U	7.7
SA13-10	11/17/2006	4.3	71.3 J	523 J	594	5.2 UJ	R	4.2 U	8.1
SA13-20	11/17/2006	6.1	53.2 UJ	269 J	303 J	5.3 UJ	R	4.3 U	8.1
SA13-30	11/17/2006	5.1	98.4 J	246 J	344 J	5.3 UJ	R	4.3 U	8.4
SA13-40	11/17/2006	20.7	136 J	699 J	835 J	6.3 UJ	R	4.8 U	7.8
SA14-0.5	11/08/2006	8.7	299	846	1140	R	0.55 UJ	4.2	9.5
SA14-10	11/08/2006	11.5	685	223	908	R	0.57 UJ	2.5 J	10.1
SA14-20	11/08/2006	19.4	1440	251	1690	R	0.62 UJ	4.2	10.1
SA14-30	11/08/2006	37.5	79.9 U	170	170	R	0.80 UJ	4.0 U	8.1
SA14-40	11/08/2006	19.0	61.8 U	225	237	R	0.62 UJ	4.0 U	8.2
SA15-0.5	11/08/2006	13.4	233	332	566	928 J	0.58 UJ	4.0 U	8.8
SA15-10	11/08/2006	14.8	58.7 U	368	368	R	0.59 UJ	4.0 U	7.9
SA15-10D	11/08/2006	9.0	54.9 U	462	505	58.5 J	0.55 UJ	3.5 J	7.9
SA15-20	11/08/2006	9.3	55.1 U	1620	1620	380 J	0.55 UJ	2.7 J	7.8
SA15-30	11/08/2006	26.5	344	1630	1970	28.0 J	0.68 UJ	2.7 J	8.2
SA15-35	11/08/2006	27.3	125	160	285	456 J	0.69 UJ	4.0 U	8.5
SA16-0.5	11/09/2006	6.4	214 J+	812 J+	1030 J+	5.3 UJ	0.53 UJ	2.5 U	8.8
SA16-10	11/09/2006	10.2	315 J+	371 J+	686 J+	5.6 UJ	0.56 UJ	2.6 U	9.7
SA16-20	11/09/2006	8.2	275 J+	528 J+	803 J+	5.4 UJ	0.54 UJ	3.3 U	9.6
SA16-30	11/09/2006	38.1	80.7 UJ	163 J+	179 J+	208 J-	0.81 UJ	4.7 U	9.9

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry
	Analytic Method	EPA 160.3	EPA 310.1	EPA 310.1	EPA 310.1	EPA 350.1	EPA 9012A	SM 5540C	SW 846 9045
	Chemical Name	Percent moisture	Alkalinity (as CaCO3)	Bicarbonate	Total Alkalinity	Ammonia (as N)	Cyanide	MBAS	pH (solid)
	Units	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	none
Sample ID	Sample Date								
SA17-0.5	11/15/2006	**14.7**	**160**	**524**	**685**	5.9 UJ	R	2.4 U	**9.6**
SA17-0.5D	11/15/2006	**13.4**	**109**	**499**	**608**	5.8 UJ	R	**2.4 J**	**9.6**
SA17-10	11/15/2006	**12.1**	**216**	**563**	**778**	5.7 UJ	R	2.2 U	**9.7**
SA17-20	11/15/2006	**5.8**	**217**	**439**	**656**	5.3 UJ	R	2.1 U	**9.8**
SA17-25	11/15/2006	**19.0**	**389**	**1260**	**1640**	6.2 UJ	R	2.6 U	**8.5**
SA18-0.5	11/15/2006	**8.3**	**84.8**	**357**	**442**	5.5 UJ	R	2.1 U	**7.7**
SA18-0.5D	11/15/2006	**4.9**	**90.1**	**450**	**541**	5.3 UJ	R	2.1 U	**8.6**
SA18-10	11/15/2006	**7.8**	54.3 U	**354**	**369**	5.4 UJ	R	2.2 U	**7.8**
SA18-20	11/15/2006	**7.0**	53.7 U	**881**	**906**	5.4 UJ	R	2.1 U	**8.0**
SA18-30	11/15/2006	**9.1**	55.0 U	**135**	**146**	5.5 UJ	R	2.2 U	**8.5**
SA19-0.5	11/16/2006	**9.4**	55.2 U	**184**	**196**	5.5 UJ	R	4.7 U	**8.1**
SA19-10	11/16/2006	**8.5**	**97.2**	**486**	**583**	5.5 UJ	R	4.5 U	**8.8**
SA19-20	11/16/2006	**8.8**	54.8 U	**583**	**606**	5.5 UJ	R	4.4 U	**8.2**
SA19-25	11/16/2006	**13.9**	58.1 U	**181**	**219**	5.8 UJ	R	4.4 U	**8.0**
SA20-0.5	11/16/2006	**10.1**	**133**	**714**	**847**	5.6 UJ	R	4.4 U	**9.4**
SA20-0.5D	11/16/2006	**19.5**	**177**	**1120**	**1300**	6.2 UJ	R	4.4 U	**9.3**
SA20-10	11/16/2006	**15.8**	**97.6**	**277**	**374**	5.9 UJ	R	4.4 U	**8.8**
SA20-20	11/16/2006	**5.2**	52.8 U	**229**	**240**	5.3 UJ	R	**3.3 J**	**8.7**
SA20-25	11/16/2006	**15.5**	59.2 U	**265**	**265**	5.9 UJ	R	**3.1 J**	**7.9**
SA21-0.5	11/15/2006	**4.3**	**151 J**	**598 J**	**749 J**	5.2 UJ	R	2.1 U	**8.7**
SA21-10	11/15/2006	**9.1**	55.0 UJ	**304 J**	**327 J**	5.5 UJ	R	2.6 U	**8.3**
SA21-20	11/15/2006	**9.5**	**195 J**	**1160 J**	**1360 J**	5.5 UJ	R	2.1 U	**8.3**
SA21-20D	11/15/2006	**4.2**	**91.8 J**	**470 J**	**562 J**	5.2 UJ	R	**2.2 J**	**8.3**
SA21-30	11/15/2006	**10.6**	**257 J**	**302 J**	**559 J**	5.6 UJ	R	2.2 U	**8.9**
SA22-0.5	11/16/2006	**21.1**	**113**	**373**	**486**	6.3 UJ	R	5.1 U	**8.4**
SA22-10	11/16/2006	**9.7**	55.4 U	**317**	**317**	5.5 UJ	R	4.3 U	**8.7**
SA22-20	11/16/2006	**14.3**	**417**	**2000**	**2420**	5.8 UJ	R	4.6 U	**8.3**
SA23-0.5	11/09/2006	**14.0**	**223 J+**	**347 J+**	**570 J+**	5.8 UJ	0.58 UJ	2.8 U	**9.9**
SA23-10	11/09/2006	**16.7**	**570 J+**	**697 J+**	**1270 J+**	6.0 UJ	0.60 UJ	2.3 U	**8.1**
SA23-20	11/09/2006	**16.9**	60.1 UJ	**583 J+**	**595 J+**	6.0 UJ	0.60 UJ	3.3 U	**8.1**
SA23-20D	11/09/2006	**13.5**	57.8 UJ	**426 J+**	**426 J+**	5.8 UJ	0.58 UJ	2.9 U	**9.6**
SA24-0.5	11/03/2006	**13.2**	57.6 U	**320**	**343**	5.8 U	0.58 U	5.0 U	**9.5**
SA24-10	11/03/2006	**7.4**	**76.3**	**354**	**431**	5.4 U	0.54 U	5.2 U	**9.7**
SA24-20	11/03/2006	**6.2**	**53.8**	**274**	**328**	5.3 U	0.53 U	4.7 U	**9.1**
SA24-25	11/03/2006	**12.0**	**333**	**413**	**746**	5.7 U	0.57 U	4.5 U	**10.2**
SA25-0.5	11/03/2006	**11.4**	**205**	**1180**	**1390**	5.6 U	0.56 U	5.7 U	**10.3**
SA25-10	11/03/2006	**12.0**	**500**	**8360**	**8860**	5.7 U	0.57 U	4.7 U	**10.5**
SA25-15	11/03/2006	**7.3**	**345**	**2890**	**3240**	5.4 U	0.54 U	4.4 U	**10.2**
SA25-20	11/03/2006	**23.0**	64.9 U	**125**	**138**	6.5 U	0.65 U	5.9 U	**10.9**
SA26-0.5	11/20/2006	**7.0**	**92.2 J+**	**238 J+**	**330 J+**	5.4 UJ	R	4.5 U	**8.6**
SA26-0.5D	11/20/2006	**8.7**	**31.3 J**	**141**	**172**	5.5 UJ	R	**3.0 J**	**8.2**
SA26-10	11/20/2006	**10.9**	56.1 U	**172**	**198**	5.6 UJ	R	4.6 U	**7.9**
SA27-0.5	11/02/2006	**4.6**	**53.0**	**1050**	**1100**	5.2 U	0.52 U	4.0 U	**8.5**
SA27-10	11/02/2006	**6.5**	53.5 U	**427**	**459**	5.3 U	0.53 U	4.0 U	**8.3**
SA27-20	11/02/2006	**9.9**	55.5 U	**779**	**790**	5.5 U	0.55 U	4.0 U	**8.4**

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry
	Analytic Method	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9060
	Chemical Name	Bromide	Chlorate	Chloride	Nitrate (as N)	Nitrite	ortho-Phosphate	Sulfate	Total Organic Carbon
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date								
MN ORE	01/19/2007								
MN TAILINGS	01/19/2007								
SA1-0.5	11/03/2006	2.6 U	5.3 UJ	2.1 U	**0.55 J**	0.21 U	5.3 U	**9.2**	**10200**
SA1-05	11/03/2006	3.2 U	6.4 UJ	**3.2**	**0.38 J**	**0.34**	6.4 U	**40.1**	**17600**
SA1-10	11/03/2006	2.7 U	5.4 UJ	**3.8 J**	**1.5 J**	0.22 U	5.4 U	**13.1**	**10000**
SA2-0.5	11/03/2006	2.7 U	5.3 UJ	2.1 U	**0.18 J**	0.21 U	5.3 U	**5.4**	**7700**
SA2-10	11/03/2006	3.1 U	6.2 UJ	**29.7**	**3.3 J**	R	6.2 U	**705**	**15100**
SA2-20	11/03/2006	2.9 U	5.9 UJ	**4.4**	**0.21 J**	**0.089 J-**	5.9 U	**66.3**	**9200**
SA2-30	11/06/2006	3.0 U	**1.4 J-**	**24.7**	**2.8 J**	R	5.9 U	**7330**	**19800**
SA2-40	11/06/2006	**2.6 J**	**7.1 J-**	**795**	**13.6 J**	**0.17 J**	**6.2 J**	**691**	**6550**
SA2-50	11/06/2006	**1.7 J**	**8.9 J-**	**689**	**5.6 J**	**5.4 J-**	**2.4 J**	**277**	**500 J**
SA2-60	11/06/2006	3.1 U	6.1 UJ	**14.6**	**0.85 J+**	**0.90**	6.1 U	**99.3**	**600 J**
SA3-0.5	11/13/2006	2.7 U	5.3 U	**0.90 J**	0.21 U	0.21 U	5.3 U	**7.2**	**2780**
SA3-0.5D	11/13/2006	2.7 U	5.3 U	**1.0 J**	0.21 U	0.21 U	5.3 U	**8.6**	**2680**
SA3-10	11/13/2006	2.7 U	5.3 U	**13.2**	**2.6**	0.21 U	**1.4 J**	**156**	**3720**
SA3-20	11/13/2006	2.7 U	**17.6 J-**	**130**	**8.2**	**1.7 J**	5.5 U	**267**	**8300**
SA3-30	11/13/2006	**3.4**	6.4 UJ	**1240**	**12.7**	**11.9**	6.4 U	**573**	**15900**
SA3-40	11/13/2006	3.7 U	7.4 UJ	**120**	**1.6**	29.5 U	7.4 U	**325**	**6600**
SA4-0.5	11/14/2006	2.7 U	5.5 UJ	**2.8**	**0.53 J+**	**0.047 J**	**2.7 J**	**19.5**	**9550**
SA4-10	11/14/2006	2.7 U	5.3 U	**4.4**	**0.35 J+**	**0.34**	**3.1 J**	**24.9**	**7100**
SA4-20	11/14/2006	**92.0**	5.5 U	**172**	**1.0 J+**	0.22 U	5.5 U	**87.4**	**7500**
SA4-30	11/14/2006	**1.4 J**	**91.3 J-**	**46.5**	**1.4 J+**	**0.059 J**	5.7 U	**733**	**1600**
SA4-40	11/14/2006	**2.0 J**	**119 J-**	**71.2**	**1.5 J+**	**0.14 J**	5.3 U	**177**	**7800**
SA5-0.5	11/14/2006	3.2 U	**14.4 J-**	**13.0**	0.26 U	**0.21 J**	6.5 U	**77.0**	**15200**
SA5-10	11/14/2006	29.1 U	**642 J-**	**377**	**4.3 J+**	2.3 U	5.8 U	**479**	**6000**
SA5-20	11/14/2006	29.5 U	**1310 J-**	**1560**	**20.2 J+**	2.4 U	5.9 U	**168**	**8300**
SA5-30	11/14/2006	27.1 U	**429 J-**	**1070**	**21.0**	2.2 U	5.4 U	**1030**	**6600**
SA5-37	11/14/2006	41.6 U	8.3 UJ	**5600**	**68.2**	3.3 U	166 U	**804**	**11200**
SA6-0.5	11/14/2006	2.7 U	5.3 UJ	**5.1**	**0.48 J+**	0.21 U	5.3 U	**115**	**9100**
SA6-0.5D	11/14/2006	2.9 U	5.8 UJ	**8.5**	**0.27 J+**	0.23 U	5.8 U	**147**	**4300**
SA6-10	11/14/2006	2.7 U	**2.8 J-**	**9.8**	**1.6 J+**	**0.32**	**3.9 J**	**175**	**6420**
SA6-20	11/14/2006	2.7 U	**3.0 J-**	**13.9**	**2.3 J+**	**0.93**	**1.6 J**	**214**	**7220**
SA6-30	11/14/2006	26.3 U	**86.9 J-**	**77.7**	**19.6**	2.1 U	**79.6 J**	**7710**	**900 J**
SA6-35	11/14/2006	37.1 U	**207 J-**	**414**	**26.5**	3.0 U	7.4 U	**599**	**9150**
SA7-0.5	11/20/2006	**1.1 J**	**108 J+**	**127**	**8.9**	R	**7.2**	**449 J**	**6780 J-**
SA7-10	11/20/2006	**0.65 J**	**138 J+**	**160**	**7.0**	2.1 UJ	5.3 U	**805 J**	**1950 J-**
SA7-10D	11/20/2006	2.7 U	**183 J+**	**177**	**5.3**	2.2 UJ	**10.6**	**120 J**	**4480 J-**
SA7-20	11/20/2006	2.7 U	**201 J+**	**208**	**6.1**	2.2 UJ	5.4 U	**145 J**	**5000 J-**
SA7-30	11/20/2006	2.7 U	**28.7 J+**	**46.7**	**0.71 J+**	2.1 UJ	**2.8 J**	**67.5 J**	**925 J-**
SA7-34	11/20/2006	32.6 U	**66.2 J+**	**95.6**	**0.89 J+**	2.6 UJ	6.5 U	**5380 J**	**11600 J-**
SA8-0.5	11/17/2006	2.6 U	**16.7 J-**	**495 J+**	**2.6 J+**	**4.7 J-**	**2.4 J**	**177**	**3480 J-**
SA8-10	11/17/2006	2.7 U	**1.9 J-**	**62.3 J+**	**1.7 J+**	2.1 UJ	5.3 U	**696**	**1220 J-**
SA8-20	11/17/2006	2.6 U	**3.2 J-**	**345 J+**	**4.4 J+**	**4.0 J-**	5.2 U	**181**	**3150 J-**
SA8-30	11/17/2006	2.7 U	**4.8 J-**	**84.5 J+**	**8.2 J+**	2.2 UJ	5.5 U	**193**	**6400 J-**

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry
Analytic Method		SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9060
Chemical Name		Bromide	Chlorate	Chloride	Nitrate (as N)	Nitrite	ortho-Phosphate	Sulfate	Total Organic Carbon
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date								
SA8-37	11/17/2006	**1.5 J**	**16.8 J-**	**395 J+**	**14.9**	2.7 UJ	**6.8 U**	**15100**	**12900 J-**
SA9-0.5	11/06/2006	3.0 U	6.0 UJ	**45.9 J**	**4.7 J**	R	6.0 U	**37.0**	**3400**
SA9-10	11/06/2006	3.0 U	6.0 UJ	**3.4 J+**	0.24 U	**0.18 J**	6.0 U	**17.8**	**13100 J**
SA9-10D	11/06/2006	2.8 U	5.6 UJ	**3.1 J+**	**0.45 J+**	**0.30**	5.6 U	**20.7**	**7780 J**
SA9-20	11/07/2006	2.7 U	5.5 UJ	2.2 U	**0.27 J**	**0.15 J**	5.5 U	**7640**	**11200**
SA9-30	11/07/2006	4.1 U	**4.0 J-**	**283**	**1.3 J+**	0.33 U	8.2 U	**1450**	**10200**
SA9-40	11/07/2006	3.5 U	6.9 UJ	**1940**	**0.65 J+**	0.28 U	6.9 U	**1050**	**6300**
SA10-0.5	11/07/2006	2.8 U	5.6 UJ	**74.1**	**0.33 J+**	**0.16 J**	5.6 U	**79.4**	**9300**
SA10-10	11/07/2006	2.8 U	5.5 UJ	**9.0**	0.22 U	0.22 U	5.5 U	**128 J+**	**11400**
SA10-10D	11/07/2006	2.9 U	5.8 UJ	**11.9**	0.23 U	0.23 U	5.8 U	**174 J+**	**14400**
SA10-20	11/07/2006	3.4 U	6.7 UJ	**3.8**	0.27 U	0.27 U	6.7 U	**13700**	**9000**
SA10-30	11/07/2006	3.9 U	**2.9 J-**	**6.9**	**0.67 J+**	0.31 U	7.8 U	**1920**	**12900**
SA10-40	11/07/2006	3.7 U	**6.0 J-**	**134**	**1.0 J+**	R	7.4 U	**503**	**11500**
SA11-0.5	11/09/2006	2.7 U	**1300**	**136**	**1.1 J+**	**2.0 J**	54.1 U	**93.6 J**	**6500**
SA11-0.5D	11/09/2006	28.4 U	**1410**	**317**	**3.5 J+**	2.3 U	5.7 U	**199 J**	**8700**
SA11-10	11/09/2006	26.8 U	5.4 U	**588**	**5.5**	2.1 U	**2900 J**	**381 J**	**7900**
SA11-20	11/09/2006	**0.95 J**	5.2 U	**1980**	**11.5**	2.1 U	**7760 J**	**49.7 J**	**5300**
SA11-30	11/09/2006	4.1 U	**1370**	**518**	**4.5**	3.3 U	8.2 U	**174 J**	**3400**
SA12-0.5	11/10/2006	2.8 U	**1.9 J**	**7.1**	**0.85 J+**	0.22 U	5.6 U	**153 J+**	**1980**
SA12-10	11/10/2006	2.7 U	**8.4**	**16.7**	**2.7**	0.21 U	7.4 U	**219 J+**	**7150**
SA12-20	11/10/2006	2.7 U	**7.2**	**16.8**	**0.23 J+**	0.22 U	6.5 U	**84.8 J+**	**4300**
SA12-30	11/10/2006	**2.2 J**	**660**	**3230**	**2.7 J+**	**17.2**	8.1 U	**265 J+**	**4800**
SA13-0.5	11/17/2006	2.9 U	5.8 U	**269 J**	0.23 U	**5.7 J**	5.8 U	**13800 J**	**4200 J-**
SA13-0.5D	11/17/2006	2.8 U	5.5 UJ	**15.0 J**	**0.42 J+**	**0.10 J**	**3.2 J**	**1080 J**	**2100 J-**
SA13-10	11/17/2006	2.6 U	5.2 UJ	**13.5 J**	**0.80 J+**	**0.55 J**	5.2 U	**853 J**	**1200 J-**
SA13-20	11/17/2006	2.7 U	5.3 U	**16.3 J**	**0.57 J+**	**0.11 J**	5.3 U	**294 J**	**6900 J-**
SA13-30	11/17/2006	2.6 U	5.3 U	**19.9 J**	**0.17 J+**	**0.74 J**	5.3 U	**174**	**6800 J-**
SA13-40	11/17/2006	3.2 U	6.3 U	**41.3 J**	**3.2 J+**	**0.13 J**	6.3 U	**382 J**	**10900 J**
SA14-0.5	11/08/2006	2.7 U	**3.3 J-**	**9.7**	0.22 U	**0.059 J**	5.5 U	**11.7**	**15400**
SA14-10	11/08/2006	2.8 U	**3.8 J-**	**2.5 J+**	0.23 U	0.23 U	5.7 U	**5.5 J**	**11200**
SA14-20	11/08/2006	3.1 U	**2.1 J-**	**7.6**	**0.32 J+**	**0.056 J**	6.2 U	**10.0**	**13800**
SA14-30	11/08/2006	4.0 U	**11.3 J-**	**2830**	**1.7 J+**	**21.3 J-**	8 U	**774**	**3500**
SA14-40	11/08/2006	3.1 U	6.2 UJ	**2040**	**0.30 J+**	**15.9 J-**	6.2 U	**730**	**25000**
SA15-0.5	11/08/2006	2.9 U	**2.1 J-**	**6.2**	**35.3**	**1.3**	5.8 U	**13.4**	**2800**
SA15-10	11/08/2006	2.9 U	5.9 U	**746 J**	**515 J**	**5.3 J-**	5.9 U	**39.3**	**5800**
SA15-10D	11/08/2006	2.7 U	**15.7 J-**	**266 J**	**43.4 J**	**7.1**	54.9 U	**36.6**	**8500**
SA15-20	11/08/2006	**83.3**	R	**344**	**176**	**5.6**	**20.7 J**	**11600**	**4700**
SA15-30	11/08/2006	3.4 U	**8.9 J-**	**218**	**10.4**	**3.0**	**13.9**	**258**	**38600**
SA15-35	11/08/2006	3.4 U	R	**187**	**10.9 J+**	**3.5**	6.9 U	**225 J+**	**21100**
SA16-0.5	11/09/2006	2.7 U	5.3 UJ	**6.3**	**0.29 J+**	0.21 U	5.3 U	**47.0 J**	**2900**
SA16-10	11/09/2006	2.8 U	5.6 UJ	**8.4**	0.22 U	**0.18 J**	**2.7 J**	**13.9**	**9800**
SA16-20	11/09/2006	2.7 U	5.4 U	**2.4**	**0.29 J+**	**0.095 J**	**5.0 J**	**11.6**	**3400**
SA16-30	11/09/2006	4.0 U	8.1 U	**1530**	**8.0**	**6.7**	80.7 U	**229**	**11800**

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type Analytic Method Chemical Name Units		Chemistry SW 846 9056 Bromide mg/kg	Chemistry SW 846 9056 Chlorate mg/kg	Chemistry SW 846 9056 Chloride mg/kg	Chemistry SW 846 9056 Nitrate (as N) mg/kg	Chemistry SW 846 9056 Nitrite mg/kg	Chemistry SW 846 9056 ortho-Phosphate mg/kg	Chemistry SW 846 9056 Sulfate mg/kg	Chemistry SW 846 9060 Total Organic Carbon mg/kg
Sample ID	Sample Date								
SA17-0.5	11/15/2006	2.9 U	5.9 UJ	**8.7**	**0.48 J+**	**0.95**	**10.6 J**	**28.8**	3900
SA17-0.5D	11/15/2006	2.9 U	5.8 U	**8.1**	**0.77 J+**	**0.25**	**4.5 J**	**24.9**	4900
SA17-10	11/15/2006	2.8 U	5.7 U	**5.2**	**0.96 J+**	**0.83**	5.7 U	**44.4**	3500
SA17-20	11/15/2006	2.7 U	5.3 U	**1.9 J**	0.21 U	**0.31**	5.3 U	**152**	2000
SA17-25	11/15/2006	**1.5 J**	**82.9**	**155**	**2.5 J+**	**0.37**	6.2 U	**685**	13100
SA18-0.5	11/15/2006	27.3 U	**10.2**	**543 J**	**5.7 J+**	10.9 U	5.5 U	**163**	5400
SA18-0.5D	11/15/2006	**1.8 J**	**4.7 J**	**287 J**	**3.8 J+**	2.1 U	5.3 U	**129**	6900
SA18-10	11/15/2006	**3.0**	**3.4 J**	**735 J**	**3.4 J+**	10.9 U	5.4 U	**3710**	9600
SA18-20	11/15/2006	**3.3**	**4.6 J**	**1180 J**	**2.9 J+**	10.7 U	5.4 U	**481**	6000
SA18-30	11/15/2006	**1.2 J**	5.5 U	**280 J**	**1.1 J+**	2.2 U	5.5 U	**379**	200 J
SA19-0.5	11/16/2006	2.8 UJ	**18.4 J-**	**11.8 J-**	**61.8 J+**	**0.31 J-**	55.2 U	**16.4 J+**	8000 J-
SA19-10	11/16/2006	2.7 UJ	5.5 UJ	**6.1 J-**	**4.9 J+**	**0.33 J-**	5.5 U	**22.1 J+**	11100 J-
SA19-20	11/16/2006	2.7 UJ	5.5 UJ	**3.8 J-**	**10.3 J+**	**0.78 J-**	5.5 U	**8160**	4200 J-
SA19-25	11/16/2006	2.9 UJ	5.8 UJ	**8.5 J-**	**1.0 J+**	0.23 UJ	5.8 U	**961**	6300 J-
SA20-0.5	11/16/2006	2.8 UJ	5.6 UJ	**1.5 J-**	**0.53 J+**	**0.95 J-**	5.6 UJ	**19.7 J+**	11700 J
SA20-0.5D	11/16/2006	3.1 UJ	6.2 UJ	**4.8 J-**	0.25 U	0.25 UJ	6.2 U	**27.3 J+**	2100 J
SA20-10	11/16/2006	3.0 UJ	5.9 UJ	**3.4 J-**	**1.1 J+**	**0.30 J-**	5.9 U	**325**	7500 J
SA20-20	11/16/2006	2.6 UJ	**1.8 J-**	**283 J-**	**4.6 J+**	2.1 UJ	5.3 U	**1810**	1100 J
SA20-25	11/16/2006	3.0 UJ	**4.3 J-**	**382 J-**	**6.3 J+**	2.4 UJ	**4.1 J**	**12000**	1400 J
SA21-0.5	11/15/2006	2.6 U	5.2 U	**8.0**	**2.5 J+**	**0.47**	5.2 U	**57.0**	2480
SA21-10	11/15/2006	2.8 U	5.5 U	**683**	**4.8 J+**	2.2 U	5.5 U	**2660**	6900
SA21-20	11/15/2006	2.8 U	5.5 U	**378**	**0.93 J+**	2.2 U	5.5 U	**1600**	7200
SA21-20D	11/15/2006	2.6 U	5.2 U	**299**	**0.71 J+**	2.1 U	5.2 U	**1800**	5800
SA21-30	11/15/2006	2.8 U	5.6 U	**154**	**0.64 J+**	2.2 U	5.6 U	**252**	9400
SA22-0.5	11/16/2006	3.2 UJ	6.3 U	**9.0 J-**	**5.7 J+**	**1.1 J-**	6.3 U	**112 J+**	7000 J-
SA22-10	11/16/2006	2.8 UJ	5.5 U	**10.0 J-**	**2.0 J+**	**0.68 J-**	**6.3**	**23.1 J+**	11900 J-
SA22-20	11/16/2006	2.9 UJ	**5.4 J**	**155 J-**	**1.6 J+**	2.3 UJ	5.8 U	**696**	7200 J-
SA23-0.5	11/09/2006	2.9 U	**5.2 J**	**4.2**	**0.21 J+**	0.23 U	**5.7 J**	**6.8**	5020
SA23-10	11/09/2006	**2.6 J**	6.0 U	**41.6**	**2.4 J+**	2.4 U	6 U	**77.6**	11700
SA23-20	11/09/2006	3.0 U	**101**	**204**	**11.3**	**3.1**	6.0 U	**7410**	1350
SA23-20D	11/09/2006	2.9 U	**101**	**100**	**6.8**	**1.9**	5.8 U	**5380**	2520
SA24-0.5	11/03/2006	2.9 U	**5.1 J-**	**467**	**19.4**	**3.3**	5.8 U	**159**	2700
SA24-10	11/03/2006	2.7 U	**17.5 J-**	**431**	**2.2 J**	**3.6 J-**	5.4 U	**91.7**	5290
SA24-20	11/03/2006	2.7 U	**43.5 J-**	**734**	**9.0 J**	**6.4 J-**	**2.7 J**	**1140**	7030
SA24-25	11/03/2006	2.8 U	**40.2 J-**	**683**	**9.0 J**	**7.1 J-**	**3.0 J**	**469**	16300
SA25-0.5	11/03/2006	2.8 U	5.6 UJ	**7.3**	**0.83 J**	**0.10 J**	5.6 U	**15.2**	14500
SA25-10	11/03/2006	2.8 U	5.7 UJ	**4.6**	**1.9 J**	**0.40**	5.7 U	**7.2**	12700
SA25-15	11/03/2006	2.7 U	5.4 UJ	**10.4**	**0.62 J**	R	5.4 U	**7.8**	24200
SA25-20	11/03/2006	3.2 U	6.5 UJ	**2240**	0.26 UJ	**16.4 J-**	6.5 U	**203**	22400
SA26-0.5	11/20/2006	2.7 U	5.4 UJ	**14.2 J**	**0.53 J**	**0.27**	5.4 U	**183**	3700 J-
SA26-0.5D	11/20/2006	2.7 U	**28.1 J+**	**358 J**	**6.1 J**	0.22 U	5.5 U	**6420**	4400 J-
SA26-10	11/20/2006	2.8 U	**94.6 J+**	**494 J**	**7.4 J**	**0.15 J**	5.6 U	**574**	2280 J-
SA27-0.5	11/02/2006	2.6 U	**6.3 J-**	**531**	**2.9 J**	**4.2 J-**	5.2 U	**22.5**	5200
SA27-10	11/02/2006	2.7 U	5.3 UJ	**875**	**0.69 J**	R	5.3 U	**2250**	1600
SA27-20	11/02/2006	2.8 U	**12.9 J-**	**513**	**1.7 J**	**4.8 J-**	5.5 U	**5900**	13300

Table 4-1
General Chemistry Results in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
J-	The result is an estimated quantity and the result may be biased low.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
R	The result is rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
mg/kg	Milligrams per kilogram.
Blank	Not analyzed.
Bold	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.

Table 4-2
General Chemistry Results in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type Analytic Method Chemical Name Units		Chemistry EPA 160.1 Total Dissolved Solids mg/L	Chemistry EPA 160.2 Total Suspended Solids mg/L	Chemistry EPA 310.1 Alkalinity (as CaCO3) mg/L	Chemistry EPA 310.1 Bicarbonate mg/L	Chemistry EPA 310.1 Total Alkalinity mg/L	Chemistry EPA 350.1 Ammonia (as N) ug/L	Chemistry EPA 425.1 MBAS mg/L	Chemistry EPA 9012A Cyanide ug/L	Chemistry SW 846 9040B pH (liquid) none
Sample ID	Sample Date									
IAR_12/01/2006	12/01/2006	7870	18 J	5.0 U	172 J+	172 J	507000	2.3	R	7.4 J
M100	12/04/2006	1670	12.0 J	5.0 U	126	126	3620	0.41	R	7.5 J
M100D	12/04/2006	1630	7.0 J	5.0 U	136	136	3770	0.34	R	7.6 J
M11	12/06/2006	3270	15.0 J	5.0 U	205	205	50.0 U	0.20	R	7.7 J
M11D	12/06/2006	3280	9.0 J	5.0 U	184	184	50.0 U	0.17 J	R	7.6 J
M120	11/28/2006	1700	9.0 J	5.0 U	146	146	50.0 U	0.20 U	R	7.5 J
M12A	12/05/2006	8170	57.0 J	5.0 U	381	381	50.0 U	0.41	R	7.8 J
M13	12/01/2006	3440	17.0 J	5.0 U	111 J+	111 J+	50.0 U	0.16 U	R	7.5 J
M29	11/17/2006	6180 J-	449 J-	5.0 U	268	268	79.9	0.20 U	5.0 UJ	
M2A	12/04/2006	12700	36.0 J	5.0 U	92.0	92.0	50.0 U	0.63	R	7.2 J
M31A	12/06/2006	9720	25.0 J	5.0 U	108	108	1270	1.8 J	R	7.1 J
M39	12/05/2006	7270	56.0 J	5.0 U	137	137	50.0 U	1.2 J	R	7.1 J
M48	12/06/2006	2690	3.0 J	5.0 U	134	134	942	1.5 J	R	7.4 J
M55	12/07/2006	9560	6.0 J	5.0 U	156	156	2630	3.3	R	7.1 J
M55D	12/07/2006	9630	9.0 J	5.0 U	168	168	2710	1.5 J	R	7.1 J
M5A	12/07/2006	11000	18.0 J	5.0 U	202	202	50.0 U	1.4 J	R	7.0 J
M76	12/04/2006	3970	20.0 J	5.0 U	125	125	50.0 U	0.21	R	7.2 J
M7B	11/30/2006	7650	37.0 J	5.0 U	98.0	98.0	50.0 U	4.0	R	7.2 J
M89	12/05/2006	13800	70.0 J	5.0 U	150	150		1.8 J	R	7.0 J
M92	11/29/2006	1850	22.0 J	5.0 U	80.0	80.0	50.0 U	0.20 U	R	7.4 J
M95	12/04/2006	7910	41.0 J	5.0 U	77.0	77.0	2450	2.2	R	7.6 J
M97	11/29/2006	3750	16.0 J	5.0 U	90.0	90.0	50.0 U	0.24	R	7.3 J
M98	11/30/2006	3900	21.0 J	5.0 U	90.0	90.0	50.0 U	0.22	R	7.1 J
MC45	12/06/2006	10500	6.0 J	5.0 U	286	286	50.0 U	1.8 J	R	7.1 J
PC40	12/01/2006	12200	79.0 J	5.0 U	212 J+	212 J+	50.0 U	3.2	R	7.0 J
GWSA2	11/06/2006	1660	29400	5.0 U	106	106	50.0 U	0.20 U	5.0 UJ	7.9 J
GWSA9	11/07/2006	12900	648	5.0 U	99.0	99.0	50.0 U	0.20 U	5.0 UJ	7.6 J
GWSA10	11/07/2006	2370	13700	5.0 U	63.0	63.0	50.0 U	0.20 U	5.0 UJ	7.7 J
GWSA14	11/08/2006	13500	4360	5.0 U	67.0	67.0	50.0 U	0.27 U	5.0 UJ	7.5 J
GWSA15	11/08/2006	14400	29800	5.0 U	198	198	893000	2.1 U	5.0 UJ	7.3 J

Table 4-2
General Chemistry Results in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry	Chemistry
	Analytic Method	SW 846 9050A	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9056	SW 846 9060
	Chemical Name	Specific Conductance	Bromide	Chlorate	Chloride	Nitrate (as N)	Nitrite	ortho-Phosphate	Sulfate	Total Organic Carbon
	Units	umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Sample Date									
IAR_12/01/2006	12/01/2006	4470	25.0 U	46.8	518	283	138	5.0 U	1250	50.0 U
M100	12/04/2006	1360 J+	0.22 J	85.0	165	12.8	1.9	5.0 U	3520	50.0 U
M100D	12/04/2006	1410 J+	0.23 J	108	168	12.9	2.2	5.0 U	3530	50.0 U
M11	12/06/2006	2360 J+	25.0 U	421	239	3.4	3.1	5.0 U	1290	50 U
M11D	12/06/2006	2330 J+	25.0 U	444	246	3.5	2.0 U	5.0 U	1380	50 U
M120	11/28/2006	1800	0.29	5.0 U	158	1.2	2.0 U	0.57	824	50.0 UJ
M12A	12/05/2006	3660 J+	25.0 U	2370	1030	15.2	10.0 U	500 U	1510	50.0 U
M13	12/01/2006	2320	0.60	279	394	1.8	R	5.0 U	1520	50.0 U
M29	11/17/2006	6420 J	14.1 J-	15.0	229 J-	9.5	2.0 U	5.0 U	5330	2.2
M2A	12/04/2006	2450 J+	0.54	4600	1800	13.6	22.5	500 U	1250	50.0 U
M31A	12/06/2006	2630 J+	25.0 U	3320	1130	17.6	10.0 U	500 U	1480	50.0 U
M39	12/05/2006	2360 J+	2.7	1620	1280	12.1	10.0 U	5.0 U	2720	50.0 U
M48	12/06/2006	2220 J+	25.0 U	484	314	15.2	4.6	5.0 U	861	50.0 U
M55	12/07/2006	3000 J+	2.5 U	3340	2030	28.8	0.20 U	500 U	1210	50.0 U
M55D	12/07/2006	3160 J+	25.0 U	3320	1940	28.8	0.20 U	500 U	1230	50.0 U
M5A	12/07/2006	3350 J+	25.0 U	5.0 U	5320	2.0 U	2.0 U	50.0 U	1600	50.0 U
M76	12/04/2006	2320 J+	0.96	820	829	8.8	14.5	15.0	770	50.0 U
M7B	11/30/2006	4310	84.1 J	8.0	4160	10.0 U	10.0 U	5.0 U	1690	50.0 U
M89	12/05/2006	3070	25.0 U	6460	2300	32.1	10.0 U	5.0 U	1080	50.0 U
M92	11/29/2006	1930	0.21 J	3.2 J	192	4.0	0.020 U	5.0 U	992	50.0 U
M95	12/04/2006	2430 J+	2.5 U	962	1270	59.5	16.8	5.0 U	3020	50.0 U
M97	11/29/2006	2410	25.0 U	277	1190	8.4	2.0 U	5.0 U	1150	50.0 U
M98	11/30/2006	2420	125 U	25.0	1120	2.6	10.0 U	5.0 U	1100	50.0 U
MC45	12/06/2006	4020 J+	25.0 U	5.0 U	4460	2.0 U	80.6	5.0 U	1870	50.0 U
PC40	12/01/2006	6670	250 U	48.0	4790	2.4	R	5.0 U	2440	50.0 U
GWSA2	11/06/2006	2260	0.65	4.0 J	170	5.4	0.020 U	0.5 U	913	4.1 J-
GWSA9	11/07/2006	15900	2.5 U	5.0 U	6390 J	3.3	0.020 U	5.0 U	2520	6.5 J-
GWSA10	11/07/2006	2880	0.60	26.9	375	6.4	0.020 U	3.7 J	1090	1.2 J-
GWSA14	11/08/2006	15200	25.0 U	5.0 U	5180	1.1 J	2.0 U	50.0 U	1950	5.9 J-
GWSA15	11/08/2006	21500	25.0 U	172	3750	132	2.0 U	50.0 U	2200	3.8 J-

Table 4-2
General Chemistry Results in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
J-	The result is an estimated quantity and the result may be biased low.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
R	The result is rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
mg/L	Milligrams per liter.
ug/L	Micrograms per liter.
umhos/cm	MicroSiemens per centimeter.
Blank	Not analyzed.
Bold	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.

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type / Analytic Method / Chemical Name / Units		Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (a) ng/kg	Dioxin SW 846 8290 Total TEQ-ENSR Calculated (a) ng/kg	Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (b) ng/kg	Dioxin SW 846 8290 Total TEQ-ENSR Calculated (b) ng/kg	Dioxin 8290 SCREEN 1,2,3,4,6,7,8-Heptachlorodibenzofuran ng/kg	Dioxin SW 846 8290 1,2,3,4,6,7,8-Heptachlorodibenzofuran ng/kg
Sample ID	Sample Date						
SA1-0.5	11/03/2006	1.17		1.21		5.865	
SA2-0.5	11/03/2006	2.57		2.58		7.825	
SA3-0.5	11/13/2006	149.01		149.01		669.842	
SA3-0.5D	11/13/2006					849.298	
SA4-0.5	11/14/2006	42.5		42.5		18.965	
SA5-0.5	11/14/2006	15.09		15.09		80.879	
SA6-0.5	11/14/2006	0.64		0.72		7.730	
SA6-0.5D	11/14/2006					2.554	
SA7-0.5	11/20/2006	192	169	192	169	927.107	873.925 J
SA8-0.5	11/17/2006	0.014		0.063		0.479	
SA9-0.5	11/06/2006	7.18		7.18		28.002	
SA10-0.5	11/07/2006	0.14		0.15		0.269	
SA11-0.5	11/09/2006	10.3		10.3		32.917	
SA11-0.5D	11/09/2006					69.353	
SA12-0.5	11/10/2006	0.078		0.11		0.471	
SA13-0.5	11/17/2006	0.006		0.1		0.047 U	
SA13-0.5D	11/17/2006					0.325	
SA14-0.5	11/08/2006	4.27		4.27		11.526	
SA15-0.5	11/08/2006	983	803	983	803	5619.090	5666.967 J
SA16-0.5	11/09/2006	1149	894	1149	894	6033.394	5388.734 J
SA17-0.5	11/15/2006	13.64		13.66		1.752	
SA17-0.5D	11/15/2006					3.563	
SA18-0.5	11/15/2006	3.36	0.75	3.39	0.82	6.645	6.645
SA18-0.5D	11/15/2006					41.263	
SA19-0.5	11/16/2006	288	268	288	268	1676.277	1580.034 J
SA20-0.5	11/16/2006	0.24		0.31		1.328	
SA20-0.5D	11/16/2006					0.543	
SA21-0.5	11/15/2006	2.41		2.42		18.803	
SA22-0.5	11/16/2006	0.43		0.47		1.882	
SA23-0.5	11/09/2006	409	330	409	330	2499.060	1955.868 J
SA24-0.5	11/03/2006	0.12		0.18		0.646	
SA25-0.5	11/03/2006	271	217	271	217	1451.247	1181.817 J
SA26-0.5	11/20/2006	0.49		0.54		3.290	
SA26-0.5D	11/20/2006					3.449	
SA27-0.5	11/02/2006	5.37		5.37		26.455	

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Units	Dioxin 8290 SCREEN 1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin ng/kg	Dioxin SW 846 8290 1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin ng/kg	Dioxin 8290 SCREEN 1,2,3,4,7,8,9-Heptachlorodibenzofuran ng/kg	Dioxin SW 846 8290 1,2,3,4,7,8,9-Heptachlorodibenzofuran ng/kg	Dioxin 8290 SCREEN 1,2,3,4,7,8-Hexachlorodibenzofuran ng/kg
Sample ID	Sample Date					
SA1-0.5	11/03/2006	3.587		2.045		1.993
SA2-0.5	11/03/2006	3.279		3.275		4.792
SA3-0.5	11/13/2006	53.366		269.014		281.567
SA3-0.5D	11/13/2006	71.721		344.266		356.494
SA4-0.5	11/14/2006	2.141		8.238		23.006
SA5-0.5	11/14/2006	5.161		36.815		37.078
SA6-0.5	11/14/2006	1.036		2.617		2.392
SA6-0.5D	11/14/2006	0.461		0.801		0.864
SA7-0.5	11/20/2006	85.450	85.45	392.108	392.11	372.915
SA8-0.5	11/17/2006	0.714		0.075 U		0.034 U
SA9-0.5	11/06/2006	13.045		13.264		15.202
SA10-0.5	11/07/2006	0.354		0.126		0.136
SA11-0.5	11/09/2006	3.477		15.475		13.715
SA11-0.5D	11/09/2006	6.317		34.356		32.600
SA12-0.5	11/10/2006	0.280		0.073 U		0.146
SA13-0.5	11/17/2006	0.054 U		0.067 U		0.035 U
SA13-0.5D	11/17/2006	0.736		0.140 U		0.084 U
SA14-0.5	11/08/2006	2.097		11.338		6.078
SA15-0.5	11/08/2006	365.788	365.788	3264.854	2758.352 J	2303.115
SA16-0.5	11/09/2006	443.741	443.741	2950.816	2485.881 J	2650.305
SA17-0.5	11/15/2006	0.279		0.818		1.703
SA17-0.5D	11/15/2006	0.845		1.760		3.450
SA18-0.5	11/15/2006	0.516	0.516 U	2.093	2.093 J	2.577
SA18-0.5D	11/15/2006	2.633		12.954		16.715
SA19-0.5	11/16/2006	145.429	145.429	779.803	831.444 J	669.437
SA20-0.5	11/16/2006	1.317		0.805		0.535
SA20-0.5D	11/16/2006	0.910		0.071 U		0.172
SA21-0.5	11/15/2006	1.360		5.435		6.907
SA22-0.5	11/16/2006	0.735		0.739		0.819
SA23-0.5	11/09/2006	208.977	208.977	1015.630	845.761 J	1021.396
SA24-0.5	11/03/2006	0.281		0.068 U		0.317
SA25-0.5	11/03/2006	101.111	101.111	785.309	544.7 J	651.256
SA26-0.5	11/20/2006	0.614		1.001		1.230
SA26-0.5D	11/20/2006	0.760		0.987		1.335
SA27-0.5	11/02/2006	10.888		10.922		10.811

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin
	Analytic Method	SW 846 8290	8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290
	Chemical Name	1,2,3,4,7,8-Hexachlorodibenzofuran	1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	1,2,3,6,7,8-Hexachlorodibenzofuran	1,2,3,6,7,8-Hexachlorodibenzofuran
	Units	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
Sample ID	Sample Date					
SA1-0.5	11/03/2006		0.070		1.429	
SA2-0.5	11/03/2006		0.096		2.661	
SA3-0.5	11/13/2006		6.265		157.518	
SA3-0.5D	11/13/2006		8.512		196.405	
SA4-0.5	11/14/2006		0.656		9.753	
SA5-0.5	11/14/2006		0.652		20.664	
SA6-0.5	11/14/2006		0.059 U		1.665	
SA6-0.5D	11/14/2006		0.055 U		0.552	
SA7-0.5	11/20/2006	372.915	8.841	8.841	249.626	249.626
SA8-0.5	11/17/2006		0.043 U		0.030 U	
SA9-0.5	11/06/2006		0.306		7.588	
SA10-0.5	11/07/2006		0.028 U		0.081	
SA11-0.5	11/09/2006		0.279		8.318	
SA11-0.5D	11/09/2006		0.600		19.180	
SA12-0.5	11/10/2006		0.036 U		0.060	
SA13-0.5	11/17/2006		0.041 U		0.031 U	
SA13-0.5D	11/17/2006		0.060 U		0.079 U	
SA14-0.5	11/08/2006		0.132		3.817	
SA15-0.5	11/08/2006	1868.559 J	33.024	33.024	1407.017	1161.921 J
SA16-0.5	11/09/2006	2143.656 J	49.392	49.392	1625.974	1362.448 J
SA17-0.5	11/15/2006		0.062 U		0.773	
SA17-0.5D	11/15/2006		0.099 U		1.330	
SA18-0.5	11/15/2006	2.577	0.063	0.063 J	1.450	1.45 J
SA18-0.5D	11/15/2006		0.315		9.814	
SA19-0.5	11/16/2006	652.232 J	17.947	17.947	425.764	425.762
SA20-0.5	11/16/2006		0.211		0.442	
SA20-0.5D	11/16/2006		0.056 U		0.095	
SA21-0.5	11/15/2006		0.144		4.195	
SA22-0.5	11/16/2006		0.050		0.541	
SA23-0.5	11/09/2006	756.882 J	18.367	18.367	685.128	489.535 J
SA24-0.5	11/03/2006		0.057 U		0.207	
SA25-0.5	11/03/2006	441.621 J	8.369	8.369	408.013	408.013
SA26-0.5	11/20/2006		0.059 U		0.897	
SA26-0.5D	11/20/2006		0.045 U		0.980	
SA27-0.5	11/02/2006		0.089 U		7.190	

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin
	Analytic Method	8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290	8290 SCREEN
	Chemical Name	1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin
	Units	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
Sample ID	Sample Date					
SA1-0.5	11/03/2006	**0.228**		0.235 U		**0.218**
SA2-0.5	11/03/2006	**0.328**		**0.289**		**0.324**
SA3-0.5	11/13/2006	**13.496**		**45.354**		**15.276**
SA3-0.5D	11/13/2006	**17.014**		**27.487**		**19.467**
SA4-0.5	11/14/2006	**1.595**		**4.476**		**1.534**
SA5-0.5	11/14/2006	**1.273**		**5.906**		**1.340**
SA6-0.5	11/14/2006	**0.191**		**0.259**		**0.256**
SA6-0.5D	11/14/2006	**0.140**		**0.145**		**0.176**
SA7-0.5	11/20/2006	**19.448**	**19.448**	**31.354**	**31.353**	**21.698**
SA8-0.5	11/17/2006	0.036 U		0.041 U		0.040 U
SA9-0.5	11/06/2006	**0.919**		**1.078**		**0.867**
SA10-0.5	11/07/2006	**0.082**		**0.066**		**0.086**
SA11-0.5	11/09/2006	**0.866**		**0.997**		**0.845**
SA11-0.5D	11/09/2006	**1.673**		**6.594**		**1.687**
SA12-0.5	11/10/2006	**0.139**		0.044 U		**0.198**
SA13-0.5	11/17/2006	0.035 U		0.042 U		0.038 U
SA13-0.5D	11/17/2006	0.055 U		0.113 U		0.058 U
SA14-0.5	11/08/2006	**0.576**		**0.613**		**0.506**
SA15-0.5	11/08/2006	**89.921**	**89.921**	**240.602**	**240.702**	**109.299**
SA16-0.5	11/09/2006	**122.741**	**122.741**	**246.274**	**246.274**	**140.746**
SA17-0.5	11/15/2006	0.049 U		**0.700**		**0.100**
SA17-0.5D	11/15/2006	**0.160**		**1.218**		**0.163**
SA18-0.5	11/15/2006	**0.130**	**0.13 JK**	0.185 U	0.185 U	**0.117**
SA18-0.5D	11/15/2006	**0.802**		1.016 U		**0.769**
SA19-0.5	11/16/2006	**32.612**	**32.612**	**52.982**	**52.981**	**37.309**
SA20-0.5	11/16/2006	**0.338**		**0.345**		**0.351**
SA20-0.5D	11/16/2006	0.050 U		0.053 U		0.052 U
SA21-0.5	11/15/2006	**0.395**		0.250 U		**0.383**
SA22-0.5	11/16/2006	**0.159**		**0.208**		**0.102**
SA23-0.5	11/09/2006	**51.669**	**51.669**	**71.553**	**71.553**	**55.546**
SA24-0.5	11/03/2006	0.054 U		0.028 U		0.056 U
SA25-0.5	11/03/2006	**28.654**	**28.654**	**64.621**	**64.621**	**31.372**
SA26-0.5	11/20/2006	0.053 U		0.117 U		0.055 U
SA26-0.5D	11/20/2006	0.040 U		**0.084**		0.042 U
SA27-0.5	11/02/2006	**0.806**		**0.925**		**0.700**

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		Dioxin	Dioxin	Dioxin	Dioxin	Dioxin
Analytic Method		SW 846 8290	8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290
Chemical Name		1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	1,2,3,7,8-Pentachlorodibenzo-p-Dioxin
Units		ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
Sample ID	Sample Date					
SA1-0.5	11/03/2006		1.041		0.094	
SA2-0.5	11/03/2006		3.224		0.177	
SA3-0.5	11/13/2006		117.401		11.897	
SA3-0.5D	11/13/2006		143.365		13.508	
SA4-0.5	11/14/2006		37.501		3.343	
SA5-0.5	11/14/2006		18.712		0.846	
SA6-0.5	11/14/2006		0.886		0.059 U	
SA6-0.5D	11/14/2006		0.456		0.047 U	
SA7-0.5	11/20/2006	21.698	199.693	199.692	16.175	16.175
SA8-0.5	11/17/2006		0.023 U		0.030 U	
SA9-0.5	11/06/2006		8.336		0.534	
SA10-0.5	11/07/2006		0.089		0.054	
SA11-0.5	11/09/2006		6.223		0.550	
SA11-0.5D	11/09/2006		16.527		1.075	
SA12-0.5	11/10/2006		0.068		0.028 U	
SA13-0.5	11/17/2006		0.028 U		0.023 U	
SA13-0.5D	11/17/2006		0.050 U		0.055 U	
SA14-0.5	11/08/2006		3.929		0.273	
SA15-0.5	11/08/2006	109.299	1020.569	890.137 J	57.995	57.995
SA16-0.5	11/09/2006	140.746	1287.384	1090.766 J	87.894	87.894
SA17-0.5	11/15/2006		6.375		0.042 U	
SA17-0.5D	11/15/2006		11.863		0.220	
SA18-0.5	11/15/2006	0.117 JK	0.985	0.985 J	0.070	0.07 J
SA18-0.5D	11/15/2006		6.188		0.489	
SA19-0.5	11/16/2006	37.309	314.427	314.428	24.099	24.099
SA20-0.5	11/16/2006		0.143		0.086	
SA20-0.5D	11/16/2006		0.054 U		0.074 U	
SA21-0.5	11/15/2006		2.669		0.202	
SA22-0.5	11/16/2006		0.420		0.070	
SA23-0.5	11/09/2006	55.546	457.566	457.566	28.207	28.207
SA24-0.5	11/03/2006		0.201		0.056 U	
SA25-0.5	11/03/2006	31.372	286.921	216.329 J	16.513	16.513
SA26-0.5	11/20/2006		0.634		0.058 U	
SA26-0.5D	11/20/2006		0.715		0.048 U	
SA27-0.5	11/02/2006		5.893		0.419	

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin
	Analytic Method	8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290
	Chemical Name	2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-Pentachlorodibenzofuran	2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-Tetrachlorodibenzofuran
	Units	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
Sample ID	Sample Date						
SA1-0.5	11/03/2006	2.166		0.579		1.372	
SA2-0.5	11/03/2006	1.635		1.575		6.586	
SA3-0.5	11/13/2006	50.697		57.175		298.648	
SA3-0.5D	11/13/2006	60.179		65.924		320.832	
SA4-0.5	11/14/2006	4.497		28.443		201.573	
SA5-0.5	11/14/2006	10.995		8.426		19.343	
SA6-0.5	11/14/2006	0.795		0.279 U		1.724	
SA6-0.5D	11/14/2006	0.262		0.195		0.752	
SA7-0.5	11/20/2006	112.484	112.484	92.926	92.927	369.233	136.994 J
SA8-0.5	11/17/2006	0.034 U		0.022 U		0.043 U	
SA9-0.5	11/06/2006	4.070		3.524		14.619	
SA10-0.5	11/07/2006	0.090		0.039		0.080	
SA11-0.5	11/09/2006	3.861		3.060		7.570	
SA11-0.5D	11/09/2006	9.620		7.344		19.669	
SA12-0.5	11/10/2006	0.037 U		0.043		0.033 U	
SA13-0.5	11/17/2006	0.035 U		0.027 U		0.055 U	
SA13-0.5D	11/17/2006	0.092 U		0.049 U		0.158 U	
SA14-0.5	11/08/2006	1.889		1.483		17.368	
SA15-0.5	11/08/2006	787.272	648.672 J	502.763	502.759	1292.662	415.316 J
SA16-0.5	11/09/2006	859.203	695.192 J	592.395	473.372 J	1518.736	446.407 J
SA17-0.5	11/15/2006	0.440		3.691		74.100	
SA17-0.5D	11/15/2006	1.355		6.606		144.703	
SA18-0.5	11/15/2006	0.488	0.488 J	0.265	0.265 JK	1.360	0.73 UJ
SA18-0.5D	11/15/2006	2.185		2.031		7.436	
SA19-0.5	11/16/2006	216.800	216.799	128.464	128.463	357.802	181.098 J
SA20-0.5	11/16/2006	0.361		0.089		0.220	
SA20-0.5D	11/16/2006	0.047 U		0.050 U		0.080 U	
SA21-0.5	11/15/2006	0.802		0.772		2.994	
SA22-0.5	11/16/2006	0.282		0.182		0.399	
SA23-0.5	11/09/2006	332.361	266.934 J	199.983	199.983	389.197	199.366 J
SA24-0.5	11/03/2006	0.057		0.076		0.183	
SA25-0.5	11/03/2006	224.385	157.601 J	139.915	139.916	327.510	145.395 J
SA26-0.5	11/20/2006	0.381		0.201		0.940	
SA26-0.5D	11/20/2006	0.401		0.253		0.726	
SA27-0.5	11/02/2006	4.081		3.078		7.057	

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		Dioxin	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin
Analytic Method		8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290	8290 SCREEN	SW 846 8290
Chemical Name		2,3,7,8-Tetrachlorodibenzo-p-Dioxin	2,3,7,8-Tetrachlorodibenzo-p-Dioxin	Octachlorodibenzofuran	Octachlorodibenzofuran	Octachlorodibenzo-p-Dioxin	Octachlorodibenzo-p-Dioxin
Units		ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
Sample ID	Sample Date						
SA1-0.5	11/03/2006	0.042 U		11.063		32.932	
SA2-0.5	11/03/2006	0.023 U		20.138		17.723	
SA3-0.5	11/13/2006	8.039		1674.507		57.568	
SA3-0.5D	11/13/2006	8.466		2372.145		90.351	
SA4-0.5	11/14/2006	4.487		38.680		2.582	
SA5-0.5	11/14/2006	0.132		237.642		7.486	
SA6-0.5	11/14/2006	0.077 U		20.727		6.287	
SA6-0.5D	11/14/2006	0.059 U		6.640		2.965	
SA7-0.5	11/20/2006	8.965	8.965	2502.073	2338.457 J	191.912	191.912
SA8-0.5	11/17/2006	0.028 U		1.403		6.973	
SA9-0.5	11/06/2006	0.265		124.382		88.963	
SA10-0.5	11/07/2006	0.024 U		0.771		4.401	
SA11-0.5	11/09/2006	0.209		81.562		6.222	
SA11-0.5D	11/09/2006	0.454		159.252		9.591	
SA12-0.5	11/10/2006	0.026 U		1.212		1.472	
SA13-0.5	11/17/2006	0.036 U		0.109 U		0.660	
SA13-0.5D	11/17/2006	0.141 U		0.670		3.166	
SA14-0.5	11/08/2006	0.081		31.029		3.732	
SA15-0.5	11/08/2006	18.916	18.916	17916.923	13990.188 J	410.286	410.286 J
SA16-0.5	11/09/2006	23.713	23.713	16111.960	12526.796 J	442.736	442.736 J
SA17-0.5	11/15/2006	0.121		6.847		2.193	
SA17-0.5D	11/15/2006	0.194		14.903		5.440	
SA18-0.5	11/15/2006	0.029 U	0.029 U	14.408	14.408	1.964	1.964 U
SA18-0.5D	11/15/2006	0.135		91.431		3.608	
SA19-0.5	11/16/2006	7.426	7.426	4873.315	4379.503 J	157.307	157.306 U
SA20-0.5	11/16/2006	0.078 U		3.376		7.056	
SA20-0.5D	11/16/2006	0.082 U		1.398		6.993	
SA21-0.5	11/15/2006	0.047		38.958		2.214	
SA22-0.5	11/16/2006	0.073 U		3.974		3.430	
SA23-0.5	11/09/2006	5.753	5.753	6299.878	5039.988 J	213.695	213.695 J
SA24-0.5	11/03/2006	0.046 U		1.385		2.462	
SA25-0.5	11/03/2006	4.934	4.934	2909.582	1726.841 J	88.725	88.725 J
SA26-0.5	11/20/2006	0.009		6.411		3.042	
SA26-0.5D	11/20/2006	0.043 U		6.170		3.024	
SA27-0.5	11/02/2006	0.150		59.691		145.942	

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin	Dioxin
	Analytic Method	SW 846 8290	SW 846 8290	SW 846 8290	SW 846 8290	SW 846 8290	SW 846 8290	SW 846 8290	SW 846 8290
	Chemical Name	Tetrachlorinated Dibenzofurans, (Total)	Total HpCDD	Total HpCDF	Total HxCDD	Total HxCDF	Total PeCDD	Total PeCDF	Total TCDD
	Units	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
Sample ID	Sample Date								
SA1-0.5	11/03/2006								
SA2-0.5	11/03/2006								
SA3-0.5	11/13/2006								
SA3-0.5D	11/13/2006								
SA4-0.5	11/14/2006								
SA5-0.5	11/14/2006								
SA6-0.5	11/14/2006								
SA6-0.5D	11/14/2006								
SA7-0.5	11/20/2006	1642.861 J	151.421	1846.885 J	158.189	1786.919	154.674	1665.598	160.412
SA8-0.5	11/17/2006								
SA9-0.5	11/06/2006								
SA10-0.5	11/07/2006								
SA11-0.5	11/09/2006								
SA11-0.5D	11/09/2006								
SA12-0.5	11/10/2006								
SA13-0.5	11/17/2006								
SA13-0.5D	11/17/2006								
SA14-0.5	11/08/2006								
SA15-0.5	11/08/2006	7527.737 J	569.535	12074.690 J	714.161	8663.283 J	653.379	8089.831 J	607.201
SA16-0.5	11/09/2006	10701.264 J	679.868	11239.820 J	968.365	9676.516 J	1060.548	10241.201 J	1020.732
SA17-0.5	11/15/2006								
SA17-0.5D	11/15/2006								
SA18-0.5	11/15/2006	6.468	0.957 U	12.632	0.142 J	9.841	0.51 J	9.31	0.756 J
SA18-0.5D	11/15/2006								
SA19-0.5	11/16/2006	2089.117 J	228.544	3521.881 J	260.194	2886.323 J	229.389	2623.048	205.418
SA20-0.5	11/16/2006								
SA20-0.5D	11/16/2006								
SA21-0.5	11/15/2006								
SA22-0.5	11/16/2006								
SA23-0.5	11/09/2006	2262.272 J	328.279	4149.869 J	399.39	3588.757 J	291.05	4381.88	212.030
SA24-0.5	11/03/2006								
SA25-0.5	11/03/2006	1638.217 J	153.094	2353.029 J	224.223	2007.901 J	194.911	1913.666 J	182.58
SA26-0.5	11/20/2006								
SA26-0.5D	11/20/2006								
SA27-0.5	11/02/2006								

Table 4-3
Dioxins and Dibenzofurans Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

(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.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration.
JK	The result is an estimated maximum possible concentration.
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.
ng/kg	Nanogram per kilogram.
TEF	Toxic Equivalency Factor.
TEQ	Toxic Equivalent Concentration
Blank	Not analyzed.
Bold	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.

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
MN ORE	01/19/2007	10300 J	3.4	24.9	1360 J	0.66 U	4.4 UJ	7.8 J-	361 J-	4.0	871	155 J
MN TAILINGS	01/19/2007	51700 J	3.6	90.1	473 J	2.3 J	65.2 UJ	8.2 J-	25500 J-	74.3	1840	797 J
SA1-0.5	11/03/2006	5380 J	0.16 J-	2.5	120 J	0.45	3.2 UJ	0.11	17900 J	7.9 J-	6.1 J-	14.5 J
SA1-05	11/03/2006	5600 J	0.10 J-	1.6	69.1 J	0.39	3.7 UJ	0.056 J	19900 J	4.7 J-	6.5 J-	11.7 J
SA1-10	11/03/2006	6000 J	0.15 J-	4.1	162 J	0.42	3.7 UJ	0.081	40900 J	6.7 J-	6.3 J-	12.4 J
SA2-0.5	11/03/2006	5510 J	0.14 J-	1.8	136 J	0.40	3.1 UJ	0.10	14700 J	6.5 J-	6.4 J-	15.2 J
SA2-10	11/03/2006	6510 J	0.15 J-	3.5	113 J	0.44	6.3 UJ	0.062	19000 J	7.6 J-	6.4 J-	12.6 J
SA2-20	11/03/2006	5110 J	0.14 J-	4.0	110 J	0.41	6.4 UJ	0.11	39900 J	6.7 J-	6.3 J-	10.0 J
SA2-30	11/06/2006	7410 J	0.12 J-	23.5	452 J	0.40	20.6 J-	0.14	138000	16.1 J-	3.6 J-	8.9 J
SA2-40	11/06/2006	16000 J	0.21 J-	18.9	84.2 J	0.75	29.6 J-	0.084	4620	20.2 J-	5.9 J-	13.9 J
SA2-50	11/06/2006	13200 J	0.23 J-	26.8	101 J	0.62	22.7 J-	0.069 J	3830	20.9 J-	6.1 J-	12.8 J
SA2-60	11/06/2006	10200 J	0.13 J-	10.6	118 J	0.43	11.1 UJ	0.046 J	4560	19.2 J-	5.5 J-	12.4 J
SA3-0.5	11/13/2006	7000	0.17 J-	3.5	181 J+	0.52	5.7 UJ	0.15	40900 J	10.7	6.5	12.3 J-
SA3-0.5D	11/13/2006	6820	0.16 J-	2.9	144 J+	0.47	5.0 UJ	0.13	19800 J	9.6	6.3 J-	13.3 J-
SA3-10	11/13/2006	6130	0.17 J-	3.0	161 J+	0.46	3.7 UJ	0.084	19300 J	9.4	5.9 J-	12.0 J-
SA3-20	11/13/2006	6960	0.094 J-	3.5	188 J+	0.46	5.8 UJ	0.077	30200 J	7.0	6.9 J-	10.3 J-
SA3-30	11/13/2006	7760	0.13 J-	61.6	667 J	0.40 J	25.6 UJ	0.077	120000 J	18.5 J-	4.0 J-	9.9 J
SA3-40	11/13/2006	13500	0.23 J-	27.7	43.6 J	0.81	24.2 UJ	0.099	30000 J	34.6 J-	5.1 J-	11.7 J
SA4-0.5	11/14/2006	7490	0.17 J-	13.4	155 J+	0.51	4.5 UJ	0.087	21100	11.2	6.3 J-	12.9 J-
SA4-10	11/14/2006	6040	0.14 J-	11.3	151 J+	0.36	4.7 UJ	0.088	25300	7.2	3.8 J-	8.4 J-
SA4-20	11/14/2006	6640	0.17 J-	5.3	176 J+	0.49	5.0 UJ	0.080	38800	10.7	5.9 J-	11.8 J-
SA4-30	11/14/2006	4260	0.12 J-	6.1	79.7 J+	0.31	4.8 UJ	0.053 J	9480	7.3	3.7 J-	9.1 J-
SA4-40	11/14/2006	5630	0.15 J-	8.6	152 J+	0.39	6.9 UJ	0.082	26600	19.1	4.1 J-	10.4 J-
SA5-0.5	11/14/2006	6440	0.32 J-	3.2	176 J+	0.48	6.7 UJ	0.11	22400	14.8	8.8 J-	14.3 J-
SA5-10	11/14/2006	5440	0.15 J-	2.7	129 J+	0.47	6.0 UJ	0.085	20700	6.6	6.9 J-	10.6 J-
SA5-20	11/14/2006	5450	0.13 J-	2.5	98.2 J+	0.41	7.0 UJ	0.063	24000	7.2	6.1 J-	11.3 J
SA5-30	11/14/2006	4130	0.16 J-	10.9	100 J+	0.28	17.9 UJ	0.039 J	47100	5.9	4.2 J-	7.6 J-
SA5-37	11/14/2006	12500	0.25 J-	27.6	39.3 J+	0.94	85.7 UJ	0.11	31600	38.8	4.5 J-	10.5 J-
SA6-0.5	11/14/2006	6160	0.15 J-	2.4	163 J+	0.40	5.2 UJ	0.089	24600	8.5	5.4 J-	10.1 J-
SA6-0.5D	11/14/2006	6710	0.15 J-	3.1	149 J+	0.44	5.3 UJ	0.10	19400	12.8	5.9 J-	12.4 J-
SA6-10	11/14/2006	6440	0.16 J-	3.1	162 J+	0.50	5.6 UJ	0.083	29300	10.6	5.6 J-	11.4 J-
SA6-20	11/14/2006	6220	0.18 J-	4.0	186 J+	0.46	6.0 UJ	0.083	33600	10.1	6.4 J-	12.0 J-
SA6-30	11/14/2006	5800	0.16 J-	4.2	143 J+	0.43	5.8 UJ	0.090	25500	7.7	6.3 J-	12.4 J-
SA6-35	11/14/2006	12500	0.27 J-	24.4	40.1 J+	0.70	20.8 UJ	0.12	32500	27.4	5.2 J-	12.0 J-
SA7-0.5	11/20/2006	6400	0.36 J-	5.5	201 J+	0.41	48.6 J-	0.24	37500	18.5 J-	8.6 J-	16.5 J-
SA7-10	11/20/2006	5850	0.17 J-	2.5	147	0.42	8.7 UJ	0.075	26400	8.2 J-	6.0 J-	10.4 J-
SA7-10D	11/20/2006	7100	0.13 J-	2.3	166	0.47	8.2 UJ	0.084	20500	7.9 J-	6.2 J-	11.3 J-
SA7-20	11/20/2006	6450	0.15 J-	3.3	149 J	0.46	9.3 UJ	0.068	25200	8.6 J-	5.8 J-	12.0 J-
SA7-30	11/20/2006	6390	0.15 J-	4.8	73.6 J	0.44 J-	12.3 UJ	0.065	29000	7.4 J-	5.2 J-	11.3 J-
SA7-34	11/20/2006	7400	0.32 J-	24.3	158 J	0.35 J-	36.8 J-	0.084	62700 J+	33.8 J-	3.1 J-	9.5 J
SA8-0.5	11/17/2006	6450	0.15 J-	1.8	143 J+	0.40 J-	2.5 J-	0.085	9930 J+	10.1 J-	7.0 J-	12.4 J-
SA8-10	11/17/2006	6650	0.24 J-	2.5	165 J	0.46 J-	3.5 J-	0.087	10500 J+	11.2 J-	6.4 J-	13.5 J
SA8-20	11/17/2006	6270	0.13 J-	3.4	161 J	0.42 J-	6.5 J-	0.090	28800 J+	9.3 J-	7.6 J-	15.6 J
SA8-30	11/17/2006	6930	0.18 J-	3.7	168 J	0.45 J-	5.6 J-	0.065	22800 J+	11.7 J-	5.1 J-	11.7 J

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
SA8-37	11/17/2006	8070	0.20 J-	44.3	81.9 J	0.47 J-	28.3 J-	0.058 J	79600 J+	40.9 J-	3.5 J-	11.7 J
SA9-0.5	11/06/2006	7060 J	6.5 J-	17.0	1200 J	0.61	5.1 UJ	0.26	34600	9.4 J-	8.9 J-	26.0 J
SA9-10	11/06/2006	6580 J	0.14 J-	3.0	200 J	0.39	4.8 UJ	0.074	17000	6.4 J-	6.0 J-	14.6 J
SA9-10D	11/06/2006	8090 J	0.20 J-	4.3	212 J	0.45	5.7 UJ	0.079	25300	10.4 J-	6.3 J-	13.7 J
SA9-20	11/07/2006	8920 J	0.19 J-	18.0	146 J	0.53	10.1 UJ	0.064	27900 U	12.3 J-	5.0 J-	13.1 J
SA9-30	11/07/2006	18800 J	0.31 J-	24.7 J	72.0 J	0.83	25.7 J-	0.14	16200 U	32.8 J-	6.6 J-	20.4 J
SA9-40	11/07/2006	14500 J	0.23 J-	17.1	265 J	0.71 J	18.0 J-	0.13 J	17100 U	27.7 J-	5.3 J-	13.2 J
SA10-0.5	11/07/2006	9380 J	0.12 J-	2.5	129 J	0.49	3.5 UJ	0.064	12700 U	10.1 J-	7.5 J-	12.6 J
SA10-10	11/07/2006	8860 J	0.16 J-	3.0	201 J	0.49	5.8 UJ	0.066	13200 U	12.0 J-	6.6 J-	14.1 J
SA10-10D	11/07/2006	9140 J	0.17 J-	3.7	333 J	0.49	5.4 UJ	0.095	24900 U	11.2 J-	8.0 J-	16.3 J
SA10-20	11/07/2006	7490 J	0.19 J-	12.9	103 J	0.40	7.5 UJ	0.066 J	74900	10.4 J-	5.2 J-	15.2 J
SA10-30	11/07/2006	18300 J	0.27 J-	25.3	58.5 J	0.78	29.0 J-	0.16	18100 U	25.0 J-	6.5 J-	19.9 J
SA10-40	11/07/2006	17400 J	0.30 J-	21.4	77.2 J	0.88	20.2 J-	0.15	15300 U	20.2 J-	6.4 J-	21.3 J
SA11-0.5	11/09/2006	7100	0.11 J-	2.9	187 J	0.49	14.6 J-	0.091	29500	12.5 J-	6.1 J-	12.7 J
SA11-0.5D	11/09/2006	7150	0.13 J-	2.7	155 J	0.48	15.4 J-	0.071	25300	13.1 J-	6.3 J-	12.8 J
SA11-10	11/09/2006	7830	0.12 J-	3.8	159 J	0.51	5.3 UJ	0.070	23400	23.3 J-	6.2 J-	12.3 J
SA11-20	11/09/2006	4880	0.083 J-	4.6	128 J	0.32	5.7 UJ	0.062	15100	11.7 J-	3.2 J-	12.7 J
SA11-30	11/09/2006	15800	0.22 J-	20.3	64.1 J	0.76	19.5 J-	0.12	10100	38.1 J-	6.6 J-	15.5 J
SA12-0.5	11/10/2006	7740	0.14 J-	2.9	168 J	0.51	9.0 UJ	0.11	21700	8.2 J-	5.5 J-	13.1 J
SA12-10	11/10/2006	6870	0.11 J-	2.6	178 J	0.44	7.1 UJ	0.059	27300	10.2 J-	6.7 J-	11.1 J
SA12-20	11/10/2006	5750	0.083 J-	7.4	111 J	0.37	5.7 UJ	0.11	43000	6.1 J-	4.1 J-	9.5 J
SA12-30	11/10/2006	17300	0.22 J-	21.3	64.7 J	0.98	38.9 J-	0.12	8270	25.3 J-	5.7 J-	18.2 J
SA13-0.5	11/17/2006	7350	0.19 J-	2.1	159	0.50 J-	3.0 J-	0.13	12600 J	12.8 J-	6.9 J-	15.9 J-
SA13-0.5D	11/17/2006	8310	0.25 J-	2.3	181	0.51 J-	3.8 J-	0.12	12300 J	13.8 J-	7.2 J-	14.7 J-
SA13-10	11/17/2006	5630	0.18 J-	2.1	159 J	0.37 J-	2.6 J-	0.11	9080 J+	10.1 J-	6.3 J-	12.6 J
SA13-20	11/17/2006	7330	0.19 J-	3.2	197 J	0.46 J-	3.6 J-	0.080	21200 J+	11.4 J-	7.3 J-	12.7 J
SA13-30	11/17/2006	7090	0.18 J-	3.1	127 J	0.45 J-	3.3 J-	0.074	15500 J+	8.8 J-	6.2 J-	12.1 J
SA13-40	11/17/2006	8720	0.19 J-	36.4	123 J-	0.55	12.9 J-	0.11	28500	14.5	5.6 J-	12.4 J-
SA14-0.5	11/08/2006	7890 J	0.17 J-	2.0	162 J	0.48	5.5 J-	0.14	29700 J	10.9 J-	6.7 J-	12.5 J
SA14-10	11/08/2006	8270 J	0.19 J-	2.2	187 J	0.54	3.8 J-	0.090	15800 J	9.6 J-	6.5 J-	12.3 J
SA14-20	11/08/2006	7540 J	0.13 J-	3.7	147 J	0.49	5.0 J-	0.070	22000 J	7.9 J-	5.3 J-	10.3 J
SA14-30	11/08/2006	14300 J	0.24 J-	23.7	118 J	0.64	21.2 J-	0.11	10400 J	16.8 J-	6.0 J-	13.0 J
SA14-40	11/08/2006	9160 J	0.11 J-	14.6	25.2 J	0.43	10.6 J-	0.22	187000 J	17.0 J-	3.0 J-	6.8 J
SA15-0.5	11/08/2006	8180 J	0.18 J-	2.5	207 J	0.49	3.6 J-	1.7	5940 J	11.5 J-	9.4 J-	14.3 J
SA15-10	11/08/2006	7600 J	0.15 J-	5.3	191 J	0.49	3.5 J-	0.068	19300 J	10.6 J-	6.6 J-	12.7 J
SA15-10D	11/08/2006	6240 J	0.12 J-	4.2	143 J	0.41	2.9 J-	0.059	18100 J	7.7 J-	6.4 J-	11.0 J
SA15-20	11/08/2006	5850 J	0.13 J-	11.4	113 J	0.32	5.9 J-	0.076	40400 J	8.6 J-	3.2 J-	8.0 J
SA15-30	11/08/2006	7930 J	0.13 J-	20.4	48.3 J	0.34	12.0 J-	0.069	129000 J	24.2 J-	2.8 J-	6.1 J
SA15-35	11/08/2006	12100 J	0.18 J-	16.2	51.8 J	0.58	16.9 J-	0.12	99800 J	18.1 J-	4.5 J-	10.6 J
SA16-0.5	11/09/2006	6810	0.16 J-	2.5	169 J	0.48	4.2 UJ	0.12	15000	11.2 J-	7.0 J-	13.3 J
SA16-10	11/09/2006	7320	0.11 J-	4.3	167 J	0.50	4.0 UJ	0.062	19800	10.7 J-	7.7 J-	12.9 J
SA16-20	11/09/2006	5230	0.10 J-	5.6	74.5 J	0.36	6.1 UJ	0.041 J	10800	16.5 J-	3.0 J-	8.9 J
SA16-30	11/09/2006	14100	0.19 J-	24.8	172 J	0.82	30.4 UJ	0.18	24700	36.8 J-	6.3 J-	15.9 J
SA17-0.5	11/15/2006	13300	0.27 J-	22.1	142 J	0.93	8.5 UJ	0.089	7470	44.6 J-	12.2 J-	223 J

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
SA17-0.5D	11/15/2006	14300	0.25 J-	37.0	185 J	0.88	8.9 UJ	0.10	11600	81.9 J-	11.8 J-	175 J
SA17-10	11/15/2006	8000	0.21 J-	4.2	202 J	0.65	6.9 UJ	0.24	16700	23.2 J-	7.1 J-	13.6 J
SA17-20	11/15/2006	4050	0.094 J-	13.0	136 J	0.30	6.8 UJ	0.091	25900	12.5 J-	4.6 J-	8.3 J
SA17-25	11/15/2006	5120	0.16 J-	13.7	52.7 J	0.35 J	24.8 UJ	0.066	47300	22.2 J-	2.7 J-	6.7 J
SA18-0.5	11/15/2006	7650	0.17 J-	2.8	186 J	0.47	4.3 UJ	0.11	32300 J	8.8 J-	5.8 J-	12.4 J
SA18-0.5D	11/15/2006	6380	0.16 J-	2.4	157 J	0.40	3.4 UJ	0.087	16600 J	8.5 J-	4.9 J-	10.3 J-
SA18-10	11/15/2006	7300	0.18 J-	4.0	207 J	0.45	8.7 UJ	0.076	19800 J	10.9 J-	7.7 J-	11.8 J
SA18-20	11/15/2006	6940	0.16 J-	4.5	143 J	0.44	6.3 UJ	0.062	25500 J	8.6 J-	5.3 J-	11.9 J
SA18-30	11/15/2006	3780	0.080 J-	4.6	71.2 J	0.20	3.0 UJ	0.022 J	2170 J	9.0 J-	2.4 J-	7.1 J
SA19-0.5	11/16/2006	7090	0.17 J-	2.2	150 J	0.46	2.8 J-	0.094	15000	10.3 J-	6.2 J-	12.4 J-
SA19-10	11/16/2006	6620	0.15 J-	3.9	145 J	0.44	4.1 J-	0.065	25900	8.4 J-	5.0 J-	10.7 J-
SA19-20	11/16/2006	6020	0.16 J-	14.7	131 J	0.38	10.2 J-	0.073	25200	9.3 J-	3.3 J-	7.1 J-
SA19-25	11/16/2006	6280	0.12 J-	16.0	105	0.33	10.0 J	0.073	44000	14.0	3.3	6.9 J-
SA20-0.5	11/16/2006	8090	0.19 J-	2.7	176	0.53	4.7 J	0.091	16600	10.7 J-	6.5	12.0 J-
SA20-0.5D	11/16/2006	9460	0.23 J-	3.1	221	0.62	7.7 J	0.12	21900	12.6 J-	8.2	14.1 J-
SA20-10	11/16/2006	7230	0.16 J-	2.3	149 J	0.49	5.5 J-	0.091	14900	9.3 J-	6.1 J-	11.6 J-
SA20-20	11/16/2006	4170	0.13 J-	8.8	129 J	0.30	6.0 J-	0.086	37600	8.5 J-	2.5 J-	5.8 J-
SA20-25	11/16/2006	4710	0.14 J-	14.1	107 J	0.28	9.7 J-	0.049 J	15200	9.6 J-	3.2 J-	7.2 J-
SA21-0.5	11/15/2006	6140	0.15 J-	2.4	165 J	0.39	3.7 UJ	0.12	28400	8.7 J-	5.2 J-	11.2 J
SA21-10	11/15/2006	7480	0.19 J-	4.6	171 J	0.47	6.4 UJ	0.073	20600	10.0 J-	6.0 J-	11.1 J
SA21-20	11/15/2006	5840	0.17 J-	4.2	194 J	0.41	5.9 UJ	0.073	27200	7.6 J-	7.2 J-	11.2 J
SA21-20D	11/15/2006	7430	0.17 J-	4.3	154 J	0.42	6.5 UJ	0.096	24200	9.0 J-	6.2 J-	12.3 J
SA21-30	11/15/2006	6380	0.14 J-	10.5	212 J	0.40	6.9 UJ	0.089	41800	12.0 J-	4.4 J-	10.8 J
SA22-0.5	11/16/2006	6400	0.18 J-	3.1	277 J-	0.46	7.1 J-	0.076	18500	8.0	7.0 J-	13.5 J-
SA22-10	11/16/2006	7430	0.17 J-	5.8	188 J	0.53	8.4 J-	0.082	32000	10.4 J-	5.5 J-	11.3 J-
SA22-20	11/16/2006	8490	0.13 J-	26.8	61.0 J	0.50	23.8 J-	0.092	31200	10.6 J-	2.8 J-	6.6 J-
SA23-0.5	11/09/2006	6850	0.13 J-	2.6	181 J	0.46	4.5 UJ	0.14	17500	8.5 J-	7.1 J-	15.2 J
SA23-10	11/09/2006	7040	0.11 J-	3.0	192 J	0.47	4.2 UJ	0.056 J	24300	8.0 J-	7.5 J-	13.7 J
SA23-20	11/09/2006	7080	0.076 J-	14.0	47.3 J	0.43	18.3 J-	0.069	64700	11.0 J-	3.2 J-	7.2 J
SA23-20D	11/09/2006	6920	0.086 J-	12.9	47.9 J	0.42	17.5 J-	0.070	55600	10.6 J-	3.8 J-	7.1 J
SA24-0.5	11/03/2006	6630 J	0.15 J-	2.1	148 J	0.45	4.0 UJ	0.086	8460 J	6.8 J-	5.7 J-	11.8 J
SA24-10	11/03/2006	7180 J	0.17 J-	5.0	190 J	0.52	5.2 UJ	0.084	17100 J	9.0 J-	5.7 J-	11.9 J
SA24-20	11/03/2006	6680 J	0.15 J-	7.9	175 J	0.49	5.6 UJ	0.076	22300 J	9.7 J-	5.0 J-	11.5 J
SA24-25	11/03/2006	5450 J	0.13 J-	5.7	123 J	0.41	5.5 UJ	0.074	35300 J	6.4 J-	4.9 J-	10.9 J
SA25-0.5	11/03/2006	5770 J	0.15 J-	2.9	146 J	0.40	4.0 UJ	0.13	33800 J	5.7 J-	5.3 J-	12.1 J
SA25-10	11/03/2006	6100 J	0.18 J-	4.9	128 J	0.40	5.9 UJ	0.11	40100 J	8.8 J-	4.1 J-	10.9 J
SA25-15	11/03/2006	3680 J	0.28 UJ	8.8	84.3 J	0.23 J	11.3 UJ	0.068 U	60400 J	19.4 J-	2.9 J-	8.9 UJ
SA25-20	11/03/2006	14600 J	0.29 J-	20.7	150 J	0.90	14.0 UJ	0.30	39900 J	16.4 J-	11.1 J-	21.4 J
SA26-0.5	11/20/2006	8130	0.21 J-	3.1	186 J-	0.49 J-	11.1 UJ	0.23	19900	10.9 J-	6.1 J-	13.1 J
SA26-0.5D	11/20/2006	7490	0.24 J-	3.7	156 J-	0.49 J-	8.9 UJ	0.17	31900	11.0 J-	6.4 J-	11.6 J
SA26-10	11/20/2006	7050	0.17 J-	5.8	166 J	0.44 J-	6.4 UJ	0.087	28700 J+	11.4 J-	4.9 J-	11.7 J
SA27-0.5	11/02/2006	7210 J	0.15 J-	2.3	162 J	0.45	7.3 UJ	0.092	18600 J	7.9 J-	5.0 J-	10.1 J
SA27-10	11/02/2006	7280 J	0.16 J-	4.6	139 J	0.49	11.3 UJ	0.062	11900 J	8.4 J-	4.8 J-	11.1 J
SA27-20	11/02/2006	5730 J	0.10 J-	7.0	69.6 J	0.35	11.7 UJ	0.060	46300 J	8.0 J-	3.8 J-	8.2 J

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Platinum	Potassium	Selenium	Silver	Sodium
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
MN ORE	01/19/2007	9240 J	31.8	80.7 J-	560000	5.0	368 J	0.038 J	3860 J-	1.0 J-	1.9 J-	97.5 J-
MN TAILINGS	01/19/2007	54600 J	121	5550 J-	79600	31.7	788 J	0.22 J	10200 J-	4.4	3.2 J-	1650 J-
SA1-0.5	11/03/2006	11600 J	12.8	6080 J-	318 J+	0.60	12.6 J	0.011 U	1590 J	0.11 U	0.13 J	192 UJ
SA1-05	11/03/2006	10200 J	6.4	7210 J-	199 J+	0.28 J	17.5 J	0.013 U	1040 J	0.14 U	0.089 J	232 UJ
SA1-10	11/03/2006	10500 J	5.6	8590 J-	323 J+	0.36 J	14.1 J	0.011 U	983 J	0.12 U	0.11 J	371 J-
SA2-0.5	11/03/2006	11300 J	112	6320 J-	325 J+	0.54	12.9 J	0.011 U	1580 J	0.12 U	0.11 J	414 J-
SA2-10	11/03/2006	10700 J	7.0	9330 J-	305 J+	0.49 J	12.6 J	0.012 U	1190 J	0.13 U	0.092 J	517 J-
SA2-20	11/03/2006	10800 J	6.8	5080 J-	404 J+	0.80	12.1 J	0.012 U	1350 J	0.13 U	0.088 J	580 J-
SA2-30	11/06/2006	6990 J	5.4	13900 J-	185 J+	0.86 J	11.5 J	0.017 J	1660 J	0.13 U	0.12 J	1060 J-
SA2-40	11/06/2006	13500 J	10.7	20100 J-	250 J+	0.93	20.9 J	0.021 J	3940 J	0.16 U	0.18 J	1690 J-
SA2-50	11/06/2006	12800 J	9.0	17500 J-	196 J+	0.67 J	17.5 J	0.018 J	3220 J	0.16 U	0.23 J	1030 J-
SA2-60	11/06/2006	10900 J	6.8	14200 J-	160 J+	0.70	20.2 J	0.012 U	2300 J	0.13 U	0.15 J	1020 J-
SA3-0.5	11/13/2006	12000 J-	12.4	7260 J-	329 J	0.49 J	13.5 J-	0.019 J	1890 J-	0.12 UJ	0.14 J	383 J-
SA3-0.5D	11/13/2006	11300	12.1	6640 J-	369 J	0.57	12.0 J-	0.016 J	1830 J-	0.12 UJ	0.13 J	344 J-
SA3-10	11/13/2006	12000	8.0	5890 J-	264 J	0.52 J	11.5 J-	0.016 J	1600 J-	0.12 UJ	0.12 J	317 J-
SA3-20	11/13/2006	8290	7.7	10100 J-	289 J	0.31 J	11.0 J-	0.015 J	1480 J-	0.12 UJ	0.11 J	756 J-
SA3-30	11/13/2006	6880	4.6	45900 J-	119	0.44 J	10.2 J-	0.019 J	1570	0.14 UJ	0.15 J	1620 J-
SA3-40	11/13/2006	11900	8.3	40800 J-	160	0.80	12.5 J-	0.023 J	3260	0.16 UJ	0.18 J	669 J-
SA4-0.5	11/14/2006	13300	14.5	7570 J-	254 J	0.45 J	13.2 J-	0.033 J	2080 J-	0.12 UJ	0.13 J	1520 J-
SA4-10	11/14/2006	8350	6.3	5530 J-	176 J	0.42 J	9.3 J-	0.012 J	2480 J-	0.12 UJ	0.11 J	823 J-
SA4-20	11/14/2006	11500	7.0	10500 J-	295 J	0.51 J	12.2 J-	0.017 J	1300 J-	0.12 UJ	0.13 J	556 J-
SA4-30	11/14/2006	6470	6.3	5110 J-	157 J	0.46 J	8.5 J-	0.011 U	1100 J-	0.12 UJ	0.061 J	360 J-
SA4-40	11/14/2006	11200	6.3	6050 J-	186 J	1.7	11.1 J-	0.014 J	1590 J-	0.12 UJ	0.11 J	609 J-
SA5-0.5	11/14/2006	11800	24.2	7040 J-	483 J	0.69	12.7 J-	0.015 J	2000 J-	0.14 UJ	0.13 J	1790 J-
SA5-10	11/14/2006	10400	6.2	6850 J-	254 J	0.90	13.7 J-	0.012 U	1290 J-	0.13 UJ	0.088 J	522 J-
SA5-20	11/14/2006	9680	5.5	7480 J-	234 J	0.34 J	13.1 J-	0.012 U	980 J-	0.13 UJ	0.081 J	532 J-
SA5-30	11/14/2006	6500	5.6	7810 J-	131 J	0.56	10.1 J-	0.011 U	1110 J-	0.12 UJ	0.074 J	1120 J-
SA5-37	11/14/2006	11300	6.6	46100 J-	167 J	1.1	11.4 J-	0.018 J	3110 J-	0.18 UJ	0.14 J	4560 J-
SA6-0.5	11/14/2006	9600	7.1	6570 J-	249 J	0.48 J	12.8 J-	0.012 J	2100 J-	0.12 UJ	0.10 J	626 J-
SA6-0.5D	11/14/2006	11600	11.5	7250 J-	271 J	0.64	12.6 J-	0.018 J	2200 J-	0.13 UJ	0.13 J	560 J-
SA6-10	11/14/2006	11700	7.6	6730 J-	227 J	0.46 J	12.1 J-	0.018 J	2030 J-	0.12 UJ	0.13 J	581 J-
SA6-20	11/14/2006	12000	8.1	8850 J-	301 J	0.43 J	11.9 J-	0.016 J	1220 J-	0.12 UJ	0.12 J	443 J-
SA6-30	11/14/2006	11200	7.4	6880 J-	323 J	0.47 J	12.2 J-	0.015 J	1050 J-	0.11 UJ	0.12 J	699 J-
SA6-35	11/14/2006	12600	8.3	28300 J-	195 J	0.95	12.5 J-	0.022 J	3180 J-	0.16 UJ	0.17 J	577 J-
SA7-0.5	11/20/2006	9830	32.5	8360 J-	1290	0.92	12.9 J-	0.077 J	1910	0.11 U	0.16 J	763
SA7-10	11/20/2006	9600	7.4	5750	278	0.41 J	11.4 J-	0.014 J	1790	0.11 U	0.11 J	314 J-
SA7-10D	11/20/2006	9830	7.8	6310	262	0.41 J	12.1 J-	0.016 J	2110	0.12 U	0.13 J	361 J-
SA7-20	11/20/2006	10300	6.7	8920 J-	250	0.40 J	11.8 J-	0.014 J	1280	0.12 U	0.12 J	392 J-
SA7-30	11/20/2006	9530	6.0	8250 J-	159	0.38 J	11.6 J-	0.012 J	1340	0.12 U	0.11 J	638 J-
SA7-34	11/20/2006	7520	4.4	19000 J-	171 J	0.52 J	9.8 J-	0.014 J	2080 J-	0.14 UJ	0.12 J	533 J-
SA8-0.5	11/17/2006	14000	7.6	6390 J-	316 J	0.55	12.4 J-	0.016 J	1380 J-	0.11 UJ	0.12 J	689 J-
SA8-10	11/17/2006	13600	8.4	5350 J-	349 J	0.54	12.7 J	0.013 J	2390 J-	0.12 UJ	0.12 J	1410 J-
SA8-20	11/17/2006	12900	6.9	7920 J-	289 J	0.47 J	18.7 J-	0.014 J	1120 J-	0.11 UJ	0.12 J	591 J-
SA8-30	11/17/2006	13300	7.8	7520 J-	214 J	0.56	11.5 J-	0.015 J	1350 J-	0.12 UJ	0.12 J	586 J-

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Platinum	Potassium	Selenium	Silver	Sodium
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
SA8-37	11/17/2006	7600	4.4	51900 J-	111 J	0.51 J	12.4 J-	0.014 U	2390 J-	0.15 UJ	0.10 J	1540 J-
SA9-0.5	11/06/2006	13000 J	305	9240 J-	6660 J+	5.3	30.4 J	0.012 U	1620 J	0.13 U	0.30 J	587 J-
SA9-10	11/06/2006	11900 J	7.7	7340 J-	247 J+	0.58 J	13.7 J	0.012 U	1350 J	0.13 U	0.13 J	376 J-
SA9-10D	11/06/2006	13200 J	7.3	9370 J-	314 J+	0.62	14.0 J	0.012 J	1680 J	0.12 U	0.15 J	440 J-
SA9-20	11/07/2006	12800 J	7.6	18200 UJ	219 J+	0.52 U	12.6 J	0.016 J	1900 UJ	0.12 U	0.18 J	479 UJ
SA9-30	11/07/2006	19800 J	10.2	43800 J-	357	1.0 U	20.5 J-	0.023 J	3950 UJ	0.18 U	0.24 J	1050 UJ
SA9-40	11/07/2006	13000 J	9.9	26000 J-	284 J+	1.2 U	12.0 J	0.020 J	3530 UJ	0.15 U	0.26 J	2760 UJ
SA10-0.5	11/07/2006	14600 J	6.0	9370 UJ	424 J+	0.41 U	12.5 J	0.011 U	1760 UJ	0.12 U	0.093 J	917 UJ
SA10-10	11/07/2006	14100 J	8.2	10500 UJ	284 J+	0.71 U	14.2 J	0.012 J	1770 UJ	0.12 U	0.15 J	738 UJ
SA10-10D	11/07/2006	14100 J	10.0	11400 UJ	435 J+	0.80 U	14.2 J	0.013 J	1850 UJ	0.12 U	0.15 J	1050 UJ
SA10-20	11/07/2006	10900 J	5.6	12100 UJ	235 J+	0.47 U	12.6 J	0.014 U	1430 UJ	0.15 U	0.12 J	575 UJ
SA10-30	11/07/2006	18500 J	11.3	54100 J-	759	1.1 U	21.0 J-	0.018 J	3300 UJ	0.17 U	0.21 J	877 UJ
SA10-40	11/07/2006	20300 J	12.5	38900 J-	610	0.89 U	22.3 J-	0.026 J	4120 J	0.16 U	0.27 J	582 UJ
SA11-0.5	11/09/2006	11600	7.0	7130 J-	250	0.48 J	11.8 J-	0.011 J	3510	0.12 U	0.12 J	2660 J-
SA11-0.5D	11/09/2006	12100	8.2	7270 J-	261	0.48 J	12.4 J-	0.012 J	2730	0.12 U	0.13 J	2300 J-
SA11-10	11/09/2006	11800	8.2	10200 J-	298	0.41 J	12.3 J-	0.013 J	2730	0.12 U	0.14 J	3730 J-
SA11-20	11/09/2006	7650	6.0	5580 J-	128	0.44 J	9.2 J-	0.011 U	2000	0.11 U	0.088 J	1750 J-
SA11-30	11/09/2006	17200	10.0	47400 J-	335	0.84	14.0 J-	0.018 J	4110	0.18 U	0.20 J	3670 J-
SA12-0.5	11/10/2006	12000	8.1	5670 J-	248	0.67	11.6 J-	0.012 J	2110	0.12 U	0.13 J	662 J-
SA12-10	11/10/2006	11500	7.0	9530 J-	278	0.43 J	11.4 J-	0.011 U	1270	0.12 U	0.12 J	762 J-
SA12-20	11/10/2006	7660	5.4	6550 J-	131	0.36 J	13.0 J-	0.011 U	1250	0.12 U	0.082 J	661 J-
SA12-30	11/10/2006	18700	10.5	44800 J-	229	1.1	13.5 J-	0.023 J	4780	0.17 U	0.25 J	2280 J-
SA13-0.5	11/17/2006	15600	9.0	6580 J-	1680	0.58 J	13.9 J-	0.015 J	2190	0.13 UJ	0.15 J	447 J-
SA13-0.5D	11/17/2006	16100	9.5	7030 J-	2320	0.52 J	14.3 J-	0.022 J	2500	0.12 UJ	0.16 J	564 J
SA13-10	11/17/2006	13200	9.4	4940 J-	350 J	0.60	11.6 J-	0.014 J	1670 J-	0.11 UJ	0.13 J	251 J-
SA13-20	11/17/2006	13200	10.4	8590 J-	434 J	0.51 J	12.5 J-	0.019 J	1380 J-	0.12 UJ	0.14 J	593 J-
SA13-30	11/17/2006	13600	7.4	7430 J-	219 J	0.45 J	12.0 J-	0.016 J	1280 J-	0.11 UJ	0.13 J	694 J-
SA13-40	11/17/2006	12600	8.1	15200	606	0.52 J	14.0 J-	0.021 J	2740	0.14 UJ	0.16 J	506 J-
SA14-0.5	11/08/2006	13600 J	11.0	8140 J-	407 J+	0.58	17.1 J	0.014 J	1940 J	0.12 UJ	0.14 J	2550 J-
SA14-10	11/08/2006	13900 J	8.8	9470 J-	407 J+	0.46 J	13.0 J	0.013 J	1800 J	0.12 UJ	0.16 J	3570 J-
SA14-20	11/08/2006	10800 J	6.9	9670 J-	227 J+	0.36 J	10.5 J	0.012 U	1530 J	0.13 UJ	0.16 J	3990 J-
SA14-30	11/08/2006	17800 J	9.6	45600 J-	361 J+	1.2 J	13.6 J	0.016 U	3170 J	0.17 UJ	0.14 J	4910 J-
SA14-40	11/08/2006	7500 J	5.3	27700 J-	143 J+	0.42 J	10.2 J	0.013 J	1710 J	0.13 UJ	0.11 J	1250 J-
SA15-0.5	11/08/2006	14100 J	10.5	6620 J-	568 J+	0.64	14.1 J	0.040 J	1430 J	0.13 UJ	0.18 J	763 J-
SA15-10	11/08/2006	13900 J	7.5	7970 J-	239 J+	0.48 J	12.5 J	0.019 J	1370 J	0.13 UJ	0.15 J	420 J-
SA15-10D	11/08/2006	11600 J	7.1	7250 J-	230 J+	0.43 J	11.6 J	0.017 J	1230 J	0.12 UJ	0.12 J	384 J-
SA15-20	11/08/2006	7050 J	6.6	7550 J-	151 J+	0.43 J	9.1 J	0.011 U	1810 J	0.12 UJ	0.11 J	447 J-
SA15-30	11/08/2006	7320 J	4.3	44700 J-	118 J+	0.2615 U	8.6 J	0.014 U	2040 J	0.15 UJ	0.11 J	1040 J-
SA15-35	11/08/2006	10300 J	6.9	27300 J-	212 J+	0.72	11.9 J	0.030 J	3090 J	0.15 UJ	0.18 J	1340 J-
SA16-0.5	11/09/2006	12600	9.1	6030 J-	361	0.52 J	13.1 J-	0.017 J	1880	0.12 U	0.13 J	345 J-
SA16-10	11/09/2006	11700	7.0	10600 J-	269	0.31 J	16.9 J-	0.011 U	1590	0.12 U	0.13 J	1550 J-
SA16-20	11/09/2006	7330	4.9	7550 J-	92.8	0.40 J	9.5 J-	0.011 U	1160	0.12 U	0.14 J	1470 J-
SA16-30	11/09/2006	17800	10.9	63700 J-	365	1.1	14.4 J-	0.018 J	3210	0.17 U	0.22 J	3070 J-
SA17-0.5	11/15/2006	12600	28.6	11100 J-	349	1.1 J	19.3 J-	0.029 J	2270	0.13 UJ	0.15 J	1420 J-

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Platinum	Potassium	Selenium	Silver	Sodium
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
SA17-0.5D	11/15/2006	11500	36.3	10300 J-	373	2.4	17.8 J-	0.027 J	2750	0.13 UJ	0.14 J	1860 J-
SA17-10	11/15/2006	13300	8.6	7970 J-	325	0.46 J	15.0 J-	0.022 J	1680	0.12 UJ	0.48	1090 J-
SA17-20	11/15/2006	7190	5.1	5300 J-	171	0.44 J	10.7 J-	0.011 U	1050	0.11 UJ	0.097 J	858 J-
SA17-25	11/15/2006	6130	4.3	36800 J-	122	0.29 J	7.2 J-	0.012 U	1710	0.13 UJ	0.20 J	978 J-
SA18-0.5	11/15/2006	11900	8.2	7190 J-	288	0.52 J	12.5 J-	0.015 J	2500	0.12 UJ	0.13 J	800 J-
SA18-0.5D	11/15/2006	10300	7.4	5900 J-	228	0.41 J	10.8 J-	0.016 J	2700	0.11 UJ	0.12 J	433 J-
SA18-10	11/15/2006	11300	8.8	8810 J-	314	0.73 J	18.2 J-	0.014 J	1490	0.12 UJ	0.11 J	711 J-
SA18-20	11/15/2006	11100	7.6	8790 J-	223	0.44 J	11.0 J-	0.012 J	1530	0.12 UJ	0.11 J	840 J-
SA18-30	11/15/2006	7450	6.0	3970 J-	58.8	0.42 J	5.2 J-	0.011 U	1190	0.12 UJ	0.078 J	822 J-
SA19-0.5	11/16/2006	11800	9.0	6680 J-	275	0.45 J	12.7 J-	0.013 J	1900	0.12 U	0.14 J	214 J-
SA19-10	11/16/2006	9700	6.8	9230 J-	180	0.41 J	11.0 J-	0.013 J	1630	0.12 U	0.12 J	302 J-
SA19-20	11/16/2006	6940	5.3	7870 J-	148	0.44 J	8.6 J-	0.012 J	1970	0.12 U	0.11 J	324 J-
SA19-25	11/16/2006	7120	5.2	18600	154	0.66	8.6 J-	0.012 U	1780	0.13 U	0.11 J	466
SA20-0.5	11/16/2006	12100	9.7	7500 J-	304	0.47 J	13.4 J-	0.014 J	2470	0.12 U	0.15 J	362
SA20-0.5D	11/16/2006	14300	11.9	8460 J-	396	0.61 J	15.6 J-	0.019 J	2910	0.13 U	0.17 J	420
SA20-10	11/16/2006	10300	8.2	6390 J-	334	0.40 J	11.5 J-	0.012 U	2260	0.13 U	0.29	298 J-
SA20-20	11/16/2006	4890	4.9	4590 J-	102	0.37 J	7.6 J-	0.011 U	1170	0.11 U	0.068 J	625 J-
SA20-25	11/16/2006	6620	5.5	6080 J-	116	0.50 J	11.0 J-	0.012 U	1390	0.13 U	0.081 J	603 J-
SA21-0.5	11/15/2006	10300	8.2 J	7560 J-	269 J	0.56 J	12.3 J-	0.011 U	2570	0.11 UJ	0.11 J	530 J-
SA21-10	11/15/2006	11400	9.1 J	10000 J-	259 J	0.74 J	12.6 J-	0.016 J	2240	0.12 UJ	0.12 J	1450 J-
SA21-20	11/15/2006	9990	16.4 J	6520 J-	452 J	1.2	10.4 J-	0.012 J	1720	0.12 UJ	0.094 J	820 J-
SA21-20D	11/15/2006	11300	8.4 J	8060 J-	254 J	0.57 J	12.8 J-	0.012 J	1870	0.11 UJ	0.11 J	1260 J-
SA21-30	11/15/2006	11100	6.7 J	9660 J-	138 J	0.49 J	10.1 J-	0.013 J	1760	0.12 UJ	0.12 J	924 J-
SA22-0.5	11/16/2006	11500	8.3	7680	619	0.69	12.9 J-	0.014 J	1840	0.14 U	0.15 J	812
SA22-10	11/16/2006	10600	7.7	10800 J-	328	0.74	12.3 J-	0.014 J	1460	0.12 U	0.13 J	1460 J-
SA22-20	11/16/2006	6640	5.3	15100 J-	139	0.73	6.6 J-	0.015 J	2210	0.13 U	0.13 J	1060 J-
SA23-0.5	11/09/2006	11500	9.2	6660 J-	439	0.54 J	14.1 J-	0.012 U	1870	0.13 U	0.12 J	1120 J-
SA23-10	11/09/2006	11300	6.7	8870 J-	323	0.41 J	11.7 J-	0.012 U	1180	0.13 U	0.10 J	2790 J-
SA23-20	11/09/2006	7520	4.4	9050 J-	131	0.39 J	9.4 J	0.012 U	2150	0.13 U	0.092 J	907 J-
SA23-20D	11/09/2006	7700	4.8	7970 J-	183	0.43 J	9.8 J-	0.012 U	2020	0.13 U	0.092 J	852 J-
SA24-0.5	11/03/2006	10900 J	7.9	5050 J-	300 J+	0.43 J	12.3 J	0.012 U	2560 J	0.12 U	0.11 J	440 J-
SA24-10	11/03/2006	12200 J	7.9	7610 J-	254 J+	0.79	12.4 J	0.012 J	1540 J	0.12 U	0.13 J	996 J-
SA24-20	11/03/2006	11400 J	6.9	8590 J-	206 J+	0.47 J	11.5 J	0.011 U	1560 J	0.12 U	0.12 J	993 J-
SA24-25	11/03/2006	8640 J	5.4	6950 J-	216 J+	0.40 J	11.3 J	0.011 U	1430 J	0.12 U	0.094 J	1460 J-
SA25-0.5	11/03/2006	7850 J	9.8	7220 J-	447 J+	0.63	10.1 J	0.011 U	2430 J	0.12 U	0.10 J	202 UJ
SA25-10	11/03/2006	7730 J	8.4	8660 J-	229 J+	0.50 J	10.9 J	0.011 U	2140 J	0.12 U	0.15 J	310 UJ
SA25-15	11/03/2006	5690 J	4.0	6310 J-	141 J+	0.42 J	7.8 J	0.054 U	1190 J	0.58 U	0.11 U	821 J-
SA25-20	11/03/2006	18400 J	11.7	31600 J-	463 J+	1.1 J	22.4 J	0.033 U	5210 J	0.35 U	0.20 J	2450 J-
SA26-0.5	11/20/2006	13100	12.6	7110 J-	339	1.1	12.5 J-	0.016 J	2900 J-	0.12 UJ	0.13 J	1000 J-
SA26-0.5D	11/20/2006	12700	9.6	6550 J-	327	0.70	13.5 J-	0.015 J	2820 J-	0.12 UJ	0.12 J	983 J-
SA26-10	11/20/2006	12100	7.2	8900 J-	187 J	0.57	11.4 J-	0.016 J	1340 J-	0.12 UJ	0.12 J	804 J-
SA27-0.5	11/02/2006	9850 J	8.8	6880 J-	272 J+	0.43 J	12.3 J	0.012 J	2940 J	0.11 U	0.12 J	429 J-
SA27-10	11/02/2006	10300 J	6.3	9360 J-	163 J+	0.46 J	12.2 J	0.011 U	2730 J	0.12 U	0.11 J	1210 J-
SA27-20	11/02/2006	7640 J	5.2	8000 J-	122 J+	0.39 J	10.6 J	0.011 U	2270 J	0.12 U	0.095 J	887 J-

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 7199	SW 846 7471
	Chemical Name	Strontium	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Chromium-hexavalent	Mercury
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date										
MN ORE	01/19/2007	**116 J**	**3.3 J+**	**0.81**	**65.0 J-**	**17.4**	**0.30**	**58.1 J-**	**325 J**	**0.15 J**	**0.017 J**
MN TAILINGS	01/19/2007	**244 J**	**6.4 J+**	**2.0**	**721 J-**	**52.6**	**2.2**	**179 J-**	**940 J**	**0.32**	**0.23 J+**
SA1-0.5	11/03/2006	**110 J**	**0.092 J**	**0.49**	**449 J**	**0.33 J-**	**0.73**	**27.4 J-**	**31.2 J-**	**0.11 J**	0.0070 U
SA1-05	11/03/2006	**129 J**	0.089 U	0.34 U	**360 J**	**0.21 J-**	**0.88**	**23.2 J-**	**23.4 J-**	0.25 U	**0.018 J**
SA1-10	11/03/2006	**393 J**	0.076 U	**0.39**	**360 J**	**0.33 J-**	**1.4**	**25.8 J-**	**22.2 J-**	0.22 U	0.0073 U
SA2-0.5	11/03/2006	**116 J**	0.12 U	**0.47**	**437 J**	**0.31 J-**	**0.68**	**26.6 J-**	**27.8 J-**	0.21 U	0.0071 U
SA2-10	11/03/2006	**224 J**	0.091 U	**0.41**	**380 J**	**0.44 J-**	**1.6**	**28.5 J-**	**26.5 J-**	0.25 U	**0.0091 J**
SA2-20	11/03/2006	**171 J**	0.16 U	**0.39**	**332 J**	**0.47 J-**	**1.1**	**24.3 J-**	**22.6 J-**	0.23 U	0.0078 UJ
SA2-30	11/06/2006	**266 J**	**0.15 J**	**0.44**	**403 J**	**0.77 J-**	**3.5**	**27.4 J-**	22.1 UJ	0.24 U	0.0079 U
SA2-40	11/06/2006	**124 J**	**0.26 J**	**0.79**	**616 J**	**0.43 J-**	**1.9**	**36.1 J-**	**37.7 J-**	0.30 U	0.010 U
SA2-50	11/06/2006	**110 J**	**0.21 J**	**0.67**	**616 J**	**0.46 J-**	**1.7**	**38.6 J-**	**33.0 J-**	0.29 U	0.0098 U
SA2-60	11/06/2006	**104 J**	**0.17 J**	**0.56**	**645 J**	**0.27 J-**	**1.2**	**30.2 J-**	**34.3 J-**	0.25 U	0.0082 U
SA3-0.5	11/13/2006	**226 J+**	0.10 U	**0.54**	**527**	0.38 UJ	**1.3**	**32.6 J-**	**27.6 J-**	**0.11 J**	**0.013 J-**
SA3-0.5D	11/13/2006	**152 J+**	0.15 U	**0.52**	**498**	0.32 UJ	**0.89**	**29.9 J-**	**29.0 J-**	0.21 U	**0.019 J-**
SA3-10	11/13/2006	**154 J+**	0.082 U	**0.48**	**504**	0.30 UJ	**0.91**	**33.9 J-**	**24.8 J-**	0.21 U	**0.013 J-**
SA3-20	11/13/2006	**228 J+**	0.12 U	**0.36**	**353**	0.19 UJ	**1.4**	**23.9 J-**	**22.9 J-**	0.22 U	0.0073 UJ
SA3-30	11/13/2006	**299 J**	0.09 U	**0.36**	**363**	0.49 UJ	**10.6**	**36.2 J-**	29.5 UJ	0.26 U	0.0086 UJ
SA3-40	11/13/2006	**119 J**	0.18 U	**0.66**	**581**	0.33 UJ	**3.7**	**33.7 J-**	49.2 UJ	0.29 U	0.0098 UJ
SA4-0.5	11/14/2006	**131 J+**	0.077 U	**0.52**	**586**	0.34 UJ	**0.89**	**35.4 J-**	**29.4 J-**	**0.12 J**	**0.014 J-**
SA4-10	11/14/2006	**187 J+**	0.074 U	**0.42**	**429**	0.23 UJ	**0.85**	**22.2 J-**	**20.1 J-**	0.21 U	**0.014 J-**
SA4-20	11/14/2006	**260 J+**	0.076 U	**0.47**	**507**	0.37 UJ	**2.0**	**34.2 J-**	**23.9 J-**	**1.7**	0.0073 UJ
SA4-30	11/14/2006	**175 J+**	0.08 U	**0.39**	**330**	0.32 UJ	**0.94**	**22.8 J-**	**17.3 J-**	0.23 U	0.0076 UJ
SA4-40	11/14/2006	**304 J+**	0.074 U	**0.63**	**517**	0.46 UJ	**1.6**	**30.6 J-**	**22.7 J-**	**0.54**	0.0071 UJ
SA5-0.5	11/14/2006	**151 J+**	0.091 U	**0.79**	**511**	0.41 UJ	**1.1**	**33.2 J-**	**31.8 J-**	**2.4**	**0.018 J-**
SA5-10	11/14/2006	**200 J+**	0.081 U	**0.39**	**370**	0.44 UJ	**1.1**	**29.9 J-**	**27.8 J-**	0.23 U	0.0078 UJ
SA5-20	11/14/2006	**210 J+**	0.082 U	**0.35**	**366**	0.27 UJ	**1.0**	**26.7 J-**	**25.2 J-**	0.24 U	0.0079 UJ
SA5-30	11/14/2006	**1120 J+**	0.076 U	**0.27**	**287**	0.33 UJ	**2.3**	**24.9 J-**	**18.9 J-**	**8.4**	0.0072 UJ
SA5-37	11/14/2006	**102 J+**	0.19 U	**0.58**	**502**	0.39 UJ	**6.1**	**33.3 J-**	**32.3 J-**	0.33 U	0.011 UJ
SA6-0.5	11/14/2006	**126 J+**	0.080 U	**0.40**	**361 J**	0.28 UJ	**0.80**	**21.8 J-**	**24.1 J-**	**0.22**	0.0071 UJ
SA6-0.5D	11/14/2006	**101 J+**	0.081 U	**0.55**	**616 J**	0.30 UJ	**1.0**	**30.5 J-**	**29.6 J-**	**0.13 J**	**0.011 J-**
SA6-10	11/14/2006	**188 J+**	0.095 U	**0.48**	**549 J**	0.29 UJ	**1.0**	**33.8 J-**	**24.8 J-**	0.22 U	0.0072 UJ
SA6-20	11/14/2006	**207 J+**	0.082 U	**0.46**	**463 J**	0.42 UJ	**2.1**	**35.2 J-**	**23.9 J-**	0.22 U	0.0072 UJ
SA6-30	11/14/2006	**299 J+**	0.082 U	**0.47**	**507 J**	0.39 UJ	**1.8**	**34.8 J-**	**24.9 J-**	0.21 U	0.007 UJ
SA6-35	11/14/2006	**159 J+**	0.22 U	**0.64**	**530 J**	0.55 UJ	**3.7**	**32.7 J-**	**36.1 J-**	**0.21 J**	0.0099 UJ
SA7-0.5	11/20/2006	**130 J+**	0.38 U	**0.92**	**364 J+**	**1.4 J-**	**0.96**	**24.1**	**39.1 J-**	**0.56**	0.0071 U
SA7-10	11/20/2006	**133 J-**	0.21 U	**0.43**	**379 J+**	**0.41 J-**	**0.86**	**23.7**	**21.7 J-**	0.21 U	**0.0074 J-**
SA7-10D	11/20/2006	**130 J-**	0.20 U	**0.52**	**382 J+**	**0.32 J-**	**0.87**	**23.5**	**23.0 J-**	0.22 U	**0.024 J-**
SA7-20	11/20/2006	**171 J**	0.12 U	**0.43**	**454 J+**	**0.33 J-**	**1.6**	**29.8 J-**	**22.3 J-**	0.22 U	0.0072 UJ
SA7-30	11/20/2006	**219 J**	0.10 U	**0.42**	**368 J+**	**0.30 J-**	**2.1**	**24.9 J-**	**21.9 J-**	**0.12 J**	0.0071 UJ
SA7-34	11/20/2006	**2280 J**	0.32 U	**0.39**	**444**	**0.87 J-**	**4.3**	**30.1 J-**	**20.3 J-**	**0.13 J**	0.0087 UJ
SA8-0.5	11/17/2006	**119 J+**	0.087 U	**1.2**	**583**	0.37 UJ	**0.75**	**43.1 J-**	**25.5 J-**	0.21 U	**0.011 J-**
SA8-10	11/17/2006	**141 J**	0.14 U	**0.99**	**654**	0.36 UJ	**0.93**	**44.5 J-**	**26.9 J-**	0.21 U	**0.0073 J-**
SA8-20	11/17/2006	**201 J**	0.080 U	**0.55**	**627**	0.28 UJ	**1.3**	**41.9 J-**	**23.8 J-**	0.21 U	0.007 UJ
SA8-30	11/17/2006	**206 J**	0.076 U	**0.60**	**577 J**	0.25 UJ	**2.0**	**39.5 J-**	**25.0 J-**	0.22 U	**0.010 J-**

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 7199	SW 846 7471
	Chemical Name	Strontium	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Chromium-hexavalent	Mercury
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date										
SA8-37	11/17/2006	**542 J**	0.16 U	**0.39**	**431**	0.41 UJ	**10.2**	**40.3 J-**	**19.2 J-**	0.27 U	0.0091 UJ
SA9-0.5	11/06/2006	**250 J**	**2.9**	**0.50**	**677 J**	**11.4 J-**	**0.90**	**49.2 J-**	**72.6 J-**	0.24 U	0.0080 U
SA9-10	11/06/2006	**207 J**	**0.092 J**	**0.59**	**654 J**	**0.29 J-**	**0.98**	**30.6 J-**	**27.7 J-**	0.24 U	0.0080 U
SA9-10D	11/06/2006	**251 J**	**0.11 J**	**0.54**	**648 J**	**0.39 J-**	**1.2**	**35.9 J-**	**28.9 J-**	0.22 U	0.0075 U
SA9-20	11/07/2006	**651 J**	**0.11 J**	**0.55**	**649 J**	**0.35 J-**	**3.7**	**40.6 J-**	**27.0 J-**	0.22 U	0.0073 U
SA9-30	11/07/2006	173 UJ	**0.28 J**	**0.80**	**663 J**	**0.43 J-**	**4.5**	**50.4 J-**	**63.9 J-**	0.33 U	0.011 U
SA9-40	11/07/2006	121 UJ	**0.25 J**	**0.77**	**745 J**	**0.60 J-**	**2.7**	**28.5 J-**	**35.5 J-**	0.28 U	0.0092 U
SA10-0.5	11/07/2006	103 UJ	**0.082 J**	**0.49**	**405 J**	**0.25 J-**	0.71 U	**31.6 J-**	**34.1 J-**	0.22 U	0.0074 U
SA10-10	11/07/2006	**168 J**	**0.10 J**	**0.59**	**724 J**	**0.29 J-**	1.3 U	**36.3 J-**	**30.3 J-**	0.22 U	0.0074 U
SA10-10D	11/07/2006	**312 J**	**0.11 J**	**0.64**	**717 J**	**0.33 J-**	1.8 U	**39.0 J-**	**30.9 J-**	0.23 U	0.0077 U
SA10-20	11/07/2006	**1100 J**	0.094 U	**0.47**	**506 J**	**0.50 J-**	**3.3**	**41.1 J-**	**25.3 J-**	0.27 U	0.0090 U
SA10-30	11/07/2006	162 UJ	**0.33**	**0.77**	**641 J**	**0.72 J-**	**3.4**	**48.2 J-**	**66.8 J-**	0.31 U	0.010 U
SA10-40	11/07/2006	147 UJ	**0.34**	**0.89**	**755 J**	**0.61 J-**	**3.1**	**42.7 J-**	**71.6 J-**	0.30 U	0.0099 U
SA11-0.5	11/09/2006	**121 J**	**0.096 J**	**0.52**	**520**	**0.24 J-**	**1.0**	**29.6 J-**	**23.9 J-**	**2.1**	**0.014 J**
SA11-0.5D	11/09/2006	**106 J**	0.08 U	**0.47**	**442**	**0.27 J-**	**0.98**	**31.3 J-**	**24.9 J-**	**2.1**	**0.015 J**
SA11-10	11/09/2006	**112 J**	0.075 U	**0.46**	**534**	**0.32 J-**	**1.6**	**31.9 J-**	**23.2 J-**	**11.8**	**0.026 J**
SA11-20	11/09/2006	**206 J**	0.073 U	**0.41**	**330**	**0.24 J-**	**1.4**	**21.8 J-**	**16.6 J-**	**3.1**	**0.0084 J**
SA11-30	11/09/2006	**78.1 J**	**0.24 J**	**0.81**	**537**	**0.80 J-**	**3.9**	**27.6 J-**	**36.9 J-**	**2.1**	**0.019 J**
SA12-0.5	11/10/2006	**211 J**	**0.086 J**	**0.51**	**426**	**0.28 J-**	**0.87**	**29.1 J-**	**24.8 J-**	0.22 U	**0.018 J**
SA12-10	11/10/2006	**183 J**	0.075 U	**0.43**	**381**	**0.30 J-**	**1.7**	**33.2 J-**	**22.7 J-**	**0.13 J**	**0.0084 J**
SA12-20	11/10/2006	**229 J**	0.076 U	**0.33**	**305**	**0.21 J-**	**1.8**	**19.3 J-**	**16.7 J-**	0.22 U	0.0072 UJ
SA12-30	11/10/2006	**107 J**	**0.24 J**	**0.97**	**543**	**0.44 J-**	**4.1**	**40.0 J-**	**37.8 J-**	**0.26 J**	**0.018 J**
SA13-0.5	11/17/2006	**130 J-**	0.098 U	**0.73**	**830**	0.36 UJ	**0.92**	**47.1 J-**	**31.5 J-**	0.23 U	**0.013 J-**
SA13-0.5D	11/17/2006	**162 J-**	0.26 U	**0.69**	**806**	0.45 UJ	**1.0**	**48.9 J-**	**29.8 J-**	**0.12 J**	**0.017 J-**
SA13-10	11/17/2006	**117 J**	0.12 U	**0.59**	**733**	0.35 UJ	**0.83**	**43.4 J-**	**27.3 J-**	0.21 U	**0.0082 J-**
SA13-20	11/17/2006	**215 J**	0.13 U	**0.63**	**689**	0.40 UJ	**1.4**	**44.1 J-**	**28.2 J-**	0.21 U	**0.012 J-**
SA13-30	11/17/2006	**310 J**	0.093 U	**0.57**	**649**	0.32 UJ	**1.4**	**41.7 J-**	**27.4 J-**	0.21 U	**0.011 J-**
SA13-40	11/17/2006	**178**	0.13 U	**0.60**	**681**	0.73 UJ	**3.2**	**56.3 J-**	**30.8 J-**	0.25 U	0.0084 UJ
SA14-0.5	11/08/2006	**142 J**	**0.099 J**	**0.60**	**625 J**	**0.37 J-**	**0.93**	**35.9 J-**	**25.8 J-**	0.22 U	0.062 U
SA14-10	11/08/2006	**109 J**	**0.098 J**	**0.56**	**594 J**	**0.23 J-**	**0.94**	**31.7 J-**	**25.4 J-**	0.23 U	0.0076 U
SA14-20	11/08/2006	**106 J**	**0.088 J**	**0.46 J**	**412 J**	**0.21 J-**	**1.6**	**25.8 J-**	**23.9 J-**	0.25 U	0.0083 U
SA14-30	11/08/2006	**98.0 J**	**0.26 J**	**0.63**	**499 J**	**0.72 J-**	**3.3**	**27.8 J-**	**37.4 J-**	0.32 U	0.011 UJ
SA14-40	11/08/2006	**168 J**	**0.11 J**	**0.42**	**352 J**	**0.16 J-**	**2.0**	**13.7 J-**	**19.4 J-**	0.25 U	0.0083 UJ
SA15-0.5	11/08/2006	**46.1 J**	**0.16 J**	**0.64**	**677 J**	**0.33 J-**	**0.81**	**38.0 J-**	**36.7 J-**	0.23 U	0.0077 U
SA15-10	11/08/2006	**99.0 J**	0.082 U	**0.56**	**643 J**	**0.36 J-**	**1.3**	**39.2 J-**	**26.4 J-**	0.23 U	0.0078 UJ
SA15-10D	11/08/2006	**74.2 J**	0.077 U	**0.45**	**478 J**	**0.32 J-**	**1.1**	**31.6 J-**	**21.5 J-**	0.22 U	0.0073 UJ
SA15-20	11/08/2006	**805 J**	0.077 U	**0.45**	**395 J**	**0.37 J-**	**1.6**	**23.5 J-**	**17.5 J-**	0.22 U	0.0074 UJ
SA15-30	11/08/2006	**437 J**	**0.098 J**	**0.38**	**354 J**	**0.15 J-**	**6.1**	**27.3 J-**	**17.2 J-**	0.27 U	0.0091 UJ
SA15-35	11/08/2006	**119 J**	**0.21 J**	**0.59**	**454 J**	**0.42 J-**	**2.8**	**22.3 J-**	**27.7 J-**	0.28 U	0.0092 UJ
SA16-0.5	11/09/2006	**72.5 J**	**0.095 J**	**0.51**	**490**	**0.34 J-**	**0.74**	**30.3 J-**	**27.0 J-**	**0.12 J**	0.0071 UJ
SA16-10	11/09/2006	**109 J**	0.078 U	**0.42**	**490**	**0.28 J-**	**1.2**	**39.2 J-**	**24.3 J-**	**0.20 J**	**0.0093 J**
SA16-20	11/09/2006	**86.5 J**	0.076 U	**0.40**	**273**	**0.16 J-**	**1.6**	**20.1 J-**	**17.7 J-**	0.22 U	**0.011 J**
SA16-30	11/09/2006	**126 J**	**0.26 J**	**0.74**	**502**	**0.46 J-**	**3.4**	**27.9 J-**	**38.4 J-**	**9.3**	0.011 UJ
SA17-0.5	11/15/2006	**112 J**	0.11 U	**0.52**	**480**	**9.1 J-**	**1.8**	**31.8 J-**	**206 J-**	**0.58**	0.0078 UJ

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Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 7199	SW 846 7471
	Chemical Name	Strontium	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Chromium-hexavalent	Mercury
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date										
SA17-0.5D	11/15/2006	165 J	0.095 U	0.48	438	13.9 J-	2.0	30.5 J-	152 J-	1.2	0.0077 UJ
SA17-10	11/15/2006	110 J	0.38 U	0.56	638	1.8 J-	1.6	37.9 J-	28.9 J-	0.16 J	0.0076 UJ
SA17-20	11/15/2006	137 J	0.074 U	0.32	298	2.5 J-	2.6	31.9 J-	17.0 J-	0.39	0.0071 UJ
SA17-25	11/15/2006	220 J	0.086 U	0.30	347	0.64 UJ	3.7	26.7 J-	26.1 UJ	0.19 J	0.0083 UJ
SA18-0.5	11/15/2006	174 J	0.081 U	0.54	626	0.38 UJ	1.1	34.3 J-	26.1 J-	0.22 U	0.0073 UJ
SA18-0.5D	11/15/2006	106 J	0.080 U	0.45	525	0.28 UJ	0.82	25.8 J-	23.4 J-	0.21 U	0.007 UJ
SA18-10	11/15/2006	316 J	0.076 U	0.51	516	0.41 UJ	1.8	32.6 J-	25.3 J-	0.22 U	0.0073 UJ
SA18-20	11/15/2006	274 J	0.075 U	0.44	490	0.28 UJ	1.9	32.1 J-	23.6 J-	0.21 U	0.0072 UJ
SA18-30	11/15/2006	69.9 J	0.15 U	0.33	410	0.27 UJ	1.4	24.5 J-	14.9 J-	0.22 U	0.0074 UJ
SA19-0.5	11/16/2006	84.3 J	0.098 J	0.51	529 J+	0.24 J-	0.85	30.9 J-	24.9 J-	0.22 U	0.010 U
SA19-10	11/16/2006	160 J	0.077 J	0.47	464 J+	0.28 J-	1.4	30.5 J-	21.6 J-	9.0	0.0073 UJ
SA19-20	11/16/2006	739 J	0.082 J	0.39	326 J+	0.56 J-	2.5	30.5 J-	17.9 UJ	0.11 J	0.0095 U
SA19-25	11/16/2006	178 J-	0.081 U	0.38	366 J+	0.36 J-	2.3	22.7	16.6 UJ	0.18 J	0.0078 UJ
SA20-0.5	11/16/2006	121	0.12 J	0.51	507	0.33 J-	0.81	30.5 J-	26.8 J-	0.22 U	0.046 U
SA20-0.5D	11/16/2006	141	0.25 J	0.67	572	0.47 J-	0.97	34.8 J-	30.4 J-	0.25 U	0.028 U
SA20-10	11/16/2006	102 J	0.14 J	0.43	403 J+	0.32 J-	0.70	23.4 J-	22.8 J-	0.24 U	0.0079 UJ
SA20-20	11/16/2006	852 J	0.077 J	0.32	252 J+	0.24 J-	1.4	18.0 J-	13.3 UJ	0.72	0.0071 UJ
SA20-25	11/16/2006	639 J	0.083 U	0.34	318 J+	0.42 J-	1.7	35.2 J-	15.8 UJ	0.29	0.0079 UJ
SA21-0.5	11/15/2006	139 J	0.073 U	0.46	497	0.28 UJ	0.86	26.2 J-	25.0 J-	0.21 U	0.007 UJ
SA21-10	11/15/2006	251 J	0.081 U	0.51	482	0.34 UJ	2.0	30.2 J-	23.8 J-	0.22 U	0.0074 UJ
SA21-20	11/15/2006	224 J	0.091 U	0.48	506	0.67 J-	2.2	30.5 J-	23.8 J-	0.22 U	0.0074 UJ
SA21-20D	11/15/2006	310 J	0.073 U	0.44	534	0.30 UJ	2.3	30.7 J-	23.9 J-	0.21 U	0.007 UJ
SA21-30	11/15/2006	217 J	0.078 U	0.45	636	0.24 UJ	3.8	39.8 J-	24.5 J-	0.22 U	0.0075 UJ
SA22-0.5	11/16/2006	166 J-	0.10 J	0.49	432 J+	0.87 J-	0.94	29.1 J-	25.0 J-	0.25 U	0.0085 UJ
SA22-10	11/16/2006	164 J	0.11 J	0.45	408 J+	0.46 J-	2.3	33.1 J-	22.5 J-	0.11 J	0.0074 UJ
SA22-20	11/16/2006	461 J	0.12 J	0.64	330 J+	0.39 J-	3.9	33.5 J-	20.0 UJ	0.23 U	0.0078 UJ
SA23-0.5	11/09/2006	126 J	0.083 J	0.51	410	0.36 J-	0.73	24.3 J-	30.5 J-	0.23 U	0.020 J
SA23-10	11/09/2006	218 J	0.084 U	0.36	371	0.35 J-	0.94	25.7 J-	22.4 J-	0.24 U	0.008 UJ
SA23-20	11/09/2006	207 J	0.094 J	0.46	328	0.29 J-	2.8	21.8 J-	20.4 J-	0.16 J	0.008 UJ
SA23-20D	11/09/2006	235 J	0.098 J	0.46	336	0.49 J-	2.8	22.1 J-	20.6 J-	0.18 J	0.0077 UJ
SA24-0.5	11/03/2006	127 J	0.084 J	0.53	394 J	0.30 J-	0.74	21.5 J-	26.8 J-	0.23 U	0.0077 U
SA24-10	11/03/2006	264 J	0.11 J	0.52	428 J	0.34 J-	1.4	30.8 J-	25.8 J-	0.22 U	0.0072 U
SA24-20	11/03/2006	268 J	0.082 J	0.48	410 J	0.86 J-	3.0	30.7 J-	24.2 J-	0.12 J	0.0071 U
SA24-25	11/03/2006	258 J	0.12 J	0.38	325 J	0.50 J-	1.8	21.8 J-	22.9 J-	0.12 J	0.0076 U
SA25-0.5	11/03/2006	187 J	0.20 J	0.50	342 J	0.98 J-	0.87	18.7 J-	26.7 J-	0.15 J	0.0075 U
SA25-10	11/03/2006	184 J	0.17 J	0.47	338 J	1.0 J-	1.5	21.9 J-	20.9 J-	0.11 J	0.0076 U
SA25-15	11/03/2006	135 J	0.38 U	0.25 U	310 J	0.49 UJ	1.4	21.0 J-	19.5 UJ	0.14 J	0.0072 U
SA25-20	11/03/2006	209 J	0.27 J	0.77 U	510 J	0.60 J-	2.9	35.8 J-	55.6 J-	0.26 U	0.0087 U
SA26-0.5	11/20/2006	134 J-	0.20 U	0.68	670	0.38 UJ	0.88	37.1 J-	31.6 J-	0.22	0.0072 U
SA26-0.5D	11/20/2006	132 J-	0.26 U	0.57	562	0.43 UJ	1.0	36.2 J-	26.7 J-	0.22 U	0.0073 U
SA26-10	11/20/2006	191 J	0.13 U	0.57	643	0.35 UJ	2.1	40.7 J-	22.7 J-	0.14 J	0.0075 UJ
SA27-0.5	11/02/2006	118 J	0.14 J	0.46	350 J	0.39 J-	0.85	18.3 J-	26.4 J-	0.21 U	0.010 J
SA27-10	11/02/2006	241 J	0.090 J	0.48	347 J	0.31 J-	2.3	26.1 J-	24.5 J-	0.21 U	0.0071 U
SA27-20	11/02/2006	199 J	0.079 J	0.33 U	293 J	0.22 J-	1.4	18.9 J-	19.9 J-	0.22 U	0.0074 U

Table 4-4
Metals Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
J-	The result is an estimated quantity and the result may be biased low.
UJ	The analyte was not detected above the laboratory method detection limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory method detection limit.
mg/kg	Milligrams per kilogram.
Bold	Bold values are constituents detected above the laboratory method detection limit.
Gray	Grayed out values are non-detected values with the laboratory method detection limits shown.

Metals Concentrations in Groundwater

Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Fraction Units	Pump rate ml/min	Turbidy (field) NTUs	Acceptance Criteria Met?	Parameters That Did Not Meet Acceptance Criteria	Metals SW 846 6020 Aluminum S ug/L	Metals SW 846 6020 Aluminum T ug/L	Metals SW 846 6020 Antimony S ug/L	Metals SW 846 6020 Antimony T ug/L	Metals SW 846 6020 Arsenic S ug/L	Metals SW 846 6020 Arsenic T ug/L	Metals SW 846 6020 Barium S ug/L	Metals SW 846 6020 Barium T ug/L	Metals SW 846 6020 Beryllium S ug/L
Sample ID	Sample Date													
IAR_12/01/2006	12/01/2006	nm	nm	Yes			157 U		10.0 U		**124**		**58.6**	
IAR-F	05/08/2007	nm	nm			7.9 U		**1.1**		**76.7**		**37.1**		1.8 U
IAR-Z	05/08/2007	nm	nm				7.9 U		**1.1**		**110**		**36.3**	
M100	12/04/2006	360	1.00	Yes			78.6 U		5 U		**85.3**		**24.0**	
M100D	12/04/2006	360	1.00	Yes			78.6 U		5 U		**88.9**		**23.6**	
M100-F	05/09/2007	350	1.91	Yes		78.6 U		5.0 U		**83.6**		**23.8**		0.88 U
M100-L	05/09/2007	100	1.58	Yes			108 U		5.0 U		**92.9**		25.5 U	
M100-Z	05/09/2007	350	1.91	Yes			78.6 U		5.0 U		**79.6**		23.6 U	
M11	12/06/2006	150	89.5	Yes			62.7 UJ		0.5 U		**309**		**14.4**	
M11D	12/06/2006	150	89.5	Yes			57.9 UJ		0.5 U		**304**		**14.1**	
M11-F	05/11/2007	150	38.1	Yes		393 U		25.0 U		**250**		12.4 U		4.4 U
M11-Z	05/11/2007	150	38.1	Yes			393 U		25.0 U		**328**		15.2 U	
M120	11/28/2006	320	1.8	Yes			**32.3**		0.50 U		**180**		**27.0**	
M120-F	05/04/2007	320	0.35	Yes		7.9 U		0.50 U		**163**		**33.0**		0.088 U
M120-L	05/04/2007	150	0.00	No	ORP		**135**		0.50 U		**167**		**35.1**	
M120-Z	05/04/2007	320	0.35	Yes			**32.6**		0.50 U		**168**		**33.9**	
M12A	12/05/2006	210	19.7	Yes			**1210 J+**		5 U		**686**		**34.0**	
M12A-F	05/11/2007	210	7.6	No	ORP	786 U		50.0 U		**692**		24.7 U		8.8 U
M12A-L	05/11/2007	100	12.1	Yes			786 U		50.0 U		**658**		24.7 U	
M12A-Z	05/11/2007	210	7.6	No	ORP		786 U		50.0 U		**700**		24.7 U	
M13	12/01/2006	300	32.4	Yes			157 U		10.0 U		**44.1 J**		**14.6 J**	
M13-F	05/09/2007	300	28.5	Yes		197 U		12.5 U		50.0 U		**9.8 J**		2.2 U
M13-L	05/09/2007	100	36.8	No	DO		197 U		12.5 U		50.0 U		14.5 U	
M13-Z	05/09/2007	300	28.5	Yes			197 U		12.5 U		**51.6 J**		10.7 U	
M29	11/17/2006					7.9 U	**5210**	**0.94 J**	**0.92 J**	**100**	**109**	**17.2**	**51.7**	0.088 UJ
M2A	12/04/2006	350	49.0	Yes			197 U		12.5 U		**56.5 J**		**46.4 J**	
M2A-F	05/09/2007	350	3.51	No	ORP	393 U		25.0 U		100 U		**46.8 J**		4.4 U
M2A-L	05/09/2007	100	56.0	Yes			**2430**		25.0 U		**102 J**		**70.8 J**	
M2A-Z	05/09/2007	350	3.51	No	ORP		393 U		25.0 U		100 U		**46.5 J**	
M31A	12/06/2006	145	155.0	Yes			**2020 J+**		5 U		**99.1**		**96.7**	
M31A-F	05/09/2007	150	14.7	Yes		393 U		25.0 U		100 U		**34.6 J**		4.4 U
M31A-Z	05/09/2007	150	14.7	Yes			**760 J**		25.0 U		**127 J**		**42.5 J**	
M39-Z	05/10/2007	325	3.16	No	ORP		393 U		25.0 U		**103 J**		**17.0 J**	
M39-F	05/10/2007	325	3.16	No	ORP	393 U		25.0 U		**128 J**		**17.1 J**		4.4 U
M39-L	05/10/2007	100	40.8	No	ORP		393 U		25.0 U		**103 J**		**18.0 J**	
M39-ZD	05/10/2007	325	3.16	No	ORP		393 U		25.0 U		100 U		**17.6 J**	
M39-LD	05/10/2007	100	40.8	No	ORP		393 U		25.0 U		**122 J**		**17.6 J**	
M39-FD	05/10/2007	325	3.16	No	ORP		393 U		25.0 U		**133 J**		**17.2 J**	
M39	12/05/2006	320	62.9	Yes			**1100 J+**		5 U		**126**		**29.3**	
M48	12/06/2006	350	nm	Yes			34.4 UJ		0.5 U		**130**		**16.2**	
M48-F	05/10/2007	350	0.63	Yes		157 U		10.0 U		**147**		**17.9 J**		1.8 U
M48-L	05/10/2007	100	0.00	Yes			157 U		10.0 U		**147**		**17.2 J**	
M48-Z	05/10/2007	350	0.63	Yes			157 U		10.0 U		**147**		**16.9 J**	
M55	12/07/2006	360	1.5	Yes			78.6 U		5 U		**97.5**		**45.3**	
M55D	12/07/2006	360	1.5	Yes			92.8 U		5 U		**93.7**		**43.2**	
M55-F	05/08/2007	350	0.00	No	ORP	393 U		25.0 U		**123 J**		**43.7 J**		4.4 U
M55-L	05/08/2007	100	1.00	No	ORP		393 U		25.0 U		**119 J**		**47.6 J**	

Table 4-5
Metals Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type / Analytic Method / Chemical Name / Fraction / Units		Pump rate ml/min	Turbidy (field) NTUs	Acceptance Criteria Met?	Parameters That Did Not Meet Acceptance Criteria	Metals SW 846 6020 Aluminum S ug/L	Metals SW 846 6020 Aluminum T ug/L	Metals SW 846 6020 Antimony S ug/L	Metals SW 846 6020 Antimony T ug/L	Metals SW 846 6020 Arsenic S ug/L	Metals SW 846 6020 Arsenic T ug/L	Metals SW 846 6020 Barium S ug/L	Metals SW 846 6020 Barium T ug/L	Metals SW 846 6020 Beryllium S ug/L
Sample ID	Sample Date													
M55-Z	05/08/2007	350	0.00	No	ORP		393 U		25.0 U		**128 J**		**46.5 J**	
M5A	12/07/2006	200	7.0	Yes			**816 J+**		**1.4**		**237**		**51.9**	
M5A-F	05/10/2007	200	2.31	Yes		786 U		50.0 U		**228 J**		**42.6 J**		8.8 U
M5A-L	05/10/2007	100	4.11	No	DO		786 U		50.0 U		**271 J**		**44.3 J**	
M5A-Z	05/10/2007	200	2.31	Yes			786 U		50.0 U		**261 J**		**44.3 J**	
M76	12/04/2006	100	0.1	Yes			**206 J+**		10 U		**121**		**24.8 J**	
M76-F	05/09/2007	200	1.84	No	ORP	393 U		25.0 U		**151 J**		**21.4 J**		4.4 U
M76-L	05/09/2007	100	7.06	No	ORP		393 U		25.0 U		**101 J**		25.8 U	
M76-Z	05/09/2007	200	1.84	No	ORP		393 U		25.0 U		100 U		23.5 U	
M7B	11/30/2006	290	16.1	No	DO		**234 J**		50.0 U		**79.9 J**		**38.3 J**	
M7B-F	05/08/2007	300	6.1	Yes		393 U		25.0 U		100 U		**35.4 J**		4.4 U
M7B-L	05/08/2007	100	70	Yes			**4940**		25.0 U		**118 J**		**75.6 J**	
M7B-Z	05/08/2007	300	6.1	Yes			393 U		25.0 U		100 U		**36.0 J**	
M89	12/05/2006	235	0.3	Yes			84.9 UJ		5 U		**84.9**		**45.9**	
M89-F	05/11/2007	225	0.00	No	ORP	786 U		50.0 U		200 U		**41.8 J**		8.8 U
M89-L	05/11/2007	100	2.90	No	ORP		786 U		50.0 U		200 U		**40.5 J**	
M89-Z	05/11/2007	225	0.00	No	ORP		786 U		50.0 U		200 U		**42.3 J**	
M92	11/29/2006	280	76.0	Yes			**1590**		0.50 U		**91.4**		**38.3**	
M92-F	05/08/2007	300	3.69	No	ORP	7.9 U		0.50 U		**83.2**		**15.8**		1.8 U
M92-L	05/08/2007	100	33.7	Yes			372 U		0.50 U		**84.6**		21.0 U	
M92-Z	05/08/2007	300	3.69	No	ORP		32.6 U		0.50 U		**95.7**		18.2 U	
M95	12/04/2006	480	68.8	Yes			**1430 J+**		12.5 U		**210**		**36.5 J**	
M95-F	05/10/2007	360	2.29	No	ORP	393 U		25.0 U		**223 J**		12.4 U		4.4 U
M95-FD	05/10/2007	360	2.29	No	ORP		393 U		25.0 U		**213 J**		12.4 U	
M95-L	05/10/2007	100	23.2	No	ORP		393 U		25.0 U		**169 J**		12.4 U	
M95-LD	05/10/2007	100	23.2	No	ORP		393 U		25.0 U		**231 J**		**12.7 J**	
M95-Z	05/10/2007	360	2.29	No	ORP		393 U		25.0 U		**227 J**		12.4 U	
M95-ZD	05/10/2007	360	2.29	No	ORP		393 U		25.0 U		**206 J**		**13.4 J**	
M97	11/29/2006	380	31.7	Yes			**510**		10.0 U		**188**		**38.7 J**	
M97-F	05/11/2007	375	2.89	No	ORP	197 U		12.5 U		**179**		**34.7 J**		2.2 U
M97-L	05/11/2007	100	6.51	No	ORP		197 U		12.5 U		**196**		**34.5 J**	
M97-Z	05/11/2007	375	2.89	No	ORP		197 U		12.5 U		**181**		**33.8 J**	
M98	11/30/2006	300	nm	Yes			157 U		10.0 U		**184**		**16.3 J**	
MC45	12/06/2006	290	0.5	Yes			**224 J+**		**1.1**		**175**		**39.5**	
MC45-F	05/07/2007	280	0.00	No	ORP	7.9 U		**1.3**		**151**		**35.2**		1.8 U
MC45-L	05/07/2007	100	0.85	No	ORP		7.9 U		**1.2**		**149**		**34.2**	
MC45-Z	05/07/2007	280	0.00	No	ORP		7.9 U		**1.1**		**154**		**36.5**	
PC40	12/01/2006	420	149	Yes			**2790**		50.0 U		**215**		**59.1**	
PC40-F	05/07/2007	400	0.00	No	DO, ORP	**23.7 J**		**0.97 J**		**196**		**28.6**		0.088 U
PC40-L	05/07/2007	100	200	Yes			**4390**		**1.2**		**208**		**75.1**	
PC40-Z	05/07/2007	400	0.00	No	DO, ORP		188 U		**0.91 J**		**203**		**31.9**	
GWSA2	11/06/2006	na	nm			**13.6 J**	**236000 J**	**0.52 J-**	R	**223**	**610**	**28.9**	**2750**	0.088 UJ
GWSA9	11/07/2006	na	nm			157 UJ	**11500 J**	**0.93 J-**	**1.3 J-**	**51.7**	**70.0**	**42.1**	**176**	1.8 UJ
GWSA10	11/07/2006	na	nm			157 UJ	**349000 J**	**0.62 J-**	R	**68.3**	**480**	**28.5**	**4100**	1.8 UJ
GWSA14	11/08/2006	na	nm			157 UJ	**939000 J**	**1.9 J-**	**2.6 J-**	**40.6**	**778**	**83.9**	**3350**	1.8 UJ
GWSA15	11/08/2006	na	nm			157 UJ	**175000 J**	**0.76 J-**	R	**53.6**	**269**	**39.8**	**3060**	1.8 UJ

Table 4-5
Metals Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
Analytic Method		SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
Chemical Name		Beryllium	Boron	Boron	Cadmium	Cadmium	Calcium	Calcium	Chromium	Chromium	Cobalt	Cobalt	Copper	Copper
Fraction		T	S	T	S	T	S	T	S	T	S	T	S	T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date													
IAR_12/01/2006	12/01/2006	1.8 U		2660		1.2 U		508000		81.5 J		6.3 U		8.8 J
IAR-F	05/08/2007		3010 J+		0.11 J		515000		194		0.98 J-		3.0	
IAR-Z	05/08/2007	1.8 U		2980		0.10 J		540000		291 J-		0.94 J-		2.7 U
M100	12/04/2006	0.88 U		1910 J		0.57 U		123000		290		3.1 U		4.2 J
M100D	12/04/2006	0.88 U		1880 J-		0.57 U		120000		292		3.1 U		2.8 J
M100-F	05/09/2007		2570		0.57 U		139000		246		3.1 U		3.0 J	
M100-L	05/09/2007	0.88 U		2520		0.64 J		135000		227		3.1 U		4.5 J
M100-Z	05/09/2007	0.88 U		2580		0.57 U		133000		237		3.1 U		3.0 U
M11	12/06/2006	1.8 U		15800 J-		0.057 U		37000		2360		0.44 J		4.3
M11D	12/06/2006	1.8 U		15800 J-		0.057 U		36700		2370		0.46 J		4.4
M11-F	05/11/2007		10200		2.9 U		45600		2200		15.7 U		12.5 U	
M11-Z	05/11/2007	4.4 U		10400		2.9 U		50200		3130		15.7 U		12.5 U
M120	11/28/2006	0.088 U		947		0.067 J		165000		2.8 U		0.37 J		2.4
M120-F	05/04/2007		1520 J+		0.072 J		208000		2.8 U		0.42 J-		2.7	
M120-L	05/04/2007	0.088 U		1470		0.057 U		222000		R		0.47 J-		2.8
M120-Z	05/04/2007	0.088 U		1460		0.057 U		219000		R		0.46 J-		2.7
M12A	12/05/2006	8.8 U		3280 J-		0.57 U		51300		10600		5.9 J		11.8
M12A-F	05/11/2007		3250 U		5.7 U		47900		12100		31.3 U		25.0 U	
M12A-L	05/11/2007	8.8 U		3450 U		5.7 U		48100		12200		31.3 U		25.0 U
M12A-Z	05/11/2007	8.8 U		3340 U		5.7 U		50100		12800		31.3 U		25.0 U
M13	12/01/2006	1.8 U		2590		1.2 U		232000		448		6.3 U		7.1 J
M13-F	05/09/2007		2670		1.4 U		202000		70.0 U		7.8 U		6.3 U	
M13-L	05/09/2007	2.2 U		2750		1.4 U		244000		257		7.8 U		6.3 U
M13-Z	05/09/2007	2.2 U		2680		1.4 U		204000		292		7.8 U		6.3 U
M29	11/17/2006	0.22 J-	2670	2250	0.078 J	0.13 J	395000	339000	24.7 J-	31.2 J-	5.1 J-	3.0 J-	11.1 J-	13.7 J-
M2A	12/04/2006	2.2 U		3030		1.4 U		753000		19600		7.8 U		6.3 U
M2A-F	05/09/2007		3420		2.9 U		752000		18700		15.7 U		12.5 U	
M2A-L	05/09/2007	4.4 U		3420		2.9 U		778000		19500		15.7 U		12.5 U
M2A-Z	05/09/2007	4.4 U		3210		2.9 U		713000		18100		15.7 U		12.5 U
M31A	12/06/2006	8.8 U		7160 J-		1.2 J		582000		11400		12.8 J		16.7
M31A-F	05/09/2007		6790		2.9 U		601000		12000		15.7 U		12.5 U	
M31A-Z	05/09/2007	4.4 U		6950		2.9 U		617000		12300		15.7 U		12.5 U
M39-Z	05/10/2007	4.4 U		10800		2.9 U		620000		4580		15.7 U		12.5 U
M39-F	05/10/2007		10400		2.9 U		629000		4670		15.7 U		12.5 U	
M39-L	05/10/2007	4.4 U		10500		2.9 U		623000		4700		15.7 U		12.5 U
M39-ZD	05/10/2007	4.4 U		10900		2.9 U		633000		4700		15.7 U		12.5 U
M39-LD	05/10/2007	4.4 U		10600		2.9 U		616000		4650		15.7 U		12.5 U
M39-FD	05/10/2007	4.4 U		10500		2.9 U		623000		4660		15.7 U		12.5 U
M39	12/05/2006	8.8 U		10700 J-		0.57 U		586000		4120		3.1 U		9.3 J
M48	12/06/2006	1.8 U		4650 J-		0.057 U		133000		730		0.70 J		2.9
M48-F	05/10/2007		3930		1.2 U		179000		971		6.3 U		5.0 U	
M48-L	05/10/2007	1.8 U		4010		1.2 U		175000		945		6.3 U		5.0 U
M48-Z	05/10/2007	1.8 U		4030		1.2 U		177000		963		6.3 U		5.0 U
M55	12/07/2006	8.8 U		10500 J-		0.57 U		48600		11100		3.1 U		6 U
M55D	12/07/2006	8.8 U		10600 J-		0.57 U		479000		10800		3.1 U		6 U
M55-F	05/08/2007		9790 J+		2.9 U		560000		12300		15.7 UJ		12.5 U	
M55-L	05/08/2007	4.4 U		9700		2.9 U		580000		12600 J-		15.7 UJ		12.5 U

Table 4-5
Metals Concentrations in Groundwater
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Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Beryllium	Boron	Boron	Cadmium	Cadmium	Calcium	Calcium	Chromium	Chromium	Cobalt	Cobalt	Copper	Copper
	Fraction	T	S	T	S	T	S	T	S	T	S	T	S	T
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date													
M55-Z	05/08/2007	4.4 U		**9980**		2.9 U		**578000**		**12600 J-**		15.7 UJ		12.5 U
M5A	12/07/2006	4.4 U		**2040 J-**		**0.066 J**		**811000**		2.8 U		**1.8 J**		**7.3**
M5A-F	05/10/2007		**2070 J**		5.7 U		**755000**		280 U		31.3 U		25.0 U	
M5A-L	05/10/2007	8.8 U		**2260 J**		5.7 U		**762000**		280 U		31.3 U		25.0 U
M5A-Z	05/10/2007	8.8 U		**2220 J**		5.7 U		**782000**		280 U		31.3 U		25.0 U
M76	12/04/2006	1.8 U		**3910 J-**		1.2 U		**121000**		**2850**		6.3 U		5 U
M76-F	05/09/2007		**3650**		2.9 U		**123000**		**2510**		15.7 U		12.5 U	
M76-L	05/09/2007	4.4 U		**3830**		2.9 U		**125000**		**2550**		15.7 U		12.5 U
M76-Z	05/09/2007	4.4 U		**3570**		2.9 U		**120000**		**2380**		15.7 U		12.5 U
M7B	11/30/2006	1.8 U		**4170**		1.2 U		**613000**		56 U		6.3 U		**6.5 J**
M7B-F	05/08/2007		**4260 J+**		2.9 U		**620000**		140 U		15.7 UJ		12.5 U	
M7B-L	05/08/2007	4.4 U		**4870**		**3.2**		**639000**		R		15.7 U		**16.8 J**
M7B-Z	05/08/2007	4.4 U		**4120**		2.9 U		**591000**		R		15.7 UJ		12.5 U
M89	12/05/2006	8.8 U		**4140 J-**		0.57 U		**754000**		**22300**		3.1 U		**6.8 J**
M89-F	05/11/2007		**4240 J**		5.7 U		**737000**		**21400**		31.3 U		25.0 U	
M89-L	05/11/2007	8.8 U		**4410 J**		5.7 U		**724000**		**21000**		31.3 U		25.0 U
M89-Z	05/11/2007	8.8 U		**4280 J**		5.7 U		**764000**		**22500**		31.3 U		25.0 U
M92	11/29/2006	0.088 U		**1360**		**0.089 J**		**138000**		**16.3**		**0.84 J**		**4.5**
M92-F	05/08/2007		**1550 J+**		0.057 U		**149000**		**12.0**		0.31 UJ		**2.1**	
M92-L	05/08/2007	1.8 U		**1380**		0.057 U		**147000**		**16.4**		**0.38 J-**		3.1 U
M92-Z	05/08/2007	1.8 U		**1820**		0.057 U		**155000**		**15.1 J-**		**0.32 J-**		2.4 U
M95	12/04/2006	2.2 U		**10300 J-**		1.4 U		**643000**		**1830**		7.8 U		**10.2 J**
M95-F	05/10/2007		**9470**		2.9 U		**595000**		**1570**		15.7 U		12.5 U	
M95-FD	05/10/2007	4.4 U		**9890**		2.9 U		**626000**		**1660**		15.7 U		12.5 U
M95-L	05/10/2007	4.4 U		**9590**		2.9 U		**575000**		**1520**		15.7 U		12.5 U
M95-LD	05/10/2007	4.4 U		**9480**		2.9 U		**598000**		**1540**		15.7 U		12.5 U
M95-Z	05/10/2007	4.4 U		**9350**		2.9 U		**582000**		**1550**		15.7 U		12.5 U
M95-ZD	05/10/2007	4.4 U		**9670**		2.9 U		**616000**		**1640**		15.7 U		12.5 U
M97	11/29/2006	1.8 U		**4810**		1.2 U		**309000**		**77.2 J**		6.3 U		**7.0**
M97-F	05/11/2007		**4720**		1.4 U		**284000**		70.0 U		7.8 U		6.3 U	
M97-L	05/11/2007	2.2 U		**4640**		1.4 U		**289000**		70.0 U		7.8 U		6.3 U
M97-Z	05/11/2007	2.2 U		**4710**		1.4 U		**277000**		70.0 U		7.8 U		6.3 U
M98	11/30/2006	1.8 U		**3200**		1.2 U		**273000**		**100 J**		6.3 U		**5.2**
MC45	12/06/2006	1.8 U		**1200 J-**		**0.14 J**		**213000**		2.8 U		**3.7**		**7.7**
MC45-F	05/07/2007		**1250 J+**		**0.12 J**		**340000**		2.8 U		**4.2 J-**		**4.0**	
MC45-L	05/07/2007	1.8 U		**1370**		0.13 U		**375000**		R		**4.3 J-**		4.0 U
MC45-Z	05/07/2007	1.8 U		**1220**		0.12 U		**342000**		R		**4.4 J-**		3.8 U
PC40	12/01/2006	2.2 U		**2140**		1.4 U		**492000**		70 U		7.8 U		**11.6 J**
PC40-F	05/07/2007		**1760 J+**		**0.16 J**		**462000**		2.8 U		**1.9 J-**		**4.4**	
PC40-L	05/07/2007	**0.16 J**		**2270**		0.18 U		**442000**		**8.2 J-**		**6.1 J-**		**7.5**
PC40-Z	05/07/2007	0.088 U		**1830**		0.16 U		**487000**		R		**2.3 J-**		4.6 U
GWSA2	11/06/2006	**11.4 J-**	**2740 J-**	**2700 J-**	**0.23 J**	**1.8 J**	**87600 J**	**588000 J**	**18.8 J-**	**375 J-**	**4.0 J-**	**91.5 J-**	**3.6 J-**	**168 J-**
GWSA9	11/07/2006	**0.53 J-**	**1650 J-**	**1250 J-**	0.057 U	**0.18 J**	**452000 J**	**308000 J**	56.0 UJ	**15.5 J-**	6.3 UJ	**3.1 J-**	**6.8 J-**	**12.7 J-**
GWSA10	11/07/2006	**19.4 J-**	**1310 J-**	**1340 J-**	0.057 U	**3.3**	**237000 J**	**1210000 J**	56.0 UJ	**579 J-**	6.3 UJ	**114 J-**	**4.9 J-**	**257 J-**
GWSA14	11/08/2006	**67.2 J-**	**1670 J-**	**1940 J-**	0.057 U	**10.4**	**1050000 J**	**4800000 J**	56.0 UJ	**1350 J-**	**6.4 J-**	**352 J-**	**7.1 J-**	**333 J-**
GWSA15	11/08/2006	**9.5 J-**	**2560 J-**	**2690 J-**	**0.17 J**	**1.1 J**	**308000 J**	**457000 J**	56.0 UJ	**274 J-**	6.3 UJ	**62.0 J-**	**6.3 J-**	**115 J-**

Table 4-5
Metals Concentrations in Groundwater
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Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Iron	Iron	Lead	Lead	Magnesium	Magnesium	Manganese	Manganese	Molybdenum	Molybdenum	Nickel	Nickel	Platinum
	Fraction	S	T	S	T	S	T	S	T	S	T	S	T	S
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date													
IAR_12/01/2006	12/01/2006		188 UJ		9.8 U		**168000**		**127**		**32.6 J**		**16.3 J**	
IAR-F	05/08/2007	R		0.49 U		**229000**		**32.2 J+**		**27.9**		**11.8 J-**		**1.0**
IAR-Z	05/08/2007		188 UJ		0.49 U		**248000**		29.8 U		**26.8**		10.3 UJ	
M100	12/04/2006		R		4.9 U		**50800**		24.4 UJ		**10.0 J**		5.2 U	
M100D	12/04/2006		R		4.9 U		**50300**		24.1 UJ		**9.5 J**		5.2 U	
M100-F	05/09/2007	R		4.9 U		**58700**		**25.3**		**10.3 J**		5.2 U		1.0 U
M100-L	05/09/2007		94.0 UJ		4.9 U		**57300**		27.9 U		**11.3 J**		5.2 U	
M100-Z	05/09/2007		94.0 UJ		4.9 U		**56900**		24.4 U		**10.0 J**		5.2 U	
M11	12/06/2006		**4680 J-**		0.49 U		**37100**		93.5 UJ		**25.6**		**1.9 J**	
M11D	12/06/2006		**4830 J-**		0.49 U		**37500**		96.0 UJ		**25.3**		**1.9 J**	
M11-F	05/11/2007	R		24.6 U		**36300**		17.1 U		**27.0 J**		25.8 U		5.0 U
M11-Z	05/11/2007		**6310 J-**		24.6 U		**39300**		173 U		25.0 U		25.8 U	
M120	11/28/2006		9.4 UJ		0.49 U		**77000**		**3.0 J**		**13.8**		**5.5**	
M120-F	05/04/2007	R		0.49 U		**127000**		1.1 UJ		**14.0**		**4.8 J-**		0.10 U
M120-L	05/04/2007		188 UJ		0.49 U		**128000**		2.4 U		**13.5**		**4.8 J-**	
M120-Z	05/04/2007		188 UJ		0.49 U		**126000**		0.83 U		**13.8**		**5.2 J-**	
M12A	12/05/2006		**3740**		4.9 U		**18000**		**592 J-**		**59.5**		**8.0 J**	
M12A-F	05/11/2007	R		49.2 U		**17900**		34.2 U		**50.9 J**		51.7 U		10.0 U
M12A-L	05/11/2007		**1010 J-**		49.2 U		**18500**		**245**		50.0 U		51.7 U	
M12A-Z	05/11/2007		940 UJ		49.2 U		**19000**		140 U		**51.1 J**		51.7 U	
M13	12/01/2006		**4920 J-**		9.8 U		**107000**		**496**		**33.1 J**		**10.6 J**	
M13-F	05/09/2007	R		12.3 U		**98400**		**1020**		**33.4 J**		12.9 U		2.5 U
M13-L	05/09/2007		**15300 J-**		12.3 U		**96800**		**5490**		**29.2 J**		12.9 U	
M13-Z	05/09/2007		**4370 J-**		12.3 U		**94700**		**1580**		**32.5 J**		12.9 U	
M29	11/17/2006	94 U	**4920**	0.49 U	**3.4**	**619000**	**538000**	**108 J-**	**181 J-**	**23.9**	**23.2**	**16.8 J-**	**18.7 J**	0.1 U
M2A	12/04/2006		R		12.3 U		**389000**		8.5 U		**14.0 J**		**22.5 J**	
M2A-F	05/09/2007	R		24.6 U		**402000**		17.1 U		25.0 U		25.8 U		5.0 U
M2A-L	05/09/2007		470 UJ		24.6 U		**413000**		33.5 U		25.0 U		25.8 U	
M2A-Z	05/09/2007		470 UJ		24.6 U		**386000**		17.1 U		25.0 U		25.8 U	
M31A	12/06/2006		**1430 J-**		4.9 U		**254000**		**8060 J-**		**11.1 J**		**24.5 J**	
M31A-F	05/09/2007	R		24.6 U		**270000**		**98.9 J**		25.0 U		25.8 U		5.0 U
M31A-Z	05/09/2007		470 UJ		24.6 U		**275000**		127 U		25.0 U		25.8 U	
M39-Z	05/10/2007		R		24.6 U		**408000**		17.1 U		25.0 U		25.8 U	
M39-F	05/10/2007	R		24.6 U		**403000 J-**		17.1 U		25.0 U		25.8 U		5.0 U
M39-L	05/10/2007		R		24.6 U		**401000**		17.1 U		25.0 U		25.8 U	
M39-ZD	05/10/2007		R		24.6 U		**414000**		17.1 U		25.0 U		25.8 U	
M39-LD	05/10/2007		R		24.6 U		**399000**		17.9 U		25.0 U		25.8 U	
M39-FD	05/10/2007		R		24.6 U		**408000 J-**		17.1 U		25.0 U		25.8 U	
M39	12/05/2006		**380 J-**		4.9 U		**357000**		208 UJ		**20.6 J**		**16.5 J**	
M48	12/06/2006		R		0.49 U		**62100**		20.9 UJ		**18.3**		**4.4 J**	
M48-F	05/10/2007	R		9.8 U		**89300 J-**		**25.7 J**		**18.5 J**		10.3 U		2.0 U
M48-L	05/10/2007		R		9.8 U		**86600**		23.6 U		**20.2 J**		10.3 U	
M48-Z	05/10/2007		R		9.8 U		**87700**		23.9 U		**19.0 J**		10.3 U	
M55	12/07/2006		R		4.9 U		**273000**		37.4 UJ		**13.1 J**		**14.5 J**	
M55D	12/07/2006		R		4.9 U		**271000**		54.6 UJ		**13 J**		**14.6 J**	
M55-F	05/08/2007	R		24.6 U		**327000**		**35.3 J+**		25.0 U		25.8 UJ		5.0 U
M55-L	05/08/2007		470 UJ		24.6 U		**335000**		48.6 U		25.0 U		25.8 UJ	

Table 4-5
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Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Iron	Iron	Lead	Lead	Magnesium	Magnesium	Manganese	Manganese	Molybdenum	Molybdenum	Nickel	Nickel	Platinum
	Fraction	S	T	S	T	S	T	S	T	S	T	S	T	S
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date													
M55-Z	05/08/2007		470 UJ		24.6 U		**340000**		34.9 U		25.0 U		25.8 UJ	
M5A	12/07/2006		**459 J-**		**1.3 J**		**944000**		**1130 J-**		**9.6**		**15.4**	
M5A-F	05/10/2007	R		49.2 U		**861000 J-**		**1480**		50.0 U		51.7 U		10.0 U
M5A-L	05/10/2007		R		49.2 U		**863000**		**1470**		50.0 U		51.7 U	
M5A-Z	05/10/2007		R		49.2 U		**905000**		**1540**		50.0 U		51.7 U	
M76	12/04/2006		R		9.8 U		**78200**		13.9 UJ		**31.4 J**		10.3 U	
M76-F	05/09/2007	R		24.6 U		**77000**		17.1 U		**29.5 J**		25.8 U		5.0 U
M76-L	05/09/2007		470 UJ		24.6 U		**79200**		23.3 U		**30.0 J**		25.8 U	
M76-Z	05/09/2007		470 UJ		24.6 U		**74600**		17.1 U		**29.4 J**		25.8 U	
M7B	11/30/2006		188 UJ		9.8 U		**394000**		34.2 U		**26.4 J**		**19.5 J**	
M7B-F	05/08/2007	R		24.6 U		**418000**		17.1 U		**27.5 J**		25.8 UJ		5.0 U
M7B-L	05/08/2007		**2410 J**		24.6 U		**421000**		64.1 U		**34.6 J**		25.8 U	
M7B-Z	05/08/2007		470 UJ		24.6 U		**408000**		17.1 U		25.0 U		25.8 UJ	
M89	12/05/2006		R		4.9 U		**369000**		9.3 UJ		**16.2 J**		**19.1 J**	
M89-F	05/11/2007	R		49.2 U		**390000**		34.2 U		50.0 U		51.7 U		10.0 U
M89-L	05/11/2007		940 UJ		49.2 U		**379000**		34.2 U		50.0 U		51.7 U	
M89-Z	05/11/2007		940 UJ		49.2 U		**406000**		34.2 U		50.0 U		51.7 U	
M92	11/29/2006		**1010 J-**		**0.82 J**		**67000**		35.3 U		**17.3**		**5.8**	
M92-F	05/08/2007	R		0.49 U		**79800**		6.8 U		**16.4**		**6.8 J-**		0.10 U
M92-L	05/08/2007		188 U		0.49 U		**78700**		8.7 U		**16.8**		**4.5 J-**	
M92-Z	05/08/2007		188 UJ		0.49 U		**83500**		6.8 U		**18.7**		10.3 UJ	
M95	12/04/2006		R		12.3 U		**212000**		68.9 UJ		**39.3 J**		**22.7 J**	
M95-F	05/10/2007	R		24.6 U		**204000 J-**		**27.6 J**		**39.4 J**		25.8 U		5.0 U
M95-FD	05/10/2007		R		24.6 U		**216000 J-**		**31.0 J**		**40.5 J**		25.8 U	
M95-L	05/10/2007		R		24.6 U		**199000**		31.6 U		**37.7 J**		25.8 U	
M95-LD	05/10/2007		R		24.6 U		**205000**		31.9 U		**40.5 J**		25.8 U	
M95-Z	05/10/2007		R		24.6 U		**202000**		27.5 U		**38.7 J**		25.8 U	
M95-ZD	05/10/2007		R		24.6 U		**213000**		31.9 U		**40.0 J**		25.8 U	
M97	11/29/2006		188 UJ		9.8 U		**192000**		14.6 U		**19.6 J**		**11.4 J**	
M97-F	05/11/2007	R		12.3 U		**186000**		8.5 U		**17.1 J**		12.9 U		2.5 U
M97-L	05/11/2007		235 UJ		12.3 U		**188000**		8.5 U		**18.5 J**		12.9 U	
M97-Z	05/11/2007		235 UJ		12.3 U		**182000**		8.5 U		**17.2 J**		12.9 U	
M98	11/30/2006		188 UJ		9.8 U		**147000**		6.8 U		**27.1 J**		10.3 U	
MC45	12/06/2006		R		**2.8 J**		**230000**		**553 J-**		**30.0**		**7.2**	
MC45-F	05/07/2007	R		0.49 U		**315000**		**697 J+**		**27.4**		**7.0 J-**		0.10 U
MC45-L	05/07/2007		188 UJ		0.75 U		**341000**		**723**		**27.1**		**6.8 J-**	
MC45-Z	05/07/2007		188 UJ		0.49 U		**306000**		**721**		**28.5**		**7.4 J-**	
PC40	12/01/2006		**1510 J-**		12.3 U		**268000**		**873**		**47.6 J**		**23.9 J**	
PC40-F	05/07/2007	R		0.49 U		**291000**		**479 J+**		**39.8**		**10.0 J-**		0.10 U
PC40-L	05/07/2007		**3640 J**		2.4 U		**349000**		**729**		**40.1**		**12.2 J-**	
PC40-Z	05/07/2007		188 UJ		0.49 U		**302000**		**558**		**41.8**		**10.0 J-**	
GWSA2	11/06/2006	9.4 UJ	**147000 J**	9.8 U	**135**	**38000 J**	**420000 J**	**18.7 J+**	**4340 J+**	**97.9**	**72.8**	**3.7 J**	**268 J**	0.10 U
GWSA9	11/07/2006	188 UJ	**5550 J**	9.8 U	9.8 U	**278000 J**	**309000 J**	**34.2 J+**	**138 J+**	**8.3**	**8.8**	**18.4 J-**	**14.6 J**	0.10 U
GWSA10	11/07/2006	188 UJ	**203000 J**	9.8 U	**237**	**95600 J**	**1160000 J**	**14.3 J+**	**5830 J+**	**19.5**	**12.5 J**	10.3 UJ	**325 J**	0.10 U
GWSA14	11/08/2006	188 UJ	**300000 J**	9.8 U	**627**	**557000 J**	**5220000 J**	**35.6 J+**	**12700 J+**	**12.7**	**4.2 J**	**31.7 J**	**1010 J**	0.10 U
GWSA15	11/08/2006	188 UJ	**113000 J**	9.8 U	**94.9**	**144000 J**	**571000 J**	**28.4 J+**	**2640 J+**	**66.5**	**68.0**	**13.6 J-**	**150 J-**	**56.0**

Table 4-5
Metals Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Platinum	Potassium	Potassium	Selenium	Selenium	Silver	Silver	Sodium	Sodium	Strontium	Strontium	Thallium	Thallium
	Fraction	T	S	T	S	T	S	T	S	T	S	T	S	T
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date													
IAR_12/01/2006	12/01/2006	2 U		**35100**		20 U		4.1 U		**688000**		**9520**		6.4 U
IAR-F	05/08/2007		**34500**		1.0 U		0.20 U		**873000**		**8490**		0.86 U	
IAR-Z	05/08/2007	**1.1**		**34800**		1.0 U		0.20 U		**918000**		**8820**		0.71 U
M100	12/04/2006	1 U		**6680**		10 U		2 U		**304000**		**3940 J**		3.2 U
M100D	12/04/2006	1 U		**6620**		10 U		2 U		**302000**		**3890 J**		3.2 U
M100-F	05/09/2007		**7060**		10.0 U		2.0 U		**309000**		**4500**		3.2 U	
M100-L	05/09/2007	1.0 U		**6830**		10.0 U		2.0 U		**299000**		**4320**		4.3 U
M100-Z	05/09/2007	1.0 U		**6780**		10.0 U		2.0 U		**300000**		**4400**		3.2 U
M11	12/06/2006	0.1 U		**15100**		**2.8 J**		0.2 U		**968000**		**1250 J-**		0.32 U
M11D	12/06/2006	0.1 U		**14900**		**3.2 J**		0.2 U		**970000**		**1240 J-**		0.32 U
M11-F	05/11/2007		**18600**		50.0 U		10.1 U		**910000**		**1200**		**22.2 J**	
M11-Z	05/11/2007	5.0 U		**19900**		50.0 U		10.1 U		**953000**		**1300**		16.0 U
M120	11/28/2006	0.1 U		**8960**		**2.2 J**		0.2 U		**181000**		**3100**		**0.47 J**
M120-F	05/04/2007		**9240**		**1.9 J**		0.20 U		**220000**		**3790**		0.63 U	
M120-L	05/04/2007	0.10 U		**9810**		**1.7 J**		0.20 U		**222000**		**3930**		0.32 U
M120-Z	05/04/2007	0.10 U		**9680**		**1.9 J**		0.20 U		**220000**		**3950**		0.32 U
M12A	12/05/2006	1 U		**41700**		10 U		2 U		**2310000**		**1770 J-**		7.8 U
M12A-F	05/11/2007		**42400**		100 U		20.3 U		**2200000**		**1550**		32.0 U	
M12A-L	05/11/2007	10.0 U		**42400**		100 U		20.3 U		**2270000**		**1550**		32.0 U
M12A-Z	05/11/2007	10.0 U		**44400**		100 U		20.3 U		**2330000**		**1620**		32.0 U
M13	12/01/2006	2 U		**14100**		20 U		4.1 U		**679000**		**5450**		6.4 U
M13-F	05/09/2007		**13700**		25.0 U		5.1 U		**633000**		**5000**		8.0 U	
M13-L	05/09/2007	2.5 U		**13900**		25.0 U		5.1 U		**617000**		**5690**		8.0 U
M13-Z	05/09/2007	2.5 U		**13500**		25.0 U		5.1 U		**613000**		**5000**		8.0 U
M29	11/17/2006	0.1 U	**15900 J-**	**15000 J-**	**5.4 J**	4.8 UJ	0.2 U	0.2 U	**525000**	**442000**	**10400**	**9290**	0.32 U	0.32 U
M2A	12/04/2006	2.5 U		**32000**		25 U		5.1 U		**1620000**		**19100**		8 U
M2A-F	05/09/2007		**35600**		50.0 U		10.1 U		**1660000**		**19500**		16.0 U	
M2A-L	05/09/2007	5.0 U		**35800**		50.0 U		10.1 U		**1710000**		**19900**		16.0 U
M2A-Z	05/09/2007	5.0 U		**34100**		50.0 U		10.1 U		**1620000**		**18600**		16.0 U
M31A	12/06/2006	1 U		**23100**		10 U		2 U		**1710000**		**14700 J-**		3.2 U
M31A-F	05/09/2007		**23400**		50.0 U		10.1 U		**1650000**		**14500**		16.0 U	
M31A-Z	05/09/2007	5.0 U		**23600**		50.0 U		10.1 U		**1650000**		**14800**		16.0 U
M39-Z	05/10/2007	5.0 U		**24200**		50.0 U		10.1 U		**864000**		**14500**		16.0 U
M39-F	05/10/2007		**24500**		50.0 U		10.1 U		**853000**		**14600**		16.0 U	
M39-L	05/10/2007	5.0 U		**24500**		50.0 U		10.1 U		**861000**		**14700**		16.0 U
M39-ZD	05/10/2007	5.0 U		**24700**		50.0 U		10.1 U		**866000**		**14700**		16.0 U
M39-LD	05/10/2007	5.0 U		**24500**		50.0 U		10.1 U		**856000**		**14400**		16.0 U
M39-FD	05/10/2007	5.0 U		**24400**		50.0 U		10.1 U		**856000**		**14500**		16.0 U
M39	12/05/2006	1 U		**24100**		10 U		2 U		**909000**		**15300 J-**		3.2 U
M48	12/06/2006	0.1 U		**7480**		**2.0 J**		0.2 U		**497000**		**6730 J-**		0.32 U
M48-F	05/10/2007		**10100**		20.0 U		4.1 U		**482000**		**6890**		6.4 U	
M48-L	05/10/2007	2.0 U		**9890**		20.0 U		4.1 U		**470000**		**6850**		**9.7 J**
M48-Z	05/10/2007	2.0 U		**9940**		20.0 U		4.1 U		**479000**		**6840**		6.4 U
M55	12/07/2006	1 U		**42300**		10 U		2 U		**1740000**		**14700 J-**		3.2 U
M55D	12/07/2006	1 U		**41400**		10 U		2 U		**1840000**		**16100 J**		3.2 U
M55-F	05/08/2007		**47100**		50.0 U		10.1 U		**1750000**		**15700**		16.0 U	
M55-L	05/08/2007	5.0 U		**48200**		50.0 U		10.1 U		**1760000**		**16000**		16.0 U

Table 4-5
Metals Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Platinum	Potassium	Potassium	Selenium	Selenium	Silver	Silver	Sodium	Sodium	Strontium	Strontium	Thallium	Thallium
	Fraction	T	S	T	S	T	S	T	S	T	S	T	S	T
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date													
M55-Z	05/08/2007	5.0 U		**48100**		50.0 U		10.1 U		**1780000**		**16100**		16.0 U
M5A	12/07/2006	0.1 U		**16300**		1 U		0.2 U		**1970000**		**25800 J-**		0.32 U
M5A-F	05/10/2007		**20200**		100 U		20.3 U		**1780000**		**23300**		32.0 U	
M5A-L	05/10/2007	10.0 U		**19900**		100 U		20.3 U		**1770000**		**23400**		32.0 U
M5A-Z	05/10/2007	10.0 U		**21100**		100 U		20.3 U		**1860000**		**23900**		32.0 U
M76	12/04/2006	2 U		**16600**		20 U		4.1 U		**1040000**		**3420 J-**		6.4 U
M76-F	05/09/2007		**17000**		50.0 U		10.1 U		**1020000**		**3250**		16.0 U	
M76-L	05/09/2007	5.0 U		**17200**		50.0 U		10.1 U		**1030000**		**3320**		16.0 U
M76-Z	05/09/2007	5.0 U		**16900**		50.0 U		10.1 U		**978000**		**3170**		16.0 U
M7B	11/30/2006	2 U		**22800**		20 U		4.1 U		**1400000**		**17200**		6.4 U
M7B-F	05/08/2007		**23300**		50.0 U		10.1 U		**1480000**		**17600**		16.0 U	
M7B-L	05/08/2007	5.0 U		**25100**		50.0 U		10.1 U		**1500000**		**18000**		33.4 U
M7B-Z	05/08/2007	5.0 U		**22500**		50.0 U		10.1 U		**1430000**		**16900**		16.0 U
M89	12/05/2006	1 U		**38900**		10 U		2 U		**2300000**		**21200 J-**		3.2 U
M89-F	05/11/2007		**37200**		100 U		20.3 U		**1970000**		**18900**		32.0 U	
M89-L	05/11/2007	10.0 U		**36800**		100 U		20.3 U		**1980000**		**18700**		32.0 U
M89-Z	05/11/2007	10.0 U		**38200**		100 U		20.3 U		**2050000**		**19800**		32.0 U
M92	11/29/2006	0.1 U		**11400**		**3.0 J**		0.2 U		**306000**		**3090**		0.32 U
M92-F	05/08/2007		**9190**		**1.1 J**		0.20 U		**360000**		**2770**		0.32 U	
M92-L	05/08/2007	0.10 U		**9880**		**1.1 J**		0.20 U		**335000**		**2960**		0.32 U
M92-Z	05/08/2007	0.10 U		**9650**		**2.3 J**		0.20 U		**373000**		**2760**		1.0 U
M95	12/04/2006	2.5 U		**16800**		25 U		5.1 U		**1330000**		**14300 J-**		8 U
M95-F	05/10/2007		**15200**		50.0 U		10.1 U		**1290000**		**12900**		16.0 U	
M95-FD	05/10/2007	5.0 U		**15700**		50.0 U		10.1 U		**1330000**		**14000**		16.0 U
M95-L	05/10/2007	5.0 U		**14900**		50.0 U		10.1 U		**1260000**		**12600**		16.0 U
M95-LD	05/10/2007	5.0 U		**14900**		50.0 U		10.1 U		**1280000**		**13100**		16.0 U
M95-Z	05/10/2007	5.0 U		**15100**		50.0 U		10.1 U		**1270000**		**12900**		16.0 U
M95-ZD	05/10/2007	5.0 U		**15700**		50.0 U		10.1 U		**1330000**		**13300**		16.0 U
M97	11/29/2006	2 U		**17300**		20 U		4.1 U		**623000**		**7620**		6.4 U
M97-F	05/11/2007		**16100**		25.0 U		5.1 U		**596000**		**7270**		8.0 U	
M97-L	05/11/2007	2.5 U		**16000**		25.0 U		5.1 U		**607000**		**7270**		8.0 U
M97-Z	05/11/2007	2.5 U		**15900**		25.0 U		5.1 U		**598000**		**7070**		8.0 U
M98	11/30/2006	2 U		**8110**		20 U		4.1 U		**847000**		**6620**		6.4 U
MC45	12/06/2006	0.1 U		**34300**		**2.3 J**		0.2 U		**3480000**		**9140 J-**		0.40 U
MC45-F	05/07/2007		**37100**		1.0 U		0.20 U		**3560000**		**8020**		0.33 U	
MC45-L	05/07/2007	0.10 U		**37600**		1.0 U		0.20 U		**3570000**		**8070**		0.39 U
MC45-Z	05/07/2007	0.10 U		**38500**		1.0 U		0.20 U		**3420000**		**8330**		0.33 U
PC40	12/01/2006	2.5 U		**29000**		25 U		5.1 U		**3380000**		**14800**		8 U
PC40-F	05/07/2007		**24600**		1.0 U		0.20 U		**3960000**		**12200**		0.32 U	
PC40-L	05/07/2007	0.10 U		**24800**		1.0 U		0.20 U		**3940000**		**12100**		0.32 U
PC40-Z	05/07/2007	0.10 U		**26400**		1.0 U		0.20 U		**3820000**		**13100**		0.32 U
GWSA2	11/06/2006	0.50 U	**7240 J-**	**60500 J-**	**3.5 J**	5.0 U	0.20 U	**1.2 J**	**368000 J**	**305000 J**	**1430 J+**	**2630 J+**	6.4 U	**7.3 J**
GWSA9	11/07/2006	0.10 U	**31100 J-**	**21600 J-**	**1.4 J**	1.0 U	0.20 U	**0.30 J**	**78800 J-**	**3590000 J**	**14100 J**	**7670 J+**	6.4 U	6.4 U
GWSA10	11/07/2006	0.50 U	**14100 J-**	**73500 J-**	**2.9 J**	5.0 U	0.20 U	**1.4 J**	**308000 J**	**289000 J**	**5350 J**	**8110 J+**	6.4 U	**7.7 J**
GWSA14	11/08/2006	0.5 U	**31500 J-**	**151000 J-**	1.0 U	5 U	0.20 U	**3.0 J**	**2350000 J**	**2300000 J**	**27700 J+**	**44500 J+**	6.4 U	32.0 U
GWSA15	11/08/2006	**63.9**	**42200 J-**	**78800 J-**	**1.9 J**	**9.2 J**	0.20 U	**1.7 J**	**2940000 J**	**3180000 J**	**10300 J**	**12900 J**	6.4 U	6.4 U

Table 4-5
Metals Concentrations in Groundwater
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	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Tin	Tin	Titanium	Titanium	Tungsten	Tungsten	Uranium	Uranium	Vanadium	Vanadium	Zinc	Zinc
	Fraction	S	T	S	T	S	T	S	T	S	T	S	T
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date												
IAR_12/01/2006	12/01/2006		4 U		7.8 U		10.0 U		**28.9**		32 U		**492 J-**
IAR-F	05/08/2007	0.20 U		**4.6**		1.0 U		**42.9 J+**		32.0 UJ		**45.6 J-**	
IAR-Z	05/08/2007		0.20 U		4.2 U		0.82 UJ		**37.5 J+**		32.0 U		40.2 UJ
M100	12/04/2006		2 U		**6.0 J**		5 UJ		**22.7**		**207 J-**		25.6 U
M100D	12/04/2006		2 U		3.9 U		5 UJ		**22.2**		**209 J-**		24.0 U
M100-F	05/09/2007	2.0 U		3.9 U		5.0 U		**25.0**		**181**		**25.8 J**	
M100-L	05/09/2007		2.0 U		10.2 U		**8.6 J**		**25.1**		**185**		27.0 U
M100-Z	05/09/2007		2.0 U		6.1 U		**5.5 J**		**25.1**		**163**		25.7 U
M11	12/06/2006		0.2 U		7.8 U		10 UJ		**15.7**		**75.6 J-**		39.7 U
M11D	12/06/2006		0.2 U		7.8 U		10 UJ		**15.5**		**84.0 J-**		59.3 U
M11-F	05/11/2007	10.0 U		19.6 U		**27.7 J**		**14.5 J**		**107 J**		50.0 U	
M11-Z	05/11/2007		10.0 U		19.6 U		25.0 U		**15.0 J**		**121 J**		50.0 U
M120	11/28/2006		**0.87 J**		**1.9 J**		0.50 U		**33.7**		**19.3 J**		7.6 UJ
M120-F	05/04/2007	0.20 U		**3.6**		0.91 U		**42.5 J+**		**11.1 J+**		**3.5 J-**	
M120-L	05/04/2007		0.20 U		**9.1**		0.50 UJ		**43.0 J+**		**10.7**		**2.7 J-**
M120-Z	05/04/2007		0.20 U		**4.7**		0.50 UJ		**43.2 J+**		**9.6 J**		**2.7 J-**
M12A	12/05/2006		**3.6 J**		**43.4 J**		50 UJ		**42.2**		R		101 U
M12A-F	05/11/2007	20.0 U		39.1 U		50.0 U		**37.5 J**		160 UJ		100 U	
M12A-L	05/11/2007		20.0 U		39.1 U		50.0 U		**37.6 J**		160 UJ		100 U
M12A-Z	05/11/2007		20.0 U		39.1 U		50.0 U		**39.4 J**		160 UJ		100 U
M13	12/01/2006		4 U		7.8 U		10.0 U		**23.3**		32 U		68.8 UJ
M13-F	05/09/2007	5.0 U		9.8 U		12.5 U		**24.6 J**		40.0 U		**75.9 J**	
M13-L	05/09/2007		5.0 U		9.8 U		12.5 U		**21.4 J**		40.0 U		**77.9 J**
M13-Z	05/09/2007		5.0 U		9.8 U		12.5 U		**23.8 J**		40.0 U		48.1 U
M29	11/17/2006	0.2 U	**0.34 J**	**6.5 J-**	**216 J-**	5 U	5 U	**241**	**201**	**50.7 J-**	**57.2 J-**	**16.8 J-**	**31.3 J-**
M2A	12/04/2006		5 U		9.8 U		12.5 UJ		**17.2 J**		R		35.6 U
M2A-F	05/09/2007	10.0 U		19.6 U		25.0 U		**19.7 J**		80.0 U		**142 J**	
M2A-L	05/09/2007		10.0 U		**86.8 J**		25.0 U		**20.7 J**		80.0 U		**155 J**
M2A-Z	05/09/2007		10.0 U		19.6 U		25.0 U		**19.0 J**		80.0 U		**146 J**
M31A	12/06/2006		**2.5 J**		72.0 U		50 UJ		**27.1**		R		676 U
M31A-F	05/09/2007	10.0 U		19.6 U		25.0 U		**27.6 J**		80.0 U		**103 J**	
M31A-Z	05/09/2007		10.0 U		**33.6 J**		25.0 U		**28.9 J**		80.0 U		**97.5 J**
M39-Z	05/10/2007		10.0 U		19.6 U		25.0 U		**106**		80.0 UJ		50.0 U
M39-F	05/10/2007	10.0 U		19.6 U		25.0 U		**103**		80.0 UJ		50.0 U	
M39-L	05/10/2007		10.0 U		19.6 U		25.0 U		**104**		80.0 UJ		50.0 U
M39-ZD	05/10/2007		10.0 U		19.6 U		25.0 U		**106**		80.0 UJ		50.0 U
M39-LD	05/10/2007		10.0 U		19.6 U		25.0 U		**101**		80.0 UJ		50.0 U
M39-FD	05/10/2007		10.0 U		19.6 U		25.0 U		**105**		80.0 UJ		50.0 U
M39	12/05/2006		2 U		39.1 U		50 UJ		**103**		R		100 U
M48	12/06/2006		0.2 U		7.8 U		**24.4 J**		**39.4**		**65.3 J-**		20 U
M48-F	05/10/2007	4.0 U		7.8 U		**29.2 J**		**40.6**		**107 J**		20.0 U	
M48-L	05/10/2007		4.0 U		7.8 U		**39.0 J**		**40.7**		**112 J**		**36.9 J**
M48-Z	05/10/2007		4.0 U		7.8 U		**30.5 J**		**40.9**		**99.9 J**		20.0 U
M55	12/07/2006		2 U		39.1 U		50 UJ		**45.3**		R		100 U
M55D	12/07/2006		2 U		39.1 U		50 UJ		**45.3**		R		100 U
M55-F	05/08/2007	10.0 U		19.6 U		25.0 U		**48.8 J+**		80.0 UJ		**87.5 J-**	
M55-L	05/08/2007		10.0 U		19.6 U		25.0 UJ		**49.5 J+**		80.0 UJ		**93.4 J-**

Table 4-5
Metals Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals	Metals
	Analytic Method	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020	SW 846 6020
	Chemical Name	Tin	Tin	Titanium	Titanium	Tungsten	Tungsten	Uranium	Uranium	Vanadium	Vanadium	Zinc	Zinc
	Fraction	S	T	S	T	S	T	S	T	S	T	S	T
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date												
M55-Z	05/08/2007		10.0 U		19.6 U		25.0 UJ		49.1 J+		80.0 UJ		50.0 UJ
M5A	12/07/2006		0.52 J		29.8 U		25 UJ		33.6		R		77.7 U
M5A-F	05/10/2007	20.0 U		39.1 U		50.0 U		45.3 J		160 UJ		100 U	
M5A-L	05/10/2007		20.0 U		39.1 U		50.0 U		47.8 J		160 UJ		100 U
M5A-Z	05/10/2007		20.0 U		39.1 U		50.0 U		46.4 J		160 UJ		100 U
M76	12/04/2006		4 U		8.6 J		10 UJ		11.1 J		R		24.8 U
M76-F	05/09/2007	10.0 U		19.6 U		25.0 U		11.4 J		80.0 U		92.6 J	
M76-L	05/09/2007		10.0 U		19.6 U		25.0 U		11.8 J		80.0 U		538
M76-Z	05/09/2007		10.0 U		19.6 U		25.0 U		11.3 J		80.0 U		96.5 J
M7B	11/30/2006		4 U		10.8 J		50.0 U		43.6		160 U		21.4 UJ
M7B-F	05/08/2007	10.0 U		19.6 U		25.0 U		46.3 J+		80.0 UJ		87.0 J-	
M7B-L	05/08/2007		10.0 U		192		25.4 J		50.6		80.0 UJ		140 J
M7B-Z	05/08/2007		10.0 U		19.6 U		25.0 UJ		44.9 J+		80.0 UJ		86.2 J-
M89	12/05/2006		2 U		39.1 U		50 UJ		27.9		R		105 U
M89-F	05/11/2007	20.0 U		39.1 U		50.0 U		25.9 J		160 UJ		100 U	
M89-L	05/11/2007		20.0 U		39.1 U		50.0 U		25.7 J		160 UJ		100 U
M89-Z	05/11/2007		20.0 U		39.1 U		50.0 U		26.7 J		160 UJ		100 U
M92	11/29/2006		0.2 U		71.8		0.63 J		5.6		36.7 J		17.2 UJ
M92-F	05/08/2007	0.20 U		2.7		0.92 U		8.4 J+		32.0 UJ		3.5 J-	
M92-L	05/08/2007		0.20 U		31.7		0.63 UJ		5.9 J+		24.1		6.6 UJ
M92-Z	05/08/2007		0.23 J		4.9 U		1.8 UJ		8.3 J+		32.0 U		2.0 UJ
M95	12/04/2006		5 U		68.9		12.5 UJ		55.7		62.7 J-		54.0 U
M95-F	05/10/2007	10.0 U		19.6 U		25.0 U		63.6		80.0 UJ		50.0 U	
M95-FD	05/10/2007		10.0 U		19.6 U		25.0 U		67.9		80.0 UJ		50.0 U
M95-L	05/10/2007		10.0 U		19.6 U		25.0 U		61.1		80.0 UJ		50.0 U
M95-LD	05/10/2007		10.0 U		19.6 U		25.0 U		64.8		80.0 UJ		50.0 U
M95-Z	05/10/2007		10.0 U		19.6 U		25.0 U		63.8		80.0 UJ		50.0 U
M95-ZD	05/10/2007		10.0 U		19.6 U		25.0 U		66.8		80.0 UJ		50.0 U
M97	11/29/2006		4 U		22.3 J		10.0 U		34.6		43.0 J		45.2 UJ
M97-F	05/11/2007	5.0 U		9.8 U		12.5 U		34.9		40.0 UJ		25.0 U	
M97-L	05/11/2007		5.0 U		9.8 U		12.5 U		36.1		40.4 J		25.0 U
M97-Z	05/11/2007		5.0 U		9.8 U		12.5 U		36.1		40.0 UJ		25.0 U
M98	11/30/2006		4 U		7.8 U		10.0 U		41.1		133 J		20 UJ
MC45	12/06/2006		5.0		18.0 U		10 UJ		22.7		560 J-		25.6 U
MC45-F	05/07/2007	0.20 U		5.1		4.4 J		36.1 J+		561 J+		3.0 J-	
MC45-L	05/07/2007		0.66 J		5.5 U		4.6 J-		34.7 J+		570		6.0 UJ
MC45-Z	05/07/2007		0.41 J		5.3 U		4.7 J-		34.0 J+		580		4.5 UJ
PC40	12/01/2006		5 U		131		50.0 U		57.7		212 J		36.8 UJ
PC40-F	05/07/2007	0.20 U		5.4		4.1 J		64.0 J+		177 J+		3.4 J-	
PC40-L	05/07/2007		0.35 J		181		4.7 J-		79.5 J+		182		20.4 UJ
PC40-Z	05/07/2007		0.20 U		12.2		4.3 J-		67.3 J+		194		4.0 UJ
GWSA2	11/06/2006	0.20 UJ	6.3 J-	4.6 J	7870 J	6.2 J-	8.4 J-	9.5 J	47.4	54.5 J-	510 J-	20.0 UJ	668 J
GWSA9	11/07/2006	0.20 UJ	0.67 J-	7.1 J	469 J	0.70 J-	0.72 J-	33.7	36.0	12.1 J-	26.4 J-	25.7 UJ	80.7 UJ
GWSA10	11/07/2006	0.20 UJ	5.2 J-	4.8	6090 J	1.2 J-	2.5 UJ	6.2 J	110	20.1 J-	404 J-	20.0 UJ	1400 J
GWSA14	11/08/2006	0.20 UJ	1.6 J-	7.5 J	1260 J	0.68 J-	2.5 UJ	21.3	314	10.6 J-	229 J-	20.0 UJ	3370 J
GWSA15	11/08/2006	0.20 UJ	6.8 J-	5.4 J	5520 J	1.2 J-	2.5 UJ	18.9 J	54.4	8.8 J-	256 J-	20.0 UJ	514 J-

Table 4-5
Metals Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

F	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min) and field filtered.
L	Sample ID suffix indicating the sample was collected using low low-flow pumping rates (100-150 ml/min).
Z	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min).
D	Dissolved Metals
DO	Dissolved Oxygen
T	Total Metals
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 high.
J-	The result is an estimated quantity and the result may be biased low.
ml/min	Milliliters per minute.
nm	Not measured.
NTUs	Nephelometric Turbidity Units.
ORP	Oxidation-reduction potential.
UJ	The analyte was not detected above the laboratory method detection limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory method detection limit.
R	The result was rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
ug/L	Micrograms per liter.
Blank	Not analyzed.
Bold	Bold values are constituents detected above the laboratory method detection limit.
Gray	Grayed out values are non-detected values with the laboratory method detection limits shown.

Table 4-6
Organochlorine Pesticide (OCP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide
	Analytic Method	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081
	Chemical Name	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-BHC	Alpha-chlordane	Beta-BHC	Delta-BHC	Dieldrin
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date									
SA1-0.5	11/03/2006	0.0018 U	**0.018**	**0.018**	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA2-0.5	11/03/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA2-20	11/03/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA2-30	11/06/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA3-0.5	11/13/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA3-0.5D	11/13/2006	0.0018 U	**0.0020**	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA4-0.5	11/14/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	**0.0036**	0.0019 U	0.0019 U
SA5-0.5	11/14/2006	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	**0.0035**	0.0022 U	0.0022 U
SA6-0.5	11/14/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA6-0.5D	11/14/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA7-0.5	11/20/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA8-0.5	11/17/2006	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
SA9-0.5	11/06/2006	**0.027 J+**	**0.62 J+**	**0.14 J+**	0.0020 U	0.0020 U	0.0020 U	**1.3 J+**	0.0020 U	0.0020 U
SA10-0.5	11/07/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA11-0.5	11/09/2006	0.0018 UJ	**0.012 J+**	0.0018 UJ	0.0018 UJ	0.0018 UJ	0.0018 UJ	**0.030 J+**	0.0018 UJ	0.0018 UJ
SA11-0.5D	11/09/2006	0.0019 U	0.0019 UJ	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 UJ	0.0019 U	0.0019 U
SA12-0.5	11/10/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	**0.0028**	0.0019 U	0.0019 U
SA13-0.5	11/17/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA13-0.5D	11/17/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA14-0.5	11/08/2006	**0.0069 J**	**0.46**	**0.66**	0.0019 U	0.0019 U	0.0019 U	**0.083**	0.0019 U	0.0019 U
SA15-0.5	11/08/2006	0.0020 U	0.0020 UJ	0.0020 UJ	0.0020 U	0.0020 U	0.0020 U	**0.0030**	0.0020 U	0.0020 U
SA15-10	11/08/2006	0.020 U	**0.065 J**	**0.052 J**	0.020 U	0.020 U	0.020 U	**0.052**	0.020 U	0.020 U
SA16-0.5	11/09/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	**0.0041**	0.0018 U	0.0018 U
SA17-0.5	11/15/2006	0.0020 U	**0.014**	**0.0068**	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA17-0.5D	11/15/2006	0.0020 U	**0.015**	**0.0083**	0.0020 U	0.0020 U	0.0020 U	**0.0026**	0.0020 U	0.0020 U
SA18-0.5	11/15/2006	0.0019 U	0.0019 U	**0.0021**	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA18-0.5D	11/15/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA19-0.5	11/16/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA20-0.5	11/16/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	**0.029 J**	0.0019 U	0.0019 U
SA20-0.5D	11/16/2006	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	**0.032**	0.021 U	0.021 U
SA21-0.5	11/15/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA22-0.5	11/16/2006	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	**0.0088 J**	0.0022 U	0.0022 U
SA23-0.5	11/09/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA24-0.5	11/03/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA25-0.5	11/03/2006	0.0019 U	**0.015 J+**	**0.010 J+**	0.0019 U	0.0019 U	0.0019 U	**0.0044 J+**	0.0019 U	0.0019 U
SA26-0.5	11/20/2006	0.0018 U	0.0018 U	0.0018 UJ	0.0018 U	0.0018 U	0.0018 U	**0.0041 J**	0.0018 U	0.0018 U
SA26-0.5D	11/20/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 UJ	0.0019 U	0.0019 U
SA27-0.5	11/02/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U

Table 4-6
Organochlorine Pesticide (OCP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide
	Analytic Method	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081
	Chemical Name	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	Gamma-BHC (Lindane)
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA2-0.5	11/03/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA2-20	11/03/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA2-30	11/06/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA3-0.5	11/13/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA3-0.5D	11/13/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA4-0.5	11/14/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA5-0.5	11/14/2006	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
SA6-0.5	11/14/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA6-0.5D	11/14/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA7-0.5	11/20/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA8-0.5	11/17/2006	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
SA9-0.5	11/06/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	**0.017 J+**	0.0020 U	0.0020 U
SA10-0.5	11/07/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA11-0.5	11/09/2006	0.0018 UJ	0.0018 UJ	0.0018 UJ	0.0018 UJ	0.0018 UJ	0.0018 UJ	0.0018 UJ
SA11-0.5D	11/09/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA12-0.5	11/10/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA13-0.5	11/17/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA13-0.5D	11/17/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA14-0.5	11/08/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	**0.038 J**	0.0019 U	0.0019 U
SA15-0.5	11/08/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA15-10	11/08/2006	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
SA16-0.5	11/09/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA17-0.5	11/15/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA17-0.5D	11/15/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA18-0.5	11/15/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA18-0.5D	11/15/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA19-0.5	11/16/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA20-0.5	11/16/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA20-0.5D	11/16/2006	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
SA21-0.5	11/15/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
SA22-0.5	11/16/2006	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
SA23-0.5	11/09/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA24-0.5	11/03/2006	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U
SA25-0.5	11/03/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA26-0.5	11/20/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 UJ	0.0018 U
SA26-0.5D	11/20/2006	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
SA27-0.5	11/02/2006	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U

Table 4-6
Organochlorine Pesticide (OCP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide
	Analytic Method	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081
	Chemical Name	Gamma-Chlordane	Heptachlor	Heptachlor Epoxide	Methoxychlor	Tech-Chlordane	Toxaphene
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date						
SA1-0.5	11/03/2006	0.0018 U	0.0018 U	0.0018 U	**0.013**	0.011 U	0.053 U
SA2-0.5	11/03/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 U	0.011 U	0.053 U
SA2-20	11/03/2006	0.0020 U	0.0020 U	0.0020 U	0.0039 U	0.012 U	0.059 U
SA2-30	11/06/2006	0.0020 U	0.0020 U	0.0020 U	0.0039 U	0.012 U	0.059 U
SA3-0.5	11/13/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 UJ	0.011 U	0.053 U
SA3-0.5D	11/13/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 UJ	0.011 U	0.053 U
SA4-0.5	11/14/2006	0.0019 U	0.0019 U	0.0019 U	**0.0048**	0.011 U	0.055 U
SA5-0.5	11/14/2006	0.0022 U	0.0022 U	0.0022 U	0.0043 UJ	0.013 U	0.065 U
SA6-0.5	11/14/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 UJ	0.011 U	0.053 U
SA6-0.5D	11/14/2006	0.0020 U	R	0.0020 U	0.0038 UJ	0.012 U	0.058 U
SA7-0.5	11/20/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 UJ	0.011 U	0.053 U
SA8-0.5	11/17/2006	0.018 U	0.018 U	0.018 U	0.035 U	0.11 U	0.53 U
SA9-0.5	11/06/2006	0.0020 U	0.0020 U	0.0020 U	0.0040 U	0.012 U	0.060 U
SA10-0.5	11/07/2006	0.0019 U	0.0019 U	0.0019 U	0.0037 U	0.011 U	0.056 U
SA11-0.5	11/09/2006	0.0018 UJ	0.0018 UJ	0.0018 UJ	0.0036 UJ	0.011 UJ	0.054 UJ
SA11-0.5D	11/09/2006	0.0019 U	0.0019 U	0.0019 U	0.0038 U	0.011 U	0.057 U
SA12-0.5	11/10/2006	0.0019 U	0.0019 U	0.0019 U	0.0037 U	0.011 U	0.056 U
SA13-0.5	11/17/2006	0.0020 U	0.0020 U	0.0020 U	0.0038 U	0.012 U	0.058 U
SA13-0.5D	11/17/2006	0.0019 U	0.0019 U	0.0019 U	**0.0076**	0.011 U	0.055 U
SA14-0.5	11/08/2006	0.0019 U	0.0019 U	0.0019 U	0.0036 U	0.011 U	0.055 U
SA15-0.5	11/08/2006	0.0020 U	0.0020 U	0.0020 U	0.0038 U	0.012 U	0.058 U
SA15-10	11/08/2006	0.020 U	0.020 U	0.020 U	0.039 U	0.12 U	0.59 U
SA16-0.5	11/09/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 U	0.011 U	0.053 U
SA17-0.5	11/15/2006	0.0020 U	0.0020 U	0.0020 U	**0.045 J**	0.012 U	0.059 U
SA17-0.5D	11/15/2006	0.0020 U	0.0020 U	0.0020 U	**0.055 J**	0.012 U	0.058 U
SA18-0.5	11/15/2006	0.0019 U	0.0019 U	0.0019 U	0.0036 UJ	0.011 U	0.055 U
SA18-0.5D	11/15/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 UJ	0.011 U	0.053 U
SA19-0.5	11/16/2006	0.0019 U	0.0019 U	0.0019 U	0.0036 U	0.011 U	0.055 U
SA20-0.5	11/16/2006	0.0019 U	0.0019 U	0.0019 U	0.0037 U	0.011 U	0.056 U
SA20-0.5D	11/16/2006	0.021 U	0.021 U	0.021 U	0.041 U	0.12 U	0.62 U
SA21-0.5	11/15/2006	0.0018 U	0.0018 U	0.0018 U	0.0034 UJ	0.010 U	0.052 U
SA22-0.5	11/16/2006	0.0022 U	0.0022 U	0.0022 U	0.0042 UJ	0.013 U	0.063 U
SA23-0.5	11/09/2006	0.0020 U	0.0020 U	0.0020 U	0.0038 U	0.012 U	0.058 U
SA24-0.5	11/03/2006	0.0020 U	0.0020 U	0.0020 U	0.0038 U	0.012 U	0.058 U
SA25-0.5	11/03/2006	0.0019 U	0.0019 U	0.0019 U	0.0037 U	0.011 U	0.056 U
SA26-0.5	11/20/2006	0.0018 U	0.0018 U	0.0018 U	0.0036 UJ	0.011 U	0.054 U
SA26-0.5D	11/20/2006	0.0019 U	0.0019 U	0.0019 U	0.0036 UJ	0.011 U	0.055 U
SA27-0.5	11/02/2006	0.0018 U	0.0018 U	0.0018 U	0.0035 U	0.010 U	0.052 U

Table 4-6
Organochlorine Pesticide (OCP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
R	The result was rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
mg/kg	Milligrams per kilogram.
Bold	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.

Table 4-7
Organochlorine Pesticide (OCP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide
	Analytic Method	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081
	Chemical Name	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-BHC	Alpha-chlordane	Beta-BHC	Delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan Sulfate
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date												
IAR_12/01/2006	12/01/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M100	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.082**	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M100D	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.087**	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M11	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M11D	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M120	11/28/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M12A	12/05/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M13	12/01/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M29	11/17/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M2A	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M31A	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M39	12/05/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M48	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.20**	0.050 U	0.050 U	**0.09 J**	0.050 U	0.050 U	0.050 U	0.050 U
M55	12/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M55D	12/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M5A	12/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	**1.8 J+**	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M76	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M7B	11/30/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	**0.078**	0.050 U	0.050 U	0.050 U	0.050 U
M89	12/05/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M92	11/29/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M95	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.081**	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M97	11/29/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
M98	11/30/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
MC45	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.79**	0.050 U	**10 J-**	**0.98**	0.050 U	0.050 U	0.050 U	0.050 U
PC40	12/01/2006	0.050 U	0.050 U	0.050 U	0.050 U	**3.1**	0.050 U	0.050 U	**2.0**	0.050 U	0.050 U	0.050 U	0.050 U
GWSA2	11/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
GWSA9	11/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.11 J**	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
GWSA10	11/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
GWSA14	11/08/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.13**	0.050 U	**0.14**	**0.11 J**	0.050 U	0.050 U	0.050 U	0.050 U
GWSA15	11/08/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U

Table 4-7
Organochlorine Pesticide (OCP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide	Pesticide
	Analytic Method	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081	SW 846 8081
	Chemical Name	Endrin	Endrin Aldehyde	Endrin Ketone	Gamma-BHC (Lindane)	Gamma-Chlordane	Heptachlor	Heptachlor Epoxide	Methoxychlor	Tech-Chlordane	Toxaphene
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date										
IAR_12/01/2006	12/01/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M100	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M100D	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M11	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M11D	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M120	11/28/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M12A	12/05/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M13	12/01/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M29	11/17/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M2A	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M31A	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M39	12/05/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M48	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M55	12/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M55D	12/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M5A	12/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	**0.41 J+**	0.050 U	**0.12 J+**	0.50 U	2.0 U
M76	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M7B	11/30/2006	0.050 U	0.050 U	0.050 U	**0.20**	0.050 U	**0.25 J**	0.050 U	0.10 U	0.50 U	2.0 U
M89	12/05/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M92	11/29/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M95	12/04/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M97	11/29/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
M98	11/30/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.17 J**	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
MC45	12/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
PC40	12/01/2006	0.050 U	0.050 U	0.050 U	**0.57 J**	0.050 U	0.050 U	0.050 U	0.10 U	0.50 U	2.0 U
GWSA2	11/06/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 UJ	0.50 U	2.0 U
GWSA9	11/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	**0.10**	**0.061**	0.050 U	0.10 UJ	0.50 U	2.0 U
GWSA10	11/07/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 UJ	0.50 U	2.0 U
GWSA14	11/08/2006	0.050 U	0.050 U	0.050 U	**0.097**	0.050 U	0.050 U	0.050 U	0.10 UJ	0.50 U	2.0 U
GWSA15	11/08/2006	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.10 UJ	0.50 U	2.0 U

Table 4-7
Organochlorine Pesticide (OCP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
J-	The result is an estimated quantity and the result may be biased low.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
ug/L	Micrograms per liter.
Bold	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.

Table 4-8
Organophosphorus Pesticide (OPP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides
	Analytic Method	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A
	Chemical Name	Azinphos-methyl	Bolstar	Chlorpyrifos	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
SA1-0.5	11/03/2006	0.014 U	0.014 U	0.021 U	0.014 U	0.041 UJ	0.016 UJ	0.023 UJ	0.024 U	0.023 U	0.051 U	0.014 UJ
SA2-0.5	11/03/2006	0.014 U	0.014 U	0.021 U	0.014 U	0.041 UJ	0.016 UJ	0.023 UJ	0.024 U	0.023 U	0.051 U	0.014 UJ
SA3-0.5	11/13/2006	0.014 U	0.014 U	0.021 U	0.014 U	0.042 U	0.016 U	0.024 U	0.025 U	0.024 U	0.051 U	0.014 UJ
SA3-0.5D	11/13/2006	0.014 U	0.014 U	0.021 U	0.014 U	0.042 U	0.016 U	0.023 U	0.025 U	0.023 U	0.051 U	0.014 UJ
SA4-0.5	11/14/2006	0.014 UJ	0.014 U	0.022 U	0.014 UJ	0.043 U	0.016 U	0.024 U	0.025 U	0.024 U	0.053 U	0.014 U
SA5-0.5	11/14/2006	0.017 UJ	0.017 U	0.026 U	0.017 UJ	0.050 U	0.019 U	0.028 U	0.030 U	**0.013 J**	0.062 U	0.017 U
SA6-0.5	11/14/2006	0.014 UJ	0.014 U	0.021 U	0.014 UJ	0.041 U	0.016 U	0.023 U	0.024 U	**0.011 J**	0.051 U	0.014 UJ
SA6-0.5D	11/14/2006	0.015 UJ	0.015 U	0.023 U	0.015 UJ	0.045 U	0.017 U	0.026 U	0.027 U	**0.012 J**	0.056 U	0.015 U
SA7-0.5	11/20/2006	0.014 U	0.014 U	0.021 U	0.014 UJ	0.041 U	0.016 U	0.023 U	0.024 U	0.023 U	0.051 U	0.014 U
SA8-0.5	11/17/2006	0.014 U	0.014 U	0.021 U	0.014 UJ	0.041 U	0.016 U	0.023 U	0.024 U	0.023 U	0.050 U	0.014 U
SA9-0.5	11/06/2006	0.016 U	0.016 U	0.024 U	0.016 U	0.047 UJ	0.018 UJ	0.026 UJ	0.028 U	0.026 U	0.058 U	0.016 UJ
SA10-0.5	11/07/2006	0.014 U	0.014 U	0.022 U	0.014 U	0.043 UJ	0.017 UJ	0.024 UJ	0.026 U	0.024 U	0.053 U	0.014 UJ
SA11-0.5	11/09/2006	0.014 UJ	0.014 UJ	0.022 UJ	0.014 UJ	0.042 UJ	0.016 UJ	0.024 UJ	0.025 UJ	0.024 UJ	0.052 UJ	0.014 UJ
SA11-0.5D	11/09/2006	0.015 UJ	0.015 U	0.023 U	0.015 U	0.044 U	0.017 U	0.025 U	0.026 U	0.025 U	0.055 U	0.015 U
SA12-0.5	11/10/2006	0.014 U	0.014 U	0.022 U	0.014 U	0.043 U	0.017 U	0.024 U	0.026 U	0.024 U	0.053 U	0.014 UJ
SA13-0.5	11/17/2006	0.015 UJ	0.015 UJ	0.023 UJ	0.015 UJ	0.045 UJ	0.017 UJ	0.026 UJ	0.027 UJ	0.026 UJ	0.056 UJ	0.015 UJ
SA13-0.5D	11/17/2006	0.014 U	0.014 U	0.022 U	0.014 UJ	0.043 U	0.017 U	0.024 U	0.025 U	0.024 U	0.053 U	0.014 U
SA14-0.5	11/08/2006	0.014 U	0.014 U	0.022 U	0.014 U	0.043 U	0.016 U	0.024 U	0.025 U	0.024 U	0.053 U	0.014 UJ
SA14-10	11/08/2006	0.015 UJ	0.015 U	0.023 U	0.015 U	0.044 U	0.017 U	0.025 U	0.026 U	0.025 U	0.054 U	0.015 U
SA15-0.5	11/08/2006	0.015 UJ	0.015 U	0.023 U	0.015 U	0.045 U	0.017 U	0.025 U	0.027 U	0.025 U	0.055 U	0.015 U
SA16-0.5	11/09/2006	0.014 UJ	0.014 UJ	0.021 UJ	0.014 UJ	0.042 UJ	0.016 UJ	0.023 UJ	0.025 UJ	0.023 UJ	0.051 UJ	0.014 UJ
SA17-0.5	11/15/2006	0.015 UJ	0.015 U	0.023 UJ	0.015 UJ	0.046 UJ	0.018 UJ	0.026 U	0.027 U	0.026 UJ	0.056 U	0.015 U
SA17-0.5D	11/15/2006	0.015 UJ	0.015 U	0.023 UJ	0.015 UJ	**0.092 J**	0.017 UJ	0.025 U	0.027 U	0.025 UJ	0.055 U	0.015 U
SA18-0.5	11/15/2006	0.014 UJ	0.014 U	0.022 UJ	0.014 UJ	0.043 U	0.016 UJ	0.024 U	0.025 U	0.024 UJ	0.052 U	0.014 U
SA18-0.5D	11/15/2006	0.014 UJ	0.014 U	0.021 UJ	0.014 UJ	0.041 U	0.016 UJ	0.023 U	0.024 U	0.023 UJ	0.050 U	0.014 U
SA19-0.5	11/16/2006	0.014 UJ	0.014 U	0.022 U	0.014 UJ	0.043 U	0.017 U	0.024 U	0.025 U	0.024 UJ	0.053 U	0.014 UJ
SA20-0.5	11/16/2006	0.014 U	0.014 U	0.022 U	0.014 U	0.043 U	0.017 U	0.024 U	0.026 U	0.024 U	0.053 U	0.014 U
SA20-0.5D	11/16/2006	0.016 UJ	0.016 U	0.025 U	0.016 UJ	0.048 U	0.019 U	0.027 U	0.029 U	0.027 UJ	0.060 U	0.016 UJ
SA21-0.5	11/15/2006	0.014 UJ	0.014 U	0.021 UJ	0.014 UJ	0.041 U	0.016 UJ	0.023 U	0.024 U	0.023 UJ	0.050 U	0.014 U
SA22-0.5	11/16/2006	0.016 UJ	0.016 U	0.025 U	0.016 UJ	0.049 U	0.019 U	0.028 U	0.029 U	0.028 UJ	0.061 U	0.016 UJ
SA23-0.5	11/09/2006	0.015 U	0.015 U	0.023 U	0.015 U	0.045 U	0.017 U	0.026 U	0.027 U	0.026 U	0.056 U	0.015 UJ
SA24-0.5	11/03/2006	0.015 U	0.015 U	0.023 U	0.015 U	0.045 UJ	0.017 UJ	0.025 UJ	0.027 U	0.025 U	0.055 U	0.015 UJ
SA25-0.5	11/03/2006	0.015 U	0.015 U	0.023 U	0.015 U	0.044 UJ	0.017 UJ	0.025 UJ	0.026 U	0.025 U	0.054 U	0.015 UJ
SA26-0.5	11/20/2006	0.014 UJ	0.014 UJ	0.022 UJ	0.014 UJ	0.042 UJ	0.016 UJ	0.024 UJ	0.025 UJ	0.024 UJ	0.052 UJ	0.014 UJ
SA26-0.5D	11/20/2006	0.014 U	0.014 U	0.022 U	0.014 U	0.043 U	0.016 U	0.024 U	0.025 U	0.024 U	0.053 U	0.014 U
SA27-0.5	11/02/2006	0.014 U	0.014 U	0.021 U	0.014 U	0.041 UJ	0.016 UJ	0.023 UJ	0.024 U	0.023 U	0.050 U	0.014 UJ

Table 4-8
Organophosphorus Pesticide (OPP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides
	Analytic Method	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A
	Chemical Name	Ethoprop	Ethyl Parathion	Famphur	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos	Naled	Phorate
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date											
SA1-0.5	11/03/2006	0.016 U	0.019 U	0.014 U	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA2-0.5	11/03/2006	0.016 U	0.019 U	0.014 U	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA3-0.5	11/13/2006	0.016 U	0.019 UJ	0.014 U	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA3-0.5D	11/13/2006	0.016 U	0.019 UJ	0.014 U	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA4-0.5	11/14/2006	0.016 U	0.020 U	0.014 UJ	0.014 U	0.036 U	0.016 U	0.033 U	0.022 U	0.016 U	0.036 UJ	0.022 U
SA5-0.5	11/14/2006	0.019 U	0.023 U	0.017 UJ	0.017 U	0.043 U	0.019 U	0.039 U	0.026 U	0.019 U	0.043 UJ	0.026 U
SA6-0.5	11/14/2006	0.016 U	0.019 U	0.014 UJ	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA6-0.5D	11/14/2006	0.017 U	0.021 U	0.015 UJ	0.015 U	0.038 U	0.017 U	0.035 U	0.023 U	0.017 U	0.038 UJ	0.023 U
SA7-0.5	11/20/2006	0.016 U	0.019 U	0.014 U	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA8-0.5	11/17/2006	0.016 U	0.019 U	0.014 U	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA9-0.5	11/06/2006	0.018 U	0.022 U	0.016 U	0.016 U	0.040 U	0.018 U	0.036 U	0.024 U	0.018 U	0.040 UJ	0.024 U
SA10-0.5	11/07/2006	0.017 U	0.020 U	0.014 U	0.014 U	0.037 U	0.017 U	0.033 U	0.022 U	0.017 U	0.037 UJ	0.022 U
SA11-0.5	11/09/2006	0.016 UJ	0.019 UJ	0.014 UJ	0.014 UJ	0.036 UJ	0.016 UJ	0.032 UJ	0.022 UJ	0.016 UJ	0.036 UJ	0.022 UJ
SA11-0.5D	11/09/2006	0.017 U	0.020 U	0.015 U	0.015 U	0.038 U	0.017 U	0.034 U	0.023 U	0.017 U	0.038 UJ	0.023 U
SA12-0.5	11/10/2006	0.017 U	0.020 UJ	0.014 U	0.014 U	0.037 U	0.017 U	0.033 U	0.022 U	0.017 U	0.037 UJ	0.022 U
SA13-0.5	11/17/2006	0.017 UJ	0.021 UJ	0.015 UJ	0.015 UJ	0.038 UJ	0.017 UJ	0.035 UJ	0.023 UJ	0.017 UJ	0.038 UJ	0.023 UJ
SA13-0.5D	11/17/2006	0.017 U	0.020 U	0.014 U	0.014 U	0.037 U	0.017 U	0.033 U	0.022 U	0.017 U	0.037 UJ	0.022 U
SA14-0.5	11/08/2006	0.016 U	0.020 UJ	0.014 U	0.014 U	0.036 U	0.016 U	0.033 U	0.022 U	0.016 U	0.036 UJ	0.022 U
SA14-10	11/08/2006	0.017 U	0.020 U	0.015 U	0.015 U	0.037 U	0.017 U	0.034 U	0.023 U	0.017 U	0.037 UJ	0.023 U
SA15-0.5	11/08/2006	0.017 U	0.021 U	0.015 U	0.015 U	0.038 U	0.017 U	0.035 U	0.023 U	0.017 U	0.038 UJ	0.023 U
SA16-0.5	11/09/2006	0.016 UJ	0.019 UJ	0.014 UJ	0.014 UJ	0.035 UJ	0.016 UJ	0.032 UJ	0.021 UJ	0.016 UJ	0.035 UJ	0.021 UJ
SA17-0.5	11/15/2006	0.018 U	0.021 U	0.015 UJ	0.015 U	0.039 U	0.018 U	0.035 U	0.023 U	0.018 U	0.039 UJ	0.023 U
SA17-0.5D	11/15/2006	0.017 U	0.021 U	0.015 UJ	0.015 U	0.038 U	0.017 U	0.035 U	0.023 U	0.017 U	0.038 UJ	0.023 U
SA18-0.5	11/15/2006	0.016 U	0.020 U	0.014 UJ	0.014 U	0.036 U	0.016 U	0.033 U	0.022 U	0.016 U	0.036 UJ	0.022 U
SA18-0.5D	11/15/2006	0.016 U	0.019 U	0.014 UJ	0.014 U	0.035 U	0.016 U	0.032 U	0.021 U	0.016 U	0.035 UJ	0.021 U
SA19-0.5	11/16/2006	0.017 U	0.020 U	0.014 UJ	0.014 U	0.036 U	0.017 U	0.033 U	0.022 U	0.017 U	0.036 UJ	0.022 U
SA20-0.5	11/16/2006	0.017 U	0.020 U	0.014 U	0.014 U	0.037 U	0.017 U	0.033 U	0.022 U	0.017 U	0.037 U	0.022 U
SA20-0.5D	11/16/2006	0.019 U	0.022 U	0.016 UJ	0.016 U	0.041 U	0.019 U	0.037 U	0.025 U	0.019 U	0.041 UJ	0.025 U
SA21-0.5	11/15/2006	0.016 U	0.019 U	0.014 UJ	0.014 U	0.034 U	0.016 U	0.031 U	0.021 U	0.016 U	0.034 UJ	0.021 U
SA22-0.5	11/16/2006	0.019 U	0.023 U	0.016 UJ	0.016 U	0.042 U	0.019 U	0.038 U	0.025 U	0.019 U	0.042 UJ	0.025 U
SA23-0.5	11/09/2006	0.017 U	0.021 UJ	0.015 U	0.015 U	0.038 U	0.017 U	0.035 U	0.023 U	0.017 U	0.038 UJ	0.023 U
SA24-0.5	11/03/2006	0.017 U	0.021 U	0.015 U	0.015 U	0.038 U	0.017 U	0.035 U	0.023 U	0.017 U	0.038 UJ	0.023 U
SA25-0.5	11/03/2006	0.017 U	0.020 U	0.015 U	0.015 U	0.037 U	0.017 U	0.034 U	0.023 U	0.017 U	0.037 UJ	0.023 U
SA26-0.5	11/20/2006	0.016 UJ	0.019 UJ	0.014 UJ	0.014 UJ	0.036 UJ	0.016 UJ	0.032 UJ	0.022 UJ	0.016 UJ	0.036 UJ	0.022 UJ
SA26-0.5D	11/20/2006	0.016 U	0.020 U	0.014 U	0.014 U	0.036 U	0.016 U	0.033 U	0.022 U	0.016 U	0.036 UJ	0.022 U
SA27-0.5	11/02/2006	0.016 U	0.019 U	0.014 U	0.014 U	0.035 U	0.016 U	0.031 U	0.021 U	0.016 U	0.035 UJ	0.021 U

Table 4-8
Organophosphorus Pesticide (OPP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides
	Analytic Method	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A
	Chemical Name	Ronnel	Stirphos	Sulfotep	Thionazin	Tokuthion	Trichloronate
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date						
SA1-0.5	11/03/2006	0.019 UJ	0.016 U	0.021 U	0.019 U	0.021 U	0.021 U
SA2-0.5	11/03/2006	0.019 UJ	0.016 U	0.021 U	0.019 U	0.021 U	0.021 U
SA3-0.5	11/13/2006	0.019 U	0.016 U	0.021 U	0.019 U	0.021 U	0.021 U
SA3-0.5D	11/13/2006	0.019 U	0.016 U	0.021 U	0.019 U	0.021 U	0.021 U
SA4-0.5	11/14/2006	0.020 U	0.016 UJ	0.022 U	0.020 U	0.022 U	0.022 U
SA5-0.5	11/14/2006	0.023 U	0.019 UJ	0.026 U	0.023 U	0.026 U	0.026 U
SA6-0.5	11/14/2006	0.019 UJ	0.016 UJ	0.021 U	0.019 U	0.021 U	0.021 U
SA6-0.5D	11/14/2006	0.021 U	0.017 UJ	0.023 U	0.021 U	0.023 U	0.023 U
SA7-0.5	11/20/2006	0.019 U	0.016 U	0.021 U	0.019 U	0.021 UJ	0.021 U
SA8-0.5	11/17/2006	0.019 U	0.016 U	0.021 U	0.019 U	0.021 UJ	0.021 U
SA9-0.5	11/06/2006	0.022 UJ	0.018 U	0.024 U	0.022 U	0.024 U	0.024 U
SA10-0.5	11/07/2006	0.020 UJ	0.017 U	0.022 U	0.020 U	0.022 U	0.022 U
SA11-0.5	11/09/2006	0.019 UJ	0.016 UJ	0.022 UJ	0.019 UJ	0.022 UJ	0.022 UJ
SA11-0.5D	11/09/2006	0.020 UJ	0.017 UJ	0.023 U	0.020 U	0.023 U	0.023 U
SA12-0.5	11/10/2006	0.020 U	0.017 U	0.022 U	0.020 U	0.022 U	0.022 U
SA13-0.5	11/17/2006	0.021 UJ	0.017 UJ	0.023 UJ	0.021 UJ	0.023 UJ	0.023 UJ
SA13-0.5D	11/17/2006	0.020 U	0.017 U	0.022 U	0.020 U	0.022 UJ	0.022 U
SA14-0.5	11/08/2006	0.020 U	0.016 U	0.022 U	0.020 U	0.022 U	0.022 U
SA14-10	11/08/2006	0.020 UJ	0.017 U	0.023 U	0.020 U	0.023 U	0.023 U
SA15-0.5	11/08/2006	0.021 UJ	0.017 UJ	0.023 U	0.021 U	0.023 U	0.023 U
SA16-0.5	11/09/2006	0.019 UJ	0.016 UJ	0.021 UJ	0.019 UJ	0.021 UJ	0.021 UJ
SA17-0.5	11/15/2006	0.021 UJ	0.018 UJ	0.023 U	0.021 U	0.023 U	0.023 UJ
SA17-0.5D	11/15/2006	0.021 UJ	0.017 UJ	0.023 U	0.021 U	0.023 U	0.023 UJ
SA18-0.5	11/15/2006	0.020 UJ	0.016 UJ	0.022 U	0.020 U	0.022 U	0.022 UJ
SA18-0.5D	11/15/2006	0.019 UJ	0.016 UJ	0.021 U	0.019 U	0.021 U	0.021 UJ
SA19-0.5	11/16/2006	0.020 UJ	0.017 UJ	0.022 U	0.020 U	0.022 U	0.022 U
SA20-0.5	11/16/2006	0.020 U	0.017 U	0.022 U	0.020 U	0.022 U	0.022 U
SA20-0.5D	11/16/2006	0.022 UJ	0.019 UJ	0.025 U	0.022 U	0.025 U	0.025 U
SA21-0.5	11/15/2006	0.019 UJ	0.016 UJ	0.021 U	0.019 U	0.021 U	0.021 UJ
SA22-0.5	11/16/2006	0.023 UJ	0.019 UJ	0.025 U	0.023 U	0.025 U	0.025 U
SA23-0.5	11/09/2006	0.021 U	0.017 U	0.023 U	0.021 U	0.023 U	0.023 U
SA24-0.5	11/03/2006	0.021 UJ	0.017 U	0.023 U	0.021 U	0.023 U	0.023 U
SA25-0.5	11/03/2006	0.020 UJ	0.017 U	0.023 U	0.020 U	0.023 U	0.023 U
SA26-0.5	11/20/2006	0.019 UJ	0.016 UJ	0.022 UJ	0.019 UJ	0.022 UJ	0.022 UJ
SA26-0.5D	11/20/2006	0.020 U	0.016 U	0.022 U	0.020 U	0.022 U	0.022 U
SA27-0.5	11/02/2006	0.019 UJ	0.016 U	0.021 U	0.019 U	0.021 U	0.021 U

Table 4-8
Organophosphorus Pesticide (OPP) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
mg/kg	Milligrams per kilogram.
Bold	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.

Table 4-9
Organophosphorus Pesticide (OPP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides
	Analytic Method	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A
	Chemical Name	Azinphos-methyl	Bolstar	Chlorpyrifos	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date										
IAR_12/01/2006	12/01/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M100	12/04/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M100D	12/04/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M11	12/06/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M11D	12/06/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M120	11/28/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M12A	12/05/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M13	12/01/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M29	11/17/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M2A	12/04/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M31A	12/06/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M39	12/05/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M48	12/06/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M55	12/07/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M55D	12/07/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M5A	12/07/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M76	12/04/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 UJ	0.50 U
M7B	11/30/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M89	12/05/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M92	11/29/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M95	12/04/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
M97	11/29/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
M98	11/30/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
MC45	12/06/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
PC40	12/01/2006	2.5 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
GWSA2	11/06/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.50 U
GWSA9	11/07/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	0.50 U
GWSA10	11/07/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	0.50 U
GWSA14	11/08/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U
GWSA15	11/08/2006	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 U

Table 4-9
Organophosphorus Pesticide (OPP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides
	Analytic Method	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A
	Chemical Name	EPN	Ethoprop	Ethyl Parathion	Famphur	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date										
IAR_12/01/2006	12/01/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M100	12/04/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M100D	12/04/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M11	12/06/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M11D	12/06/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M120	11/28/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M12A	12/05/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M13	12/01/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M29	11/17/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M2A	12/04/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M31A	12/06/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M39	12/05/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M48	12/06/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M55	12/07/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M55D	12/07/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M5A	12/07/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M76	12/04/2006	1.2 UJ	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M7B	11/30/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M89	12/05/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M92	11/29/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M95	12/04/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M97	11/29/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
M98	11/30/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
MC45	12/06/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
PC40	12/01/2006	1.2 U	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
GWSA2	11/06/2006	1.2 UJ	0.50 U	1.0 U	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
GWSA9	11/07/2006	1.2 UJ	0.50 U	1.0 U	1.0 U	2.5 UJ	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
GWSA10	11/07/2006	1.2 UJ	0.50 U	1.0 U	1.0 U	2.5 UJ	2.5 U	1.2 U	5.0 U	4.0 U	6.2 U
GWSA14	11/08/2006	1.2 UJ	0.50 U	1.0 UJ	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 UJ	6.2 U
GWSA15	11/08/2006	1.2 UJ	0.50 U	1.0 UJ	1.0 U	2.5 U	2.5 U	1.2 U	5.0 U	4.0 UJ	6.2 U

Table 4-9
Organophosphorus Pesticide (OPP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides	O. Pesticides
	Analytic Method	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A	SW 846 8141A
	Chemical Name	Naled	Phorate	Ronnel	Stirphos	Sulfotep	Thionazin	Tokuthion	Trichloronate
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date								
IAR_12/01/2006	12/01/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M100	12/04/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M100D	12/04/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M11	12/06/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M11D	12/06/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M120	11/28/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M12A	12/05/2006	1.0 UJ	1.2 UJ	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M13	12/01/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M29	11/17/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M2A	12/04/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M31A	12/06/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M39	12/05/2006	1.0 UJ	1.2 UJ	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M48	12/06/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M55	12/07/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M55D	12/07/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M5A	12/07/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M76	12/04/2006	1.0 U	1.2 UJ	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M7B	11/30/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M89	12/05/2006	1.0 UJ	1.2 UJ	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M92	11/29/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M95	12/04/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M97	11/29/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
M98	11/30/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
MC45	12/06/2006	1.0 U	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
PC40	12/01/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
GWSA2	11/06/2006	1.0 UJ	1.2 U	10 U	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
GWSA9	11/07/2006	1.0 UJ	1.2 U	10 UJ	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
GWSA10	11/07/2006	1.0 UJ	1.2 U	10 UJ	3.5 U	1.5 U	1.0 U	1.6 U	0.50 U
GWSA14	11/08/2006	1.0 UJ	1.2 U	10 U	3.5 UJ	1.5 U	1.0 U	1.6 U	0.50 U
GWSA15	11/08/2006	1.0 UJ	1.2 U	10 U	3.5 UJ	1.5 U	1.0 U	1.6 U	0.50 U

Table 4-9
Organophosphorus Pesticide (OPP) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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.
ug/L	Micrograms per liter.
Gray	Grayed out values are non-detected values with the laboratory sample quantitation limits shown.

Table 4-10
Herbicides Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Herbicide
	Analytic Method	SW 846 8151
	Chemical Name	2,4,5-TP (Silvex)
	Units	ug/kg
Sample ID	Sample Date	
SA21-0.5	11/15/2006	21 U
SA22-0.5	11/16/2006	25 U
SA23-0.5	11/09/2006	23 U

Notes:
U The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
ug/kg Micrograms per kilogram.
Gray Grayed out values are non-detected values with the laboratory sample quantitation limits shown.

Table 4-11
Herbicides Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Herbicide
	Analytic Method	SW 846 8151
	Chemical Name	2,4,5-TP (Silvex)
	Report Result Unit	ug/L
Sample ID	Sample Date	
M100	12/04/2006	1.0 U
M100D	12/04/2006	1.0 U
M7B	11/30/2006	1.0 U
M98	11/30/2006	1.0 U

Notes:

U The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
ug/kg Micrograms per liter.
Gray Grayed out values are non-detected values with the laboratory sample quantitation limits shown.

Table 4-12
Polychlorinated Biphenyl (PCB) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	PCB	PCB	PCB	PCB	PCB	PCB	PCB
	Analytic Method	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082
	Chemical Name	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA1-05	11/03/2006	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U
SA1-10	11/03/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA2-0.5	11/03/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA2-10	11/03/2006	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U
SA2-20	11/03/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA2-30	11/06/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA2-40	11/06/2006	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
SA2-50	11/06/2006	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
SA2-60	11/06/2006	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
SA3-0.5	11/13/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA3-0.5D	11/13/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA3-10	11/13/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA3-20	11/13/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA3-30	11/13/2006	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
SA3-40	11/13/2006	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
SA4-0.5	11/14/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA4-10	11/14/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA4-20	11/14/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA4-30	11/14/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA4-40	11/14/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA5-0.5	11/14/2006	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
SA5-10	11/14/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA5-20	11/14/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA5-30	11/14/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA5-37	11/14/2006	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U
SA6-0.5	11/14/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA6-0.5D	11/14/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA6-10	11/14/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA6-20	11/14/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA6-30	11/14/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA6-35	11/14/2006	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
SA7-0.5	11/20/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA7-10	11/20/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA7-10D	11/20/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA7-20	11/20/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA7-30	11/20/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA7-34	11/20/2006	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
SA8-0.5	11/17/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA8-10	11/17/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA8-20	11/17/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA8-30	11/17/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA8-37	11/17/2006	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U
SA9-0.5	11/06/2006	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U

Table 4-12
Polychlorinated Biphenyl (PCB) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	PCB	PCB	PCB	PCB	PCB	PCB	PCB
	Analytic Method	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082
	Chemical Name	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date							
SA9-10	11/06/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA9-10D	11/06/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA9-20	11/07/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	**0.47 J+**
SA9-30	11/07/2006	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U
SA9-40	11/07/2006	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U
SA10-0.5	11/07/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA10-10	11/07/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA10-10D	11/07/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA10-20	11/07/2006	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U
SA10-30	11/07/2006	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U
SA10-40	11/07/2006	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
SA11-0.5	11/09/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA11-0.5D	11/09/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA11-10	11/09/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA11-20	11/09/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA11-30	11/09/2006	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U
SA12-0.5	11/10/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA12-10	11/10/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA12-20	11/10/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA12-30	11/10/2006	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U
SA13-0.5	11/17/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA13-0.5D	11/17/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA13-10	11/17/2006	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U
SA13-20	11/17/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA13-30	11/17/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA13-40	11/17/2006	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U
SA14-0.5	11/08/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA14-10	11/08/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA14-20	11/08/2006	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U
SA14-30	11/08/2006	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U
SA14-40	11/08/2006	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U
SA15-0.5	11/08/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA15-10	11/08/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA15-10D	11/08/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA15-20	11/08/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA15-30	11/08/2006	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U
SA15-35	11/08/2006	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U
SA16-0.5	11/09/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA16-10	11/09/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA16-20	11/09/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA16-30	11/09/2006	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U	0.053 U
SA17-0.5	11/15/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA17-0.5D	11/15/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA17-10	11/15/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U

Table 4-12
Polychlorinated Biphenyl (PCB) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	PCB	PCB	PCB	PCB	PCB	PCB	PCB
	Analytic Method	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082
	Chemical Name	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date							
SA17-20	11/15/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA17-25	11/15/2006	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U
SA18-0.5	11/15/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA18-0.5D	11/15/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA18-10	11/15/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA18-20	11/15/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA18-30	11/15/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA19-0.5	11/16/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA19-10	11/16/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA19-20	11/16/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA19-25	11/16/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA20-0.5	11/16/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA20-0.5D	11/16/2006	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U
SA20-10	11/16/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA20-20	11/16/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA20-25	11/16/2006	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
SA21-0.5	11/15/2006	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U
SA21-10	11/15/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA21-20	11/15/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA21-20D	11/15/2006	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U	0.034 U
SA21-30	11/15/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA22-0.5	11/16/2006	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U
SA22-10	11/16/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA22-20	11/16/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA23-0.5	11/09/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA23-10	11/09/2006	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
SA23-20	11/09/2006	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
SA23-20D	11/09/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA24-0.5	11/03/2006	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U
SA24-10	11/03/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA24-20	11/03/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA24-25	11/03/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA25-0.5	11/03/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA25-10	11/03/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA25-15	11/03/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA25-20	11/03/2006	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U
SA26-0.5	11/20/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA26-0.5D	11/20/2006	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
SA26-10	11/20/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U
SA27-0.5	11/02/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA27-10	11/02/2006	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U
SA27-20	11/02/2006	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U

Table 4-12
Polychlorinated Biphenyl (PCB) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J+	The result is an estimated quantity and the result may be biased high.
	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
mg/kg	Milligrams per kilogram.
Bold	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.

Table 4-13
Polychlorinated Biphenyl (PCB) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	PCB	PCB	PCB	PCB	PCB	PCB	PCB
	Analytic Method	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082	SW 846 8082
	Chemical Name	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date							
IAR_12/01/2006	12/01/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M100	12/04/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M100D	12/04/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M11	12/06/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M11D	12/06/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M120	11/28/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M12A	12/05/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M13	12/01/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M29	11/17/2006	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ
M2A	12/04/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M31A	12/06/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M39	12/05/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M48	12/06/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M55	12/07/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M55D	12/07/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M5A	12/07/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M76	12/04/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M7B	11/30/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M89	12/05/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M92	11/29/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M95	12/04/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M97	11/29/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
M98	11/30/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
MC45	12/06/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
PC40	12/01/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
GWSA2	11/06/2006	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ
GWSA9	11/07/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
GWSA10	11/07/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
GWSA14	11/08/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
GWSA15	11/08/2006	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U

Table 4-13
Polychlorinated Biphenyl (PCB) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
ug/L	Micrograms per liter.
Gray	Grayed out values are non-detected values with the laboratory sample quantitation limits shown.

Table 4-14
Perchlorate Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Perchlorate
	Analytic Method	EPA 314.0
	Chemical Name	Perchlorate
	Units	ug/kg
Sample ID	Sample Date	
SA1-0.5	11/03/2006	42.2 U
SA1-05	11/03/2006	**28.9 J**
SA1-10	11/03/2006	**36.2 J**
SA2-0.5	11/03/2006	**35.7 J**
SA2-10	11/03/2006	**451**
SA2-20	11/03/2006	**77.8**
SA2-30	11/06/2006	**655**
SA2-40	11/06/2006	**2270**
SA2-50	11/06/2006	**406**
SA2-60	11/06/2006	49.0 U
SA3-0.5	11/13/2006	**1880**
SA3-0.5D	11/13/2006	**1540**
SA3-10	11/13/2006	**10200**
SA3-20	11/13/2006	**6100**
SA3-30	11/13/2006	**974**
SA3-40	11/13/2006	**86.7**
SA4-0.5	11/14/2006	**3140**
SA4-10	11/14/2006	**496**
SA4-20	11/14/2006	**3800**
SA4-30	11/14/2006	**42800**
SA4-40	11/14/2006	**73900**
SA5-0.5	11/14/2006	**14900**
SA5-10	11/14/2006	**112000**
SA5-20	11/14/2006	**66400**
SA5-30	11/14/2006	**19100**
SA5-37	11/14/2006	**375000**
SA6-0.5	11/14/2006	**239**
SA6-0.5D	11/14/2006	**426**
SA6-10	11/14/2006	**2320**
SA6-20	11/14/2006	**3020**
SA6-30	11/14/2006	**5340**
SA6-35	11/14/2006	**54100**
SA7-0.5	11/20/2006	**34300 J**
SA7-10	11/20/2006	**109000 J**
SA7-10D	11/20/2006	**113000 J**
SA7-20	11/20/2006	**12800 J**
SA7-30	11/20/2006	**8690 J**
SA7-34	11/20/2006	**31700 J**
SA8-0.5	11/17/2006	**17500**
SA8-10	11/17/2006	**1500**
SA8-20	11/17/2006	**3300**
SA8-30	11/17/2006	**2690**
SA8-37	11/17/2006	**12100**
SA9-0.5	11/06/2006	**35500**
SA9-10	11/06/2006	**696 J**
SA9-10D	11/06/2006	**408 J**
SA9-20	11/07/2006	**169**
SA9-30	11/07/2006	**2730**
SA9-40	11/07/2006	**133**
SA10-0.5	11/07/2006	**209**
SA10-10	11/07/2006	**227**
SA10-10D	11/07/2006	**226**
SA10-20	11/07/2006	**280**
SA10-30	11/07/2006	**2250**
SA10-40	11/07/2006	**656**
SA11-0.5	11/09/2006	**62500**
SA11-0.5D	11/09/2006	**72400**
SA11-10	11/09/2006	**204000**
SA11-20	11/09/2006	**210000**
SA11-30	11/09/2006	**56900**
SA12-0.5	11/10/2006	**6410**
SA12-10	11/10/2006	**7210**
SA12-20	11/10/2006	**9550**
SA12-30	11/10/2006	**184000**
SA13-0.5	11/17/2006	**192**

Table 4-14
Perchlorate Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Perchlorate
	Analytic Method	EPA 314.0
	Chemical Name	Perchlorate
	Units	ug/kg
Sample ID	Sample Date	
SA13-0.5D	11/17/2006	**120**
SA13-10	11/17/2006	**195**
SA13-20	11/17/2006	**184**
SA13-30	11/17/2006	**220**
SA13-40	11/17/2006	**1490**
SA14-0.5	11/08/2006	**1410**
SA14-10	11/08/2006	**220**
SA14-20	11/08/2006	**450**
SA14-30	11/08/2006	**6710**
SA14-40	11/08/2006	**500**
SA15-0.5	11/08/2006	**113000**
SA15-10	11/08/2006	**1210000**
SA15-10D	11/08/2006	**1160000**
SA15-20	11/08/2006	**943000**
SA15-30	11/08/2006	**2330000**
SA15-35	11/08/2006	**204000**
SA16-0.5	11/09/2006	**3720**
SA16-10	11/09/2006	**177**
SA16-20	11/09/2006	**609**
SA16-30	11/09/2006	**1860000**
SA17-0.5	11/15/2006	**366**
SA17-0.5D	11/15/2006	**302**
SA17-10	11/15/2006	**122**
SA17-20	11/15/2006	**792**
SA17-25	11/15/2006	**13500**
SA18-0.5	11/15/2006	**3850 J**
SA18-0.5D	11/15/2006	**1590 J**
SA18-10	11/15/2006	**3500 J**
SA18-20	11/15/2006	**2120 J**
SA18-30	11/15/2006	**53.0 J**
SA19-0.5	11/16/2006	**217000**
SA19-10	11/16/2006	**67700**
SA19-20	11/16/2006	**86100**
SA19-25	11/16/2006	**47200**
SA20-0.5	11/16/2006	**150**
SA20-0.5D	11/16/2006	**158**
SA20-10	11/16/2006	**855**
SA20-20	11/16/2006	**60200**
SA20-25	11/16/2006	**57600**
SA21-0.5	11/15/2006	**1170**
SA21-10	11/15/2006	44.0 U
SA21-20	11/15/2006	44.2 U
SA21-20D	11/15/2006	41.8 U
SA21-30	11/15/2006	**2050**
SA22-0.5	11/16/2006	**4950**
SA22-10	11/16/2006	**2460**
SA22-20	11/16/2006	**60400**
SA23-0.5	11/09/2006	**2760**
SA23-10	11/09/2006	**1280**
SA23-20	11/09/2006	**43200**
SA23-20D	11/09/2006	**34300**
SA24-0.5	11/03/2006	**3840**
SA24-10	11/03/2006	**2690**
SA24-20	11/03/2006	**4080**
SA24-25	11/03/2006	**2160**
SA25-0.5	11/03/2006	**152**
SA25-10	11/03/2006	**30.5 J**
SA25-15	11/03/2006	**42.3 J**
SA25-20	11/03/2006	260 U
SA26-0.5	11/20/2006	**21800**
SA26-0.5D	11/20/2006	**19300**
SA26-10	11/20/2006	**323000**
SA27-0.5	11/02/2006	**918**
SA27-10	11/02/2006	**438**
SA27-20	11/02/2006	**16000**

Table 4-14
Perchlorate Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit. absence of the analyte cannot be verified.
ug/kg	Micrograms per kilogram.
Bold	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.

Table 4-15
Perchlorate Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Perchlorate
	Analytic Method	EPA 314.0
	Chemical Name	Perchlorate
	Units	ug/L
Sample ID	Sample Date	
IAR_12/01/2006	12/01/2006	**4160000**
M100	12/04/2006	**51400 J+**
M100D	12/04/2006	**50700 J+**
M11	12/06/2006	**32500 J+**
M11D	12/06/2006	**32400 J+**
M120	11/28/2006	**498**
M12A	12/05/2006	**323000 J+**
M13	12/01/2006	**25300**
M29	11/17/2006	**2410**
M2A	12/04/2006	**465000**
M31A	12/06/2006	**1740000 J+**
M39	12/05/2006	**403000 J+**
M48	12/06/2006	**153000**
M55	12/07/2006	**577000 J+**
M55D	12/07/2006	**587000 J+**
M5A	12/07/2006	33.9 U
M76	12/04/2006	**77300 J+**
M7B	11/30/2006	**61000**
M89	12/05/2006	**898000 J+**
M92	11/29/2006	**610**
M95	12/04/2006	**624000 J+**
M97	11/29/2006	**74500**
M98	11/30/2006	**21800**
MC45	12/06/2006	**7940 J+**
PC40	12/01/2006	**36800**
GWSA2	11/06/2006	**393**
GWSA9	11/07/2006	**216**
GWSA10	11/07/2006	**1790**
GWSA14	11/08/2006	**1120**
GWSA15	11/08/2006	**6290000**

Table 4-15
Perchlorate Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J+	The result is an estimated quantity and the result may be biased high.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
ug/L	Micrograms per liter.
Bold	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.

Table 4-16
Radionuclide (RAD) Activities in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
	Analytic Method	HASL-300 gamma	HASL-300 gamma	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD
	Chemical Name	Ra-226	Ra-228	Th-228	Th-230	Th-232	Uranium-233/234	Uranium-235/236	Uranium-238
	Fraction	N	N	N	N	N	N	N	N
	Units	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g
Sample ID	Sample Date								
MN ORE	01/19/2007	0.271 U	**0.55**	**0.517**	**0.249 J**	**0.514 J**	**0.21 J**	**0.0311 J**	**0.217 J**
MN TAILINGS	01/19/2007	0.968 U	**1.54**	**1.19**	**0.802 J**	**0.957 J**	**0.882**	0.0134 U	**0.854**
SA1-0.5	11/03/2006	**1.01 J**	**1.6**						
SA1-05	11/03/2006	**1.25 J**	**1.69**						
SA1-10	11/03/2006	**1.31 J**	**1.65**						
SA2-0.5	11/03/2006	**1.02 J**	**1.97**	**1.12**	**0.798 J**	**0.994 J**	**0.26 J**	**0.035 J-**	**0.196 J**
SA2-10	11/03/2006	**1.17 J**	**1.56**						
SA2-20	11/03/2006	**1.15 J**	**1.95**						
SA2-30	11/06/2006	**3.39**	1.01 U						
SA2-40	11/06/2006	**1.34 J**	**1.72**						
SA2-50	11/06/2006	**1.3 J**	**1.39**						
SA2-60	11/06/2006	**2.64**	**1.54**						
SA3-0.5	11/13/2006	**0.997 J**	**1.81**						
SA3-0.5D	11/13/2006	**1.13 J**	2.21 U						
SA3-10	11/13/2006	**1.01 J**	**1.65**	**0.691 J**	**0.554 J**	**0.601 J**	**0.427 J-**	0.0123 UJ	**0.292 J-**
SA3-20	11/13/2006	**1.19 J**	**1.66**						
SA3-30	11/13/2006	**1.59 J**	0.357 U						
SA3-40	11/13/2006	**2.34**	0.913 U						
SA4-0.5	11/14/2006	**1.1 J**	**1.83**						
SA4-10	11/14/2006	**1.13 J**	**1.81**						
SA4-20	11/14/2006	**1.19 J**	**1.53**	**0.511 JB**	**0.875 J**	**0.706 J**	**1.35**	**0.0181 J**	**0.833**
SA4-30	11/14/2006	**1.45 J**	**1.91**						
SA4-40	11/14/2006	**1.6 J**	**1.9**						
SA5-0.5	11/14/2006	**1.12 J**	**1.92**						
SA5-10	11/14/2006	**1.07 J**	**1.66**						
SA5-20	11/14/2006	**1.1 J**	**1.52**						
SA5-30	11/14/2006	**2.29**	**1.68**	**0.481 JB**	**2.23**	**0.59 J**	**1.58**	**0.0469 J**	**1.37**
SA5-37	11/14/2006	**2.46**	**0.806 J**						
SA6-0.5	11/14/2006	**1.18 J**	**1.87**						
SA6-0.5D	11/14/2006	**1.32 J**	**1.89**						
SA6-10	11/14/2006	**1.07 J**	**1.8**	**0.601 J**	**0.619 JB**	**0.668 J**	**0.787**	**0.0165 J**	**0.483 J**
SA6-20	11/14/2006	**1.21 J**	**1.63**						
SA6-30	11/14/2006	**1.49 J**	**1.94**						
SA6-35	11/14/2006	**2.1**	1.1 U						
SA7-0.5	11/20/2006	**1.12 J-**	**1.83 J-**						
SA7-10	11/20/2006	**1.02 J-**	**1.9 J-**						
SA7-10D	11/20/2006	**0.939 J-**	**1.77 J-**						
SA7-20	11/20/2006	**1.28 J-**	**1.57 J-**	**0.488 J**	**0.775 J-**	**0.618 J**	**0.652 J+**	0.0145 U	**0.493 J**
SA7-30	11/20/2006	**1.79 J-**	**1.78 J-**						
SA7-34	11/20/2006	**7.49 J-**	**0.805 J-**						
SA8-0.5	11/17/2006	**1.07 J-**	**1.76 J-**						
SA8-10	11/17/2006	**1.08 J-**	2.05 UJ						
SA8-20	11/17/2006	**1 J-**	**1.88 J-**						
SA8-30	11/17/2006	**1.34 J-**	**1.85 J-**						
SA8-37	11/17/2006	**3.16 J-**	0.771 UJ						

Table 4-16
Radionuclide (RAD) Activities in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
	Analytic Method	HASL-300 gamma	HASL-300 gamma	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD
	Chemical Name	Ra-226	Ra-228	Th-228	Th-230	Th-232	Uranium-233/234	Uranium-235/236	Uranium-238
	Fraction	N	N	N	N	N	N	N	N
	Units	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g
Sample ID	Sample Date								
SA9-0.5	11/06/2006	1.02 J	1.64						
SA9-10	11/06/2006	1.12 J	1.76						
SA9-10D	11/06/2006	1.14 J	1.61						
SA9-20	11/07/2006	1.62 J	1.47						
SA9-30	11/07/2006	2.33	0.892 J						
SA9-40	11/07/2006	2.11	1.72						
SA10-0.5	11/07/2006	1.1 J	1.81						
SA10-10	11/07/2006	0.978 J	1.69						
SA10-10D	11/07/2006	0.759 J	1.6						
SA10-20	11/07/2006	1.31 J	0.812 J						
SA10-30	11/07/2006	1.4 J	1.14						
SA10-40	11/07/2006	1.58 J	1.42						
SA11-0.5	11/09/2006	0.947 J+	1.8 J+						
SA11-0.5D	11/09/2006	0.905 J+	1.87 J+						
SA11-10	11/09/2006	1.7 J+	1.95 J+	0.663 J	0.833 J	0.836 J	0.663	0.004 U	0.37 J
SA11-20	11/09/2006	1.06 J+	1.68 J+						
SA11-30	11/09/2006	2.49 J+	1.17 J+						
SA12-0.5	11/10/2006	1.16 J+	1.79 J+						
SA12-10	11/10/2006	0.98 J+	1.83 J+						
SA12-20	11/10/2006	1.84 J+	2.01 J+						
SA12-30	11/10/2006	1.44 J+	1.03 J+						
SA13-0.5	11/17/2006	1.12 J-	1.68 J-						
SA13-0.5D	11/17/2006	1.06 J-	1.87 J-						
SA13-10	11/17/2006	1.14 J-	2.05 J-						
SA13-20	11/17/2006	1.27 J-	1.78 J-						
SA13-30	11/17/2006	1.73 J-	1.88 J-						
SA13-40	11/17/2006	1.79 J-	1.61 J-	0.659 J	0.922 J	0.539 J	1.05 J+	0.0274 U	0.813
SA14-0.5	11/08/2006	1.07 J+	1.85 J+						
SA14-10	11/08/2006	1.06 U	1.93 J+						
SA14-20	11/08/2006	1.35 J+	1.82 J+						
SA14-30	11/08/2006	1.47 J+	1.38 J+						
SA14-40	11/08/2006	1.18 J+	0.676 J+						
SA15-0.5	11/08/2006	1.19 J+	2.11 J+						
SA15-10	11/08/2006	1.2 J+	1.91 J+	0.868 J	0.794 J	0.796 J	0.518 J	0.0102 U	0.376 J
SA15-10D	11/08/2006	1.21 J+	1.89 J+	0.779 J	0.529 J	0.544 J	0.404 J	0.00471 U	0.392 J
SA15-20	11/08/2006	1.43 J+	1.84 J+						
SA15-30	11/08/2006	1.91 J+	0.777 J+						
SA15-35	11/08/2006	1.54 J+	0.852 J+						
SA16-0.5	11/09/2006	1.16 J+	1.92 J+						
SA16-10	11/09/2006	1.07 J+	1.5 J+						
SA16-20	11/09/2006	1.85 J+	2.07 J+						
SA16-30	11/09/2006	1.71 J+	1.17 J+						
SA17-0.5	11/15/2006	1.12 J	1.75						
SA17-0.5D	11/15/2006	1.12 J	1.8						
SA17-10	11/15/2006	1.2 J	1.55						

Table 4-16
Radionuclide (RAD) Activities in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
	Analytic Method	HASL-300 gamma	HASL-300 gamma	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD
	Chemical Name	Ra-226	Ra-228	Th-228	Th-230	Th-232	Uranium-233/234	Uranium-235/236	Uranium-238
	Fraction	N	N	N	N	N	N	N	N
	Units	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g	pci/g
Sample ID	Sample Date								
SA17-20	11/15/2006	1.8 J	1.99						
SA17-25	11/15/2006	1.81 J	1.32						
SA18-0.5	11/15/2006	1.19 J	1.75	0.763 J	0.433 J-	0.676 J	0.547 J	0.00628 U	0.313 J
SA18-0.5D	11/15/2006	1.06 J	1.97	0.481 J	0.495 J-	0.658 J	0.322 J	0.0114 J+	0.263 J
SA18-10	11/15/2006	1.25 J	1.78						
SA18-20	11/15/2006	1.8 J	1.83						
SA18-30	11/15/2006	2.47	1.99						
SA19-0.5	11/16/2006	1.16 J-	2 J-						
SA19-10	11/16/2006	1.43 J-	1.63 J-						
SA19-20	11/16/2006	1.76 J-	1.7 J-						
SA19-25	11/16/2006	1.57 J-	1.38 J-						
SA20-0.5	11/16/2006	1 J-	1.87 J-						
SA20-0.5D	11/16/2006	0.863 J-	1.56 J-						
SA20-10	11/16/2006	1.31 J-	1.63 J-						
SA20-20	11/16/2006	1.47 J-	1.76 J-						
SA20-25	11/16/2006	1.52 J-	1.82 J-						
SA21-0.5	11/15/2006	1.15 J	1.81	0.954 J	0.671 J-	0.742 J	0.314 J	0.0211 J+	0.237 J
SA21-10	11/15/2006	1.22 U	2						
SA21-20	11/15/2006	1.67 J	1.87						
SA21-20D	11/15/2006	2.01	1.73						
SA21-30	11/15/2006	1.48 J	1.87						
SA22-0.5	11/16/2006	1.01 J-	1.78 J-						
SA22-10	11/16/2006	1.37 J-	1.78 J-						
SA22-20	11/16/2006	2.28 J-	1.99 J-						
SA23-0.5	11/09/2006	1.11 J+	2.06 J+						
SA23-10	11/09/2006	1.18 J+	1.66 U						
SA23-20	11/09/2006	1.73 J+	1.59 J+						
SA23-20D	11/09/2006	1.72 J+	1.34 J+						
SA24-0.5	11/03/2006	0.965 J	1.79						
SA24-10	11/03/2006	1.08 J	1.73						
SA24-20	11/03/2006	1.4 J	1.65						
SA24-25	11/03/2006	1.59 J	1.68						
SA25-0.5	11/03/2006	1.21 J	2.03						
SA25-10	11/03/2006	1.19 J	1.61						
SA25-15	11/03/2006	1.69 J	1.6						
SA25-20	11/03/2006	1.63 J	1.35						
SA26-0.5	11/20/2006	1.2 J-	1.91 J-	0.805 J	0.391 J	0.759 J	0.262 J+	0.00551 U	0.137 J
SA26-0.5D	11/20/2006	1.02 J-	1.78 J-	0.774 J	0.441 J	0.729 J	0.262 J+	0.00397 U	0.146 J
SA26-10	11/20/2006	1.33 J-	1.82 J-						
SA27-0.5	11/02/2006	0.985 J	1.87						
SA27-10	11/02/2006	1.23 J	1.84						
SA27-20	11/02/2006	1.11 J	1.42						

Table 4-16
Radionuclide (RAD) Activities in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
J-	The result is an estimated quantity and the result may be biased low.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
JB	The result may be biased high partially attributable to blank contamination. This qualifier is applied only to radiochemical results.
pCi/g	PicoCuries per gram.
Blank	Not analyzed.
Bold	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.

Table 4-17
Radionuclide (RAD) Activities in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Fraction Units	Pump rate ml/min	Turbidy (field) NTUs	Acceptance Criteria Met?	Parameters That Did Not Meet Acceptance Criteria	RAD EPA 903.1 Ra-226 - soluble S pci/L	RAD EPA 903.1 Ra-226 - soluble T pci/L	RAD EPA 904.0 Ra-228 - soluble S pci/L	RAD EPA 904.0 Ra-228 - soluble T pci/L	RAD HASL-300 TH MOD Th-228 - soluble S pci/L	RAD HASL-300 TH MOD Th-228 - soluble T pci/L	RAD HASL-300 TH MOD Th-230 - soluble S pci/L
IAR_12/01/2006	12/01/2006	nm	nm	Yes			**0.913 J-**		**1.39 J-**			
IAR-F	05/08/2007	nm	nm			**1.13 J**		**1.16 J-**				
IAR-Z	05/08/2007	nm	nm				**1.67 J**		**1.30 B**			
M100	12/04/2006	360	1.00	Yes			**0.195 J-**		0.294 UJ			
M100D	12/04/2006	360	1.00	Yes			0.0806 UJ		0.388 UJ			
M100-F	05/09/2007	350	1.91	Yes		**0.381 J**		0.982 UJ				
M100-L	05/09/2007	100	1.58	Yes			**0.240 J**		0.506 UJ			
M100-Z	05/09/2007	350	1.91	Yes			0.151 U		0.240 UJ			
M11	12/06/2006	150	89.5	Yes			**0.162 J**		0.113 UJ			
M11D	12/06/2006	150	89.5	Yes			**0.237 J**		0.0565 UJ			
S	Soluable metals											
M11-F	05/11/2007	150	38.1	Yes		**0.308 J**		**1.30 JB**				
M11-Z	05/11/2007	150	38.1	Yes			0.332 U		**1.23 B**			
M120	11/28/2006	320	1.8	Yes			0.0778 U		0.307 U			
M120-F	05/04/2007	320	0.35	Yes		0.175 U		0.731 UJ				
M120-L	05/04/2007	150	0.00	No	ORP		0.102 U		0.290 UJ			
M120-Z	05/04/2007	320	0.35	Yes			**0.168 J**		0.357 UJ			
M12A	12/05/2006	210	19.7	Yes			**0.273 B**		0.578 UJ			
M12A-F	05/11/2007	210	7.6	No	ORP	**0.323 J**		**0.950 B**				
M12A-L	05/11/2007	100	12.1	Yes			**1.13 J**		**1.40 JB**			
M12A-Z	05/11/2007	210	7.6	No	ORP		**0.601 J**		**1.45**			
M13	12/01/2006	300	32.4	Yes			**0.163 J-**		0.121 UJ			
M13-F	05/09/2007	300	28.5	Yes		0.175 U		0.486 UJ				
M13-L	05/09/2007	100	36.8	No	DO		0.0642 U		0.462 UJ			
M13-Z	05/09/2007	300	28.5	Yes			-0.0728 U		0.152 UJ			
M29	11/17/2006					**0.603 J**	**0.745 J**	0.565 UJ	0.602 UJ			
M2A	12/04/2006	350	49.0	Yes			0.126 UJ		**0.771 JB**			
M2A-F	05/09/2007	350	3.51	No	ORP	**0.366 J**		0.632 UJ				
M2A-L	05/09/2007	100	56.0	Yes			**0.192 J**		0.499 UJ			
M2A-Z	05/09/2007	350	3.51	No	ORP		0.0440 U		0.402 UJ			
M31A	12/06/2006	145	155.0	Yes			**0.434 J**		**0.7 J-**		-0.0273 U	
M31A-F	05/09/2007	150	14.7	Yes		**0.572 J**		**0.775 J-**		0.00562 U		**0.0768 J**
M31A-Z	05/09/2007	150	14.7	Yes			**0.312 J**		0.862 UJ		0.0584 U	
M39	12/05/2006	325	3.16	No	ORP		**0.224 B**		0.333 UJ			
M39-F	05/10/2007	325	3.16	No	ORP	**0.232 J**		**0.788 J**		0.0288 U		**6.29**
M39-FD	05/10/2007	100	40.8	No	ORP	**0.182 J**		0.336 U		0.0343 U		**7.19**
M39-L	05/10/2007	325	3.16	No	ORP		**0.299 J**		**0.672 J**		**0.501 J**	
M39-LD	05/10/2007	100	40.8	No	ORP		**0.258 J**		**0.753 J**		**0.306 J**	
M39-Z	05/10/2007	325	3.16	No	ORP		**0.191 J**		0.277 U		0.0105 U	
M39-ZD	05/10/2007	320	62.9	Yes			**0.185 J**		0.106 U		0.0253 U	
M48	12/06/2006	350	nm	Yes			**0.235 J**		0.13 UJ			
M48-F	05/10/2007	350	0.63	Yes		**0.135 J**		0.592 U				
M48-L	05/10/2007	100	0.00	Yes			**0.135 J**		0.408 U			
M48-Z	05/10/2007	350	0.63	Yes			**0.116 J**		0.518 U			
M55	12/07/2006	360	1.5	Yes			**0.229 J**		**0.535 J-**			
M55D	12/07/2006	360	1.5	Yes			**0.247 J**		0.271 UJ			
M55-F	05/08/2007	350	0.00	No	ORP	**0.300 J**		**1.46 J-**				
M55-L	05/08/2007	100	1.00	No	ORP		0.396 U		1.17 UJ			
M55-Z*	05/08/2007	350	0.00	No	ORP							
M5A	12/07/2006	200	7.0	Yes			**0.546 J**		**1.14 J-**			

Table 4-17
Radionuclide (RAD) Activities in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type / Analytic Method / Chemical Name / Fraction / Units		Pump rate ml/min	Turbidy (field) NTUs	Acceptance Criteria Met?	Parameters That Did Not Meet Acceptance Criteria	RAD EPA 903.1 Ra-226 - soluble S pci/L	RAD EPA 903.1 Ra-226 - soluble T pci/L	RAD EPA 904.0 Ra-228 - soluble S pci/L	RAD EPA 904.0 Ra-228 - soluble T pci/L	RAD HASL-300 TH MOD Th-228 - soluble S pci/L	RAD HASL-300 TH MOD Th-228 - soluble T pci/L	RAD HASL-300 TH MOD Th-230 - soluble S pci/L
M5A-F	05/10/2007	200	2.31	Yes		**0.507 J**		**0.950 J**				
M5A-L	05/10/2007	100	4.11	No	DO		**0.765 J**		**1.60**			
M5A-Z	05/10/2007	200	2.31	Yes			**0.566 J**		**1.11**			
M76	12/04/2006	100	0.1	Yes			**0.151 J-**		0.119 UJ			
M76-F	05/09/2007	200	1.84	No	ORP	0.203 U		0.475 UJ				
M76-L	05/09/2007	100	7.06	No	ORP		0.256 U		0.409 UJ			
M76-Z	05/09/2007	200	1.84	No	ORP		0.184 U		0.543 UJ			
M7B	11/30/2006	290	16.1	No	DO		**0.457 J**		**0.947 J-**			
M7B-F	05/08/2007	300	6.1	Yes		**0.808 J**		**1.76 J-**				
M7B-L	05/08/2007	100	70	Yes			**0.481 J**		**1.27 J-**			
M7B-Z	05/08/2007	300	6.1	Yes			**0.672 J**		**1.85 J-**			
M89	12/05/2006	235	0.3	Yes			**0.293 B**		0.197 UJ			
M89-F	05/11/2007	225	0.00	No	ORP	**0.221 J**		**1.65**				
M89-L	05/11/2007	100	2.90	No	ORP		0.170 U		**1.92**			
M89-Z	05/11/2007	225	0.00	No	ORP		**0.352 J**		**1.27 JB**			
M92	11/29/2006	280	76.0	Yes			**0.209 J**		0.204 U			
M92-F	05/08/2007	300	3.69	No	ORP	0.0895 U		0.322 UJ		0 U		0.0127 U
M92-L	05/08/2007	100	33.7	Yes			0.118 U		0.359 UJ		0.0266 U	
M92-Z	05/08/2007	300	3.69	No	ORP		**0.241 J**		**0.736 J-**		0.00575 U	
M95	12/04/2006	480	68.8	Yes			**0.57 J-**		0.397 UJ			
M95-F	05/10/2007	360	2.29	No	ORP	**0.282 J**		0.216 U		0 U		**4.79**
M95-FD	05/10/2007	360	2.29	No	ORP	**0.313 J**		0.360 U		0.0248 U		**4.36**
M95-L	05/10/2007	100	23.2	No	ORP		**0.296 J**		0.315 U		0.0619 U	
M95-LD	05/10/2007	100	23.2	No	ORP		**0.360 J**		0.288 U		0.107 U	
M95-Z	05/10/2007	360	2.29	No	ORP		**0.347 J**		0.193 U		0 U	
M95-ZD	05/10/2007	360	2.29	No	ORP		**0.416 J**		**0.464 J**		0.0431 U	
M97	11/29/2006	380	31.7	Yes			**0.522 J**		**0.718 J**			
M97-F	05/11/2007	375	2.89	No	ORP	**0.390 J**		**1.03 B**				
M97-L	05/11/2007	100	6.51	No	ORP		**0.390 J**		**0.882 B**			
M97-Z	05/11/2007	375	2.89	No	ORP		**0.380 J**		**0.788 B**			
M98	11/30/2006	300	nm	Yes			**0.43 J**		**0.465 J-**			
MC45	12/06/2006	290	0.5	Yes			0.0802 U		0.503 UJ			
MC45-F	05/07/2007	280	0.00	No	ORP	0.142 U		0.362 UJ				
MC45-L	05/07/2007	100	0.85	No	ORP		0.254 U		0.548 UJ			
MC45-Z	05/07/2007	280	0.00	No	ORP		0.0927 U		**0.783 B**			
PC40	12/01/2006	420	149	Yes			**0.244 J-**		0.416 UJ			
PC40-F	05/07/2007	400	0.00	No	DO, ORP	0.131 U		**0.783 J-**				
PC40-L	05/07/2007	100	200	Yes			**0.397 J**		**1.47 J-**			
PC40-Z	05/07/2007	400	0.00	No	DO, ORP		0.222 U		**0.858 B**			
GWSA2	11/06/2006	na	nm				**10.9 J-**		**5.82 J-**		**8.15**	
GWSA9	11/07/2006	na	nm				**1.45 JB**		**1.26 JB**			
GWSA10	11/07/2006	na	nm				**2.76 J-**		**1.96 J-**			
GWSA14	11/08/2006	na	nm				**6.55 J+**		**3.75**			
GWSA15	11/08/2006	na	nm			**0.742 J**	**3.32 J+**	**1.4 J**	**2.18**			

Table 4-17
Radionuclide (RAD) Activities in Groundwater
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	Analyte Type	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
	Analytic Method	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD
	Chemical Name	Th-230 - soluble	Th-232 - soluble	Th-232 - soluble	Uranium-233/234	Uranium-233/234	Uranium-235/236	Uranium-235/236	Uranium-238	Uranium-238
	Fraction	T	S	T	S	T	S	T	S	T
	Units	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L
IAR_12/01/2006	12/01/2006									
IAR-F	05/08/2007									
IAR-Z	05/08/2007									
M100	12/04/2006									
M100D	12/04/2006									
M100-F	05/09/2007									
M100-L	05/09/2007									
M100-Z	05/09/2007									
M11	12/06/2006									
M11D	12/06/2006									
S	Soluable metals									
M11-F	05/11/2007									
M11-Z	05/11/2007									
M120	11/28/2006									
M120-F	05/04/2007									
M120-L	05/04/2007									
M120-Z	05/04/2007									
M12A	12/05/2006									
M12A-F	05/11/2007									
M12A-L	05/11/2007									
M12A-Z	05/11/2007									
M13	12/01/2006									
M13-F	05/09/2007									
M13-L	05/09/2007									
M13-Z	05/09/2007									
M29	11/17/2006									
M2A	12/04/2006									
M2A-F	05/09/2007									
M2A-L	05/09/2007									
M2A-Z	05/09/2007									
M31A	12/06/2006	**1.28 J**		0.0135 U		**15.4**		**0.497 J-**		**9.34**
M31A-F	05/09/2007		0.0110 U		**14.0**		**0.274**		**8.49**	
M31A-Z	05/09/2007	0.0798 U		0.0285 U		**13.7**		**0.408**		**8.09**
M39	12/05/2006									
M39-F	05/10/2007		0 UJ		**52.0**		**1.52**		**33.8**	
M39-FD	05/10/2007		0.0221 UJ		**54.8**		**1.54**		**35.8**	
M39-L	05/10/2007	**7.61 J**		**0.304 J**		**50.9**		**1.49**		**33.2**
M39-LD	05/10/2007	**14.1 J**		0.0242 UJ		**52.1**		**1.54**		**34.0**
M39-Z	05/10/2007	**5.00 J**		**0.102 J**		**55.1**		**1.19**		**34.9**
M39-ZD	05/10/2007	**0.428 B**		**0.122 J**		**53.1**		**1.43**		**33.3**
M48	12/06/2006									
M48-F	05/10/2007									
M48-L	05/10/2007									
M48-Z	05/10/2007									
M55	12/07/2006									
M55D	12/07/2006									
M55-F	05/08/2007									
M55-L	05/08/2007									
M55-Z*	05/08/2007									
M5A	12/07/2006									

Table 4-17
Radionuclide (RAD) Activities in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
	Analytic Method	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 TH MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD	HASL-300 U MOD
	Chemical Name	Th-230 - soluble	Th-232 - soluble	Th-232 - soluble	Uranium-233/234	Uranium-233/234	Uranium-235/236	Uranium-235/236	Uranium-238	Uranium-238
	Fraction	T	S	T	S	T	S	T	S	T
	Units	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L	pci/L
M5A-F	05/10/2007									
M5A-L	05/10/2007									
M5A-Z	05/10/2007									
M76	12/04/2006									
M76-F	05/09/2007									
M76-L	05/09/2007									
M76-Z	05/09/2007									
M7B	11/30/2006									
M7B-F	05/08/2007									
M7B-L	05/08/2007									
M7B-Z	05/08/2007									
M89	12/05/2006									
M89-F	05/11/2007									
M89-L	05/11/2007									
M89-Z	05/11/2007									
M92	11/29/2006									
M92-F	05/08/2007		0 U		**3.22**		**0.124 J**		**2.25**	
M92-L	05/08/2007	**0.0998 J**		0.0473 U		**3.00**		**0.0905 J**		**2.06**
M92-Z	05/08/2007	**0.0354 B**		0.0198 U		**3.01**		**0.0466 J**		**1.94**
M95	12/04/2006									
M95-F	05/10/2007		0.0350 UJ		**29.1**		**1.06**		**20.3**	
M95-FD	05/10/2007		0.0560 UJ		**29.2**		**0.936**		**21.9**	
M95-L	05/10/2007	**5.53**		**0.379 J**		**29.8**		**0.958**		**22.0**
M95-LD	05/10/2007	**4.65**		0.0882 UJ		**28.5**		**0.698**		**22.6**
M95-Z	05/10/2007	**0.188 B**		0.0188 UJ		**28.1**		**0.680**		**21.2**
M95-ZD	05/10/2007	**0.142 B**		0.0333 UJ		**29.0**		**0.673**		**22.6**
M97	11/29/2006									
M97-F	05/11/2007									
M97-L	05/11/2007									
M97-Z	05/11/2007									
M98	11/30/2006									
MC45	12/06/2006									
MC45-F	05/07/2007									
MC45-L	05/07/2007									
MC45-Z	05/07/2007									
PC40	12/01/2006									
PC40-F	05/07/2007									
PC40-L	05/07/2007									
PC40-Z	05/07/2007									
GWSA2	11/06/2006	**13**		**9.14**		**15.5**		**0.348 J+**		**11.2**
GWSA9	11/07/2006									
GWSA10	11/07/2006									
GWSA14	11/08/2006									
GWSA15	11/08/2006									

Table 4-17
Radionuclide (RAD) Activities in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

F	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min) and field filtered.
L	Sample ID suffix indicating the sample was collected using low low-flow pumping rates 100-150 ml/min).
Z	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min.).
DO	Dissolved Oxygen
T	Total Metals.
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 high.
J-	The result is an estimated quantity and the result may be biased low.
ml/min	Milliliters per minute.
nm	Not measured.
NTUs	Nephelometric Turbidity Units.
ORP	Oxidation-reduction potential.
S	Soluable metals
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
B	The result may be a false positive totally attributable to blank contamination. This qualifier is applied only to radiochemical results.
JB	The result may be biased high partially attributable to blank contamination.
*	No analytical data is available for this sample due to a laboratory error. This qualifier is applied only to radiochemical results.
pci/L	PicoCuries per liter.
Blank	Not analyzed.
Bold	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.

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	1,4-Dioxane	2-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthene	Acenaphthylene	Acenaphthylene	Anthracene	Anthracene	Benz(a)anthracene
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date										
SA1-0.5	11/03/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA1-05	11/03/2006	420 U	420 U		420 U		420 U		420 U		420 U
SA1-10	11/03/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA2-0.5	11/03/2006	70 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U
SA2-10	11/03/2006	410 U	410 U		410 U		410 U		410 U		410 U
SA2-20	11/03/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA2-30	11/06/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA2-40	11/06/2006	490 U	490 U		490 U		490 U		490 U		490 U
SA2-50	11/06/2006	490 U	490 U		490 U		490 U		490 U		490 U
SA2-60	11/06/2006	400 U	400 U		400 U		400 U		400 U		400 U
SA3-0.5	11/13/2006	71 U	350 U	7.1 U	350 U	7.1 U	350 U	7.1 U	350 U	7.1 U	350 U
SA3-0.5D	11/13/2006	70 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U
SA3-10	11/13/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA3-20	11/13/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA3-30	11/13/2006	430 U	430 U		430 U		430 U		430 U		430 U
SA3-40	11/13/2006	490 U	490 U		490 U		490 U		490 U		490 U
SA4-0.5	11/14/2006	360 U	360 U	7.3 U	360 U	7.3 U	360 U	7.3 U	360 U	7.3 U	360 U
SA4-10	11/14/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA4-20	11/14/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA4-30	11/14/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA4-40	11/14/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA5-0.5	11/14/2006	430 U	430 U	8.5 U	430 U	8.5 U	430 U	8.5 U	430 U	8.5 U	430 U
SA5-10	11/14/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA5-20	11/14/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA5-30	11/14/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA5-37	11/14/2006	550 U	550 U		550 U		550 U		550 U		550 U
SA6-0.5	11/14/2006	350 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U
SA6-0.5D	11/14/2006	380 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U
SA6-10	11/14/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA6-20	11/14/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA6-30	11/14/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA6-35	11/14/2006	490 U	490 U		490 U		490 U		490 U		490 U
SA7-0.5	11/20/2006	70 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U
SA7-10	11/20/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA7-10D	11/20/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA7-20	11/20/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA7-30	11/20/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA7-34	11/20/2006	430 U	430 U		430 U		430 U		430 U		430 U
SA8-0.5	11/17/2006	69 U	350 U	6.9 U	350 U	6.9 U	350 U	6.9 U	350 U	6.9 U	350 U
SA8-10	11/17/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA8-20	11/17/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA8-30	11/17/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA8-37	11/17/2006	450 U	450 U		450 U		450 U		450 U		450 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	1,4-Dioxane	2-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthene	Acenaphthylene	Acenaphthylene	Anthracene	Anthracene	Benz(a)anthracene
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA9-0.5	11/06/2006	79 U	400 U	7.9 U	400 U	7.9 U	400 U	7.9 U	400 U	7.9 U	400 U
SA9-10	11/06/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA9-10D	11/06/2006	370 U	370 U		370 U		370 U		370 U		**40 J**
SA9-20	11/07/2006	360 U	360 U		360 U		360 U		360 U		**90 J**
SA9-30	11/07/2006	540 U	540 U		540 U		540 U		540 U		540 U
SA9-40	11/07/2006	460 U	460 U		460 U		460 U		460 U		460 U
SA10-0.5	11/07/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA10-10	11/07/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA10-10D	11/07/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA10-20	11/07/2006	440 U	440 U		440 U		440 U		440 U		440 U
SA10-30	11/07/2006	510 U	510 U		510 U		510 U		510 U		510 U
SA10-40	11/07/2006	490 U	490 U		490 U		490 U		490 U		490 U
SA11-0.5	11/09/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA11-0.5D	11/09/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA11-10	11/09/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA11-20	11/09/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA11-30	11/09/2006	540 U	540 U		540 U		540 U		540 U		540 U
SA12-0.5	11/10/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA12-10	11/10/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA12-20	11/10/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA12-30	11/10/2006	530 U	530 U		530 U		530 U		530 U		530 U
SA13-0.5	11/17/2006	77 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U
SA13-0.5D	11/17/2006	73 U	370 U	7.3 U	370 U	7.3 U	370 U	7.3 U	370 U	7.3 U	370 U
SA13-10	11/17/2006	340 U	340 U		340 U		340 U		340 U		340 U
SA13-20	11/17/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA13-30	11/17/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA13-40	11/17/2006	420 U	420 U		420 U		420 U		420 U		420 U
SA14-0.5	11/08/2006	360 U	360 U	7.2 U	360 U	7.2 U	360 U	7.2 U	360 U	7.2 U	360 U
SA14-10	11/08/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA14-20	11/08/2006	410 U	410 U		410 U		410 U		410 U		410 U
SA14-30	11/08/2006	530 U	530 U		530 U		530 U		530 U		530 U
SA14-40	11/08/2006	410 U	410 U		410 U		410 U		410 U		410 U
SA15-0.5	11/08/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA15-10	11/08/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA15-10D	11/08/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA15-20	11/08/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA15-30	11/08/2006	450 U	450 U		450 U		450 U		450 U		450 U
SA15-35	11/08/2006	450 U	450 U		450 U		450 U		450 U		450 U
SA16-0.5	11/09/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA16-10	11/09/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA16-20	11/09/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA16-30	11/09/2006	530 U	530 U		530 U		530 U		530 U		530 U
SA17-0.5	11/15/2006	77 U	390 U	7.7 U	390 U	7.7 U	390 U	7.7 U	390 U	7.7 U	390 U
SA17-0.5D	11/15/2006	380 U	380 U		380 U		380 U		380 U		380 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	1,4-Dioxane	2-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthene	Acenaphthylene	Acenaphthylene	Anthracene	Anthracene	Benz(a)anthracene
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA17-10	11/15/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA17-20	11/15/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA17-25	11/15/2006	410 U	410 U		410 U		410 U		410 U		410 U
SA18-0.5	11/15/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA18-0.5D	11/15/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA18-10	11/15/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA18-20	11/15/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA18-30	11/15/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA19-0.5	11/16/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA19-10	11/16/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA19-20	11/16/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA19-25	11/16/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA20-0.5	11/16/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA20-0.5D	11/16/2006	410 U	410 U		410 U		410 U		410 U		410 U
SA20-10	11/16/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA20-20	11/16/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA20-25	11/16/2006	390 U	390 U		390 U		390 U		390 U		390 U
SA21-0.5	11/15/2006	69 U	340 U	6.9 U	340 U	6.9 U	340 U	6.9 U	340 U	6.9 U	340 U
SA21-10	11/15/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA21-20	11/15/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA21-20D	11/15/2006	340 U	340 U		340 U		340 U		340 U		340 U
SA21-30	11/15/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA22-0.5	11/16/2006	420 U	420 U		420 U		420 U		420 U		420 U
SA22-10	11/16/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA22-20	11/16/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA23-0.5	11/09/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA23-10	11/09/2006	400 U	400 U		400 U		400 U		400 U		400 U
SA23-20	11/09/2006	400 U	400 U		400 U		400 U		400 U		400 U
SA23-20D	11/09/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA24-0.5	11/03/2006	380 U	380 U		380 U		380 U		380 U		380 U
SA24-10	11/03/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA24-20	11/03/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA24-25	11/03/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA25-0.5	11/03/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA25-10	11/03/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA25-15	11/03/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA25-20	11/03/2006	430 U	430 U		430 U		430 U		430 U		430 U
SA26-0.5	11/20/2006	71 U	360 U	7.1 U	360 U	7.1 U	360 U	7.1 U	360 U	7.1 U	360 U
SA26-0.5D	11/20/2006	360 U	360 U		360 U		360 U		360 U		360 U
SA26-10	11/20/2006	370 U	370 U		370 U		370 U		370 U		370 U
SA27-0.5	11/02/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA27-10	11/02/2006	350 U	350 U		350 U		350 U		350 U		350 U
SA27-20	11/02/2006	370 U	370 U		370 U		370 U		370 U		370 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
Chemical Name		Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(k)fluoranthene
Chemical Name		SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
Units		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date									
SA1-0.5	11/03/2006		350 U		350 U		350 U		350 U	
SA1-05	11/03/2006		420 U		420 U		420 U		420 U	
SA1-10	11/03/2006		360 U		360 U		360 U		360 U	
SA2-0.5	11/03/2006	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U
SA2-10	11/03/2006		410 U		410 U		410 U		410 U	
SA2-20	11/03/2006		390 U		390 U		390 U		390 U	
SA2-30	11/06/2006		390 U		390 U		390 U		390 U	
SA2-40	11/06/2006		490 U		490 U		490 U		490 U	
SA2-50	11/06/2006		490 U		490 U		490 U		490 U	
SA2-60	11/06/2006		400 U		400 U		400 U		400 U	
SA3-0.5	11/13/2006	7.1 U	350 U	7.1 U	350 U	7.1 U	350 U	7.1 U	350 U	7.1 U
SA3-0.5D	11/13/2006	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U
SA3-10	11/13/2006		350 U		350 U		350 U		350 U	
SA3-20	11/13/2006		360 U		360 U		360 U		360 U	
SA3-30	11/13/2006		430 U		430 U		430 U		430 U	
SA3-40	11/13/2006		490 U		490 U		490 U		490 U	
SA4-0.5	11/14/2006	7.3 U	360 U	7.3 U	360 U	7.3 U	360 U	7.3 U	360 U	7.3 U
SA4-10	11/14/2006		350 U		350 U		350 U		350 U	
SA4-20	11/14/2006		360 U		360 U		360 U		360 U	
SA4-30	11/14/2006		380 U		380 U		380 U		380 U	
SA4-40	11/14/2006		350 U		350 U		350 U		350 U	
SA5-0.5	11/14/2006	8.5 U	430 U	8.5 U	430 U	8.5 U	430 U	8.5 U	430 U	8.5 U
SA5-10	11/14/2006		380 U		380 U		380 U		380 U	
SA5-20	11/14/2006		390 U		390 U		390 U		390 U	
SA5-30	11/14/2006		360 U		360 U		360 U		360 U	
SA5-37	11/14/2006		550 U		550 U		550 U		550 U	
SA6-0.5	11/14/2006	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U
SA6-0.5D	11/14/2006	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U
SA6-10	11/14/2006		360 U		360 U		360 U		360 U	
SA6-20	11/14/2006		360 U		360 U		360 U		360 U	
SA6-30	11/14/2006		350 U		350 U		350 U		350 U	
SA6-35	11/14/2006		490 U		490 U		490 U		490 U	
SA7-0.5	11/20/2006	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U
SA7-10	11/20/2006		350 U		350 U		350 U		350 U	
SA7-10D	11/20/2006		360 U		360 U		360 U		360 U	
SA7-20	11/20/2006		360 U		360 U		360 U		360 U	
SA7-30	11/20/2006		350 U		350 U		350 U		350 U	
SA7-34	11/20/2006		430 U		430 U		430 U		430 U	
SA8-0.5	11/17/2006	6.9 U	350 U	6.9 U	350 U	6.9 U	350 U	6.9 U	350 U	6.9 U
SA8-10	11/17/2006		350 U		350 U		350 U		350 U	
SA8-20	11/17/2006		350 U		350 U		350 U		350 U	
SA8-30	11/17/2006		360 U		360 U		360 U		360 U	
SA8-37	11/17/2006		450 U		450 U		450 U		450 U	

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(k)fluoranthene
	Chemical Name	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA9-0.5	11/06/2006	**12**	400 U	**13**	400 U	**22**	400 U	**23**	400 U	**16**
SA9-10	11/06/2006		390 U		390 U		390 U		390 U	
SA9-10D	11/06/2006		**45 J**		**77 J**		**48 J**		**49 J**	
SA9-20	11/07/2006		**79 J**		**110 J**		**69 J**		**110 J**	
SA9-30	11/07/2006		540 U		540 U		540 U		540 U	
SA9-40	11/07/2006		460 U		460 U		460 U		460 U	
SA10-0.5	11/07/2006		370 U		370 U		370 U		370 U	
SA10-10	11/07/2006		360 U		360 U		360 U		360 U	
SA10-10D	11/07/2006		380 U		380 U		380 U		380 U	
SA10-20	11/07/2006		440 U		440 U		440 U		440 U	
SA10-30	11/07/2006		510 UJ		510 UJ		510 UJ		510 UJ	
SA10-40	11/07/2006		490 U		490 U		490 U		490 U	
SA11-0.5	11/09/2006		360 U		360 U		360 U		360 U	
SA11-0.5D	11/09/2006		380 U		380 U		380 U		380 U	
SA11-10	11/09/2006		350 U		350 U		350 U		350 U	
SA11-20	11/09/2006		350 U		350 U		350 U		350 U	
SA11-30	11/09/2006		540 U		540 U		540 U		540 U	
SA12-0.5	11/10/2006		370 U		370 U		370 U		370 U	
SA12-10	11/10/2006		350 U		350 U		350 U		350 U	
SA12-20	11/10/2006		360 U		360 U		360 U		360 U	
SA12-30	11/10/2006		530 U		530 U		530 U		530 U	
SA13-0.5	11/17/2006	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U
SA13-0.5D	11/17/2006	7.3 U	370 U	7.3 U	370 U	7.3 U	370 U	7.3 U	370 U	7.3 U
SA13-10	11/17/2006		340 U		340 U		340 U		340 U	
SA13-20	11/17/2006		350 U		350 U		350 U		350 U	
SA13-30	11/17/2006		350 U		350 U		350 U		350 U	
SA13-40	11/17/2006		420 U		420 U		420 U		420 U	
SA14-0.5	11/08/2006	7.2 U	360 U	7.2 U	360 U	7.2 U	360 U	7.2 U	360 U	7.2 U
SA14-10	11/08/2006		370 U		370 U		370 U		370 U	
SA14-20	11/08/2006		410 U		410 U		410 U		410 U	
SA14-30	11/08/2006		530 U		530 U		530 U		530 U	
SA14-40	11/08/2006		410 U		410 U		410 U		410 U	
SA15-0.5	11/08/2006		380 U		380 U		380 U		380 U	
SA15-10	11/08/2006		390 U		390 U		390 U		390 U	
SA15-10D	11/08/2006		360 U		360 U		360 U		360 U	
SA15-20	11/08/2006		360 U		360 U		360 U		360 U	
SA15-30	11/08/2006		450 U		450 U		450 U		450 U	
SA15-35	11/08/2006		450 U		450 U		450 U		450 U	
SA16-0.5	11/09/2006		350 U		350 U		350 U		350 U	
SA16-10	11/09/2006		370 U		370 U		370 U		370 U	
SA16-20	11/09/2006		360 U		360 U		360 U		360 U	
SA16-30	11/09/2006		530 U		530 U		530 U		530 U	
SA17-0.5	11/15/2006	7.7 U	390 U	7.7 U	390 U	7.7 U	390 U	7.7 U	390 U	7.7 U
SA17-0.5D	11/15/2006		380 U		380 U		380 U		380 U	

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(k)fluoranthene
	Chemical Name	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA17-10	11/15/2006		380 U		380 U		380 U		380 U	
SA17-20	11/15/2006		350 U		350 U		350 U		350 U	
SA17-25	11/15/2006		410 U		410 U		410 U		410 U	
SA18-0.5	11/15/2006		360 U		360 U		360 U		360 U	
SA18-0.5D	11/15/2006		350 U		350 U		350 U		350 U	
SA18-10	11/15/2006		360 U		360 U		360 U		360 U	
SA18-20	11/15/2006		350 U		350 U		350 U		350 U	
SA18-30	11/15/2006		360 U		360 U		360 U		360 U	
SA19-0.5	11/16/2006		360 U		360 U		360 U		360 U	
SA19-10	11/16/2006		360 U		360 U		360 U		360 U	
SA19-20	11/16/2006		360 U		360 U		360 U		360 U	
SA19-25	11/16/2006		380 U		380 U		380 U		380 U	
SA20-0.5	11/16/2006		370 U		370 U		370 U		370 U	
SA20-0.5D	11/16/2006		410 U		410 U		410 U		410 U	
SA20-10	11/16/2006		390 U		390 U		390 U		390 U	
SA20-20	11/16/2006		350 U		350 U		350 U		350 U	
SA20-25	11/16/2006		390 U		390 U		390 U		390 U	
SA21-0.5	11/15/2006	6.9 U	340 U	6.9 U	340 U	6.9 U	340 U	6.9 U	340 U	6.9 U
SA21-10	11/15/2006		360 U		360 U		360 U		360 U	
SA21-20	11/15/2006		360 U		360 U		360 U		360 U	
SA21-20D	11/15/2006		340 U		340 U		340 U		340 U	
SA21-30	11/15/2006		370 U		370 U		370 U		370 U	
SA22-0.5	11/16/2006		420 U		420 U		420 U		420 U	
SA22-10	11/16/2006		370 U		370 U		370 U		370 U	
SA22-20	11/16/2006		380 U		380 U		380 U		380 U	
SA23-0.5	11/09/2006		380 U		380 U		380 U		380 U	
SA23-10	11/09/2006		400 U		400 U		400 U		400 U	
SA23-20	11/09/2006		400 U		400 U		400 U		400 U	
SA23-20D	11/09/2006		380 U		380 U		380 U		380 U	
SA24-0.5	11/03/2006		380 U		380 U		380 U		380 U	
SA24-10	11/03/2006		360 U		360 U		360 U		360 U	
SA24-20	11/03/2006		350 U		350 U		350 U		350 U	
SA24-25	11/03/2006		370 U		370 U		370 U		370 U	
SA25-0.5	11/03/2006		370 U		370 U		370 U		370 U	
SA25-10	11/03/2006		370 U		370 U		370 U		370 U	
SA25-15	11/03/2006		360 U		360 U		360 U		360 U	
SA25-20	11/03/2006		430 U		430 U		430 U		430 U	
SA26-0.5	11/20/2006	7.1 U	360 U	7.1 U	360 U	7.1 U	360 U	7.1 U	360 U	7.1 U
SA26-0.5D	11/20/2006		360 U		360 U		360 U		360 U	
SA26-10	11/20/2006		370 U		370 U		370 U		370 U	
SA27-0.5	11/02/2006		350 U		350 U		350 U		350 U	
SA27-10	11/02/2006		350 U		350 U		350 U		350 U	
SA27-20	11/02/2006		370 U		370 U		370 U		370 U	

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	bis(2-Ethylhexyl)phthalate	Butyl benzyl phthalate	Chrysene	Chrysene	Dibenz(a,h)anthracene	Dibenz(a,h)anthracene	Diethyl phthalate	Dimethyl phthalate	Di-N-Butyl phthalate
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date									
SA1-0.5	11/03/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA1-05	11/03/2006	420 U	420 U	420 U		420 U		420 U	420 U	420 U
SA1-10	11/03/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA2-0.5	11/03/2006	350 U	350 U	350 U	7.0 U	350 U	7.0 U	350 U	350 U	350 U
SA2-10	11/03/2006	410 U	410 U	410 U		410 U		410 U	410 U	410 U
SA2-20	11/03/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA2-30	11/06/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA2-40	11/06/2006	490 U	490 U	490 U		490 U		490 U	490 U	490 U
SA2-50	11/06/2006	490 U	490 U	490 U		490 U		490 U	490 U	490 U
SA2-60	11/06/2006	400 U	400 U	400 U		400 U		400 U	400 U	400 U
SA3-0.5	11/13/2006	350 U	350 U	350 U	7.1 U	350 U	7.1 U	350 U	350 U	350 U
SA3-0.5D	11/13/2006	350 U	350 U	350 U	7.0 U	350 U	7.0 U	350 U	350 U	350 U
SA3-10	11/13/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA3-20	11/13/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA3-30	11/13/2006	430 U	430 U	430 U		430 U		430 U	430 U	430 U
SA3-40	11/13/2006	490 U	490 U	490 U		490 U		490 U	490 U	490 U
SA4-0.5	11/14/2006	360 U	360 U	360 U	7.3 U	360 U	7.3 U	360 U	360 U	360 U
SA4-10	11/14/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA4-20	11/14/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA4-30	11/14/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA4-40	11/14/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA5-0.5	11/14/2006	430 U	430 U	430 U	8.5 U	430 U	8.5 U	430 U	430 U	430 U
SA5-10	11/14/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA5-20	11/14/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA5-30	11/14/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA5-37	11/14/2006	550 U	550 U	550 U		550 U		550 U	550 U	550 U
SA6-0.5	11/14/2006	350 U	350 U	350 U	7.0 U	350 U	7.0 U	350 U	350 U	350 U
SA6-0.5D	11/14/2006	380 U	380 U	380 U	7.7 U	380 U	7.7 U	380 U	380 U	380 U
SA6-10	11/14/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA6-20	11/14/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA6-30	11/14/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA6-35	11/14/2006	490 U	490 U	490 U		490 U		490 U	490 U	490 U
SA7-0.5	11/20/2006	350 U	350 U	350 U	7.0 U	350 U	7.0 U	350 U	350 U	350 U
SA7-10	11/20/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA7-10D	11/20/2006	360 U	360 U	360 U		360 U		360 U	360 U	350 U
SA7-20	11/20/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA7-30	11/20/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA7-34	11/20/2006	430 U	430 U	430 U		430 U		430 U	430 U	430 U
SA8-0.5	11/17/2006	350 U	350 U	350 U	**7.0**	350 U	6.9 U	350 U	350 U	350 U
SA8-10	11/17/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA8-20	11/17/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA8-30	11/17/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA8-37	11/17/2006	450 U	450 U	450 U		450 U		450 U	450 U	450 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	bis(2-Ethylhexyl)phthalate	Butyl benzyl phthalate	Chrysene	Chrysene	Dibenz(a,h)anthracene	Dibenz(a,h)anthracene	Diethyl phthalate	Dimethyl phthalate	Di-N-Butyl phthalate
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA9-0.5	11/06/2006	400 U	400 U	400 U	**24**	400 U	7.9 U	400 U	400 U	400 U
SA9-10	11/06/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA9-10D	11/06/2006	**66 J**	370 U	**71 J**		370 U		370 U	370 U	370 U
SA9-20	11/07/2006	**51 J**	360 U	**130 J**		360 U		360 U	360 U	360 U
SA9-30	11/07/2006	540 U	540 U	540 U		540 U		540 U	540 U	540 U
SA9-40	11/07/2006	460 U	460 U	460 U		460 U		460 U	460 U	460 U
SA10-0.5	11/07/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA10-10	11/07/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA10-10D	11/07/2006	**180 J**	380 U	380 U		380 U		380 U	380 U	380 U
SA10-20	11/07/2006	440 U	440 U	440 U		440 U		440 U	440 U	440 U
SA10-30	11/07/2006	510 U	510 U	510 U		510 U		510 U	510 U	510 U
SA10-40	11/07/2006	490 U	490 U	490 U		490 U		490 U	490 U	490 U
SA11-0.5	11/09/2006	**410**	360 U	360 U		360 U		360 U	360 U	360 U
SA11-0.5D	11/09/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA11-10	11/09/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA11-20	11/09/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA11-30	11/09/2006	540 U	540 U	540 U		540 U		540 U	540 U	540 U
SA12-0.5	11/10/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA12-10	11/10/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA12-20	11/10/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA12-30	11/10/2006	530 U	530 U	530 U		530 U		530 U	530 U	530 U
SA13-0.5	11/17/2006	380 U	380 U	380 U	7.7 U	380 U	7.7 U	380 U	380 U	380 U
SA13-0.5D	11/17/2006	370 U	370 U	370 U	7.3 U	370 U	7.3 U	370 U	370 U	370 U
SA13-10	11/17/2006	340 U	340 U	340 U		340 U		340 U	340 U	340 U
SA13-20	11/17/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA13-30	11/17/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA13-40	11/17/2006	420 U	420 U	420 U		420 U		420 U	420 U	420 U
SA14-0.5	11/08/2006	360 U	360 U	360 U	7.2 U	360 U	7.2 U	360 U	360 U	360 U
SA14-10	11/08/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA14-20	11/08/2006	410 U	410 U	410 U		410 U		**260 J**	410 U	410 U
SA14-30	11/08/2006	530 U	530 U	530 U		530 U		530 U	530 U	530 U
SA14-40	11/08/2006	410 U	410 U	410 U		410 U		410 U	410 U	410 U
SA15-0.5	11/08/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA15-10	11/08/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA15-10D	11/08/2006	**160 J**	360 U	360 U		360 U		360 U	360 U	**650**
SA15-20	11/08/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA15-30	11/08/2006	450 U	450 U	450 U		450 U		**150 J**	450 U	450 U
SA15-35	11/08/2006	450 U	450 U	450 U		450 U		450 U	450 U	450 U
SA16-0.5	11/09/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA16-10	11/09/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA16-20	11/09/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA16-30	11/09/2006	530 U	530 U	530 U		530 U		530 U	530 U	530 U
SA17-0.5	11/15/2006	390 U	390 U	390 U	7.7 U	390 U	7.7 U	390 U	390 U	390 U
SA17-0.5D	11/15/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	bis(2-Ethylhexyl)phthalate	Butyl benzyl phthalate	Chrysene	Chrysene	Dibenz(a,h)anthracene	Dibenz(a,h)anthracene	Diethyl phthalate	Dimethyl phthalate	Di-N-Butyl phthalate
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA17-10	11/15/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA17-20	11/15/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA17-25	11/15/2006	410 U	410 U	410 U		410 U		410 U	410 U	410 U
SA18-0.5	11/15/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA18-0.5D	11/15/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA18-10	11/15/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA18-20	11/15/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA18-30	11/15/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA19-0.5	11/16/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA19-10	11/16/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA19-20	11/16/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA19-25	11/16/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA20-0.5	11/16/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA20-0.5D	11/16/2006	410 U	410 U	410 U		410 U		410 U	410 U	410 U
SA20-10	11/16/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA20-20	11/16/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA20-25	11/16/2006	390 U	390 U	390 U		390 U		390 U	390 U	390 U
SA21-0.5	11/15/2006	340 U	340 U	340 U	6.9 U	340 U	6.9 U	340 U	340 U	340 U
SA21-10	11/15/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA21-20	11/15/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA21-20D	11/15/2006	340 U	340 U	340 U		340 U		340 U	340 U	340 U
SA21-30	11/15/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA22-0.5	11/16/2006	420 U	420 U	420 U		420 U		420 U	420 U	420 U
SA22-10	11/16/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA22-20	11/16/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA23-0.5	11/09/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA23-10	11/09/2006	400 U	400 U	400 U		400 U		400 U	400 U	400 U
SA23-20	11/09/2006	400 U	400 U	400 U		400 U		400 U	400 U	400 U
SA23-20D	11/09/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA24-0.5	11/03/2006	380 U	380 U	380 U		380 U		380 U	380 U	380 U
SA24-10	11/03/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA24-20	11/03/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA24-25	11/03/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA25-0.5	11/03/2006	**150 J**	370 U	370 U		370 U		370 U	370 U	370 U
SA25-10	11/03/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA25-15	11/03/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA25-20	11/03/2006	430 U	430 U	430 U		430 U		430 U	430 U	430 U
SA26-0.5	11/20/2006	360 U	360 U	360 U	7.1 U	360 U	7.1 U	360 U	360 U	360 U
SA26-0.5D	11/20/2006	360 U	360 U	360 U		360 U		360 U	360 U	360 U
SA26-10	11/20/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U
SA27-0.5	11/02/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA27-10	11/02/2006	350 U	350 U	350 U		350 U		350 U	350 U	350 U
SA27-20	11/02/2006	370 U	370 U	370 U		370 U		370 U	370 U	370 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Di-N-Octyl phthalate	Fluoranthene	Fluoranthene	Fluorene	Fluorene	Hexachlorobenzene	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date									
SA1-0.5	11/03/2006	350 U	350 U		350 U		350 U		350 U	
SA1-05	11/03/2006	420 U	420 U		420 U		420 U		420 U	
SA1-10	11/03/2006	360 U	360 U		360 U		360 U		360 U	
SA2-0.5	11/03/2006	350 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U
SA2-10	11/03/2006	410 U	410 U		410 U		410 U		410 U	
SA2-20	11/03/2006	390 U	390 U		390 U		390 U		390 U	
SA2-30	11/06/2006	390 U	390 U		390 U		390 U		390 U	
SA2-40	11/06/2006	490 U	490 U		490 U		490 U		490 U	
SA2-50	11/06/2006	490 U	490 U		490 U		490 U		490 U	
SA2-60	11/06/2006	400 U	400 U		400 U		400 U		400 U	
SA3-0.5	11/13/2006	350 U	350 U	7.1 U	350 U	7.1 U	350 U	7.1 U	350 U	7.1 U
SA3-0.5D	11/13/2006	350 U	350 U	7.0 U	350 U	7.0 U	350 U	**10**	350 U	7.0 U
SA3-10	11/13/2006	350 U	350 U		350 U		350 U		350 U	
SA3-20	11/13/2006	360 U	360 U		360 U		360 U		360 U	
SA3-30	11/13/2006	430 U	430 U		430 U		430 U		430 U	
SA3-40	11/13/2006	490 U	490 U		490 U		490 U		490 U	
SA4-0.5	11/14/2006	360 U	360 U	7.3 U	360 U	7.3 U	360 U	**8.8**	360 U	7.3 U
SA4-10	11/14/2006	350 U	350 U		350 U		350 U		350 U	
SA4-20	11/14/2006	360 U	360 U		360 U		360 U		360 U	
SA4-30	11/14/2006	380 U	380 U		380 U		380 U		380 U	
SA4-40	11/14/2006	350 U	350 U		350 U		350 U		350 U	
SA5-0.5	11/14/2006	430 U	430 U	8.5 U	430 U	8.5 U	430 U	**21**	430 U	8.5 U
SA5-10	11/14/2006	380 U	380 U		380 U		380 U		380 U	
SA5-20	11/14/2006	390 U	390 U		390 U		390 U		390 U	
SA5-30	11/14/2006	360 U	360 U		360 U		360 U		360 U	
SA5-37	11/14/2006	550 U	550 U		550 U		550 U		550 U	
SA6-0.5	11/14/2006	350 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 UJ	7.0 U
SA6-0.5D	11/14/2006	380 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 UJ	7.7 U
SA6-10	11/14/2006	360 U	360 U		360 U		360 U		360 U	
SA6-20	11/14/2006	360 U	360 U		360 U		360 U		360 U	
SA6-30	11/14/2006	350 U	350 U		350 U		350 U		350 U	
SA6-35	11/14/2006	490 U	490 U		490 U		490 U		490 U	
SA7-0.5	11/20/2006	350 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U	350 U	7.0 U
SA7-10	11/20/2006	350 U	350 U		350 U		350 U		350 U	
SA7-10D	11/20/2006	360 U	360 U		360 U		360 U		360 U	
SA7-20	11/20/2006	360 U	360 U		360 U		360 U		360 U	
SA7-30	11/20/2006	350 U	350 U		350 U		350 U		350 U	
SA7-34	11/20/2006	430 U	430 U		430 U		430 U		430 U	
SA8-0.5	11/17/2006	350 U	350 U	**27**	350 U	6.9 U	350 U	6.9 U	350 U	6.9 U
SA8-10	11/17/2006	350 U	350 U		350 U		350 U		350 UJ	
SA8-20	11/17/2006	350 U	350 U		350 U		350 U		350 UJ	
SA8-30	11/17/2006	360 U	360 U		360 U		360 U		360 UJ	
SA8-37	11/17/2006	450 U	450 U		450 U		450 U		450 UJ	

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Di-N-Octyl phthalate	Fluoranthene	Fluoranthene	Fluorene	Fluorene	Hexachlorobenzene	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA9-0.5	11/06/2006	400 U	400 U	**17**	400 U	7.9 U	400 U	**31**	400 U	**19**
SA9-10	11/06/2006	390 U	390 U		390 U		390 U		390 U	
SA9-10D	11/06/2006	370 U	**85 J**		370 U		370 U		370 U	
SA9-20	11/07/2006	360 U	**180 J**		360 U		360 U		**62 J**	
SA9-30	11/07/2006	540 U	540 U		540 U		540 U		540 U	
SA9-40	11/07/2006	460 U	460 U		460 U		460 U		460 U	
SA10-0.5	11/07/2006	370 U	370 U		370 U		370 U		370 U	
SA10-10	11/07/2006	360 U	360 U		360 U		360 U		360 U	
SA10-10D	11/07/2006	380 U	380 U		380 U		380 U		380 U	
SA10-20	11/07/2006	440 U	440 U		440 U		440 U		440 U	
SA10-30	11/07/2006	510 UJ	510 U		510 U		510 U		510 UJ	
SA10-40	11/07/2006	490 U	490 U		490 U		490 U		490 U	
SA11-0.5	11/09/2006	360 U	360 U		360 U		**960**		360 U	
SA11-0.5D	11/09/2006	380 U	380 U		380 U		380 U		380 U	
SA11-10	11/09/2006	350 U	350 U		350 U		350 U		350 U	
SA11-20	11/09/2006	350 U	350 U		350 U		350 U		350 U	
SA11-30	11/09/2006	540 U	540 U		540 U		540 U		540 U	
SA12-0.5	11/10/2006	370 U	370 U		370 U		370 U		370 U	
SA12-10	11/10/2006	350 U	350 U		350 U		350 U		350 U	
SA12-20	11/10/2006	360 U	360 U		360 U		360 U		360 U	
SA12-30	11/10/2006	530 U	530 U		530 U		530 U		530 U	
SA13-0.5	11/17/2006	380 U	380 U	7.7 U	380 U	7.7 U	380 U	7.7 U	380 UJ	7.7 U
SA13-0.5D	11/17/2006	370 U	370 U	7.3 U	370 U	7.3 U	370 U	7.3 U	370 UJ	7.3 U
SA13-10	11/17/2006	340 U	340 U		340 U		340 U		340 UJ	
SA13-20	11/17/2006	350 U	350 U		350 U		350 U		350 UJ	
SA13-30	11/17/2006	350 U	350 U		350 U		350 U		350 UJ	
SA13-40	11/17/2006	420 U	420 U		420 U		420 U		420 UJ	
SA14-0.5	11/08/2006	360 U	360 U	7.2 U	360 U	7.2 U	**73 J**	**77**	360 U	7.2 U
SA14-10	11/08/2006	370 U	370 U		370 U		370 U		370 U	
SA14-20	11/08/2006	410 U	410 U		410 U		410 U		410 U	
SA14-30	11/08/2006	530 U	530 U		530 U		530 U		530 U	
SA14-40	11/08/2006	410 U	410 U		410 U		410 U		410 U	
SA15-0.5	11/08/2006	380 U	380 U		380 U		**310 J**		380 U	
SA15-10	11/08/2006	390 U	390 U		390 U		390 U		390 U	
SA15-10D	11/08/2006	360 U	360 U		360 U		**160 J**		360 U	
SA15-20	11/08/2006	360 U	360 U		360 U		360 U		360 U	
SA15-30	11/08/2006	450 U	450 U		450 U		450 U		450 U	
SA15-35	11/08/2006	450 U	450 U		450 U		450 U		450 U	
SA16-0.5	11/09/2006	350 U	350 U		350 U		350 U		350 U	
SA16-10	11/09/2006	370 U	370 U		370 U		370 U		370 U	
SA16-20	11/09/2006	360 U	360 U		360 U		360 U		360 U	
SA16-30	11/09/2006	530 U	530 U		530 U		530 U		530 U	
SA17-0.5	11/15/2006	390 U	390 U	7.7 U	390 U	7.7 U	**61 J**	**60**	390 UJ	7.7 U
SA17-0.5D	11/15/2006	380 U	380 U		380 U		**45 J**		380 UJ	

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Di-N-Octyl phthalate	Fluoranthene	Fluoranthene	Fluorene	Fluorene	Hexachlorobenzene	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene
	Chemical Name	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA17-10	11/15/2006	380 U	380 U		380 U		**57 J**		380 UJ	
SA17-20	11/15/2006	350 U	350 U		350 U		350 U		350 UJ	
SA17-25	11/15/2006	410 U	410 U		410 U		410 U		410 UJ	
SA18-0.5	11/15/2006	360 U	360 U		360 U		360 U		360 UJ	
SA18-0.5D	11/15/2006	350 U	350 U		350 U		350 U		350 UJ	
SA18-10	11/15/2006	360 U	360 U		360 U		360 U		360 UJ	
SA18-20	11/15/2006	350 U	350 U		350 U		350 U		350 U	
SA18-30	11/15/2006	360 U	360 U		360 U		360 U		360 UJ	
SA19-0.5	11/16/2006	360 U	360 U		360 U		360 U		360 U	
SA19-10	11/16/2006	360 U	360 U		360 U		360 U		360 U	
SA19-20	11/16/2006	360 U	360 U		360 U		360 U		360 U	
SA19-25	11/16/2006	380 U	380 U		380 U		380 U		380 U	
SA20-0.5	11/16/2006	370 U	370 U		370 U		370 U		370 U	
SA20-0.5D	11/16/2006	410 U	410 U		410 U		410 U		410 U	
SA20-10	11/16/2006	390 U	390 U		390 U		390 U		390 U	
SA20-20	11/16/2006	350 U	350 U		350 U		350 U		350 U	
SA20-25	11/16/2006	390 U	390 U		390 U		390 U		390 U	
SA21-0.5	11/15/2006	340 U	340 U	6.9 U	340 U	6.9 U	340 U	6.9 U	340 UJ	6.9 U
SA21-10	11/15/2006	360 U	360 U		360 U		360 U		360 UJ	
SA21-20	11/15/2006	360 U	360 U		360 U		360 U		360 UJ	
SA21-20D	11/15/2006	340 U	340 U		340 U		340 U		340 UJ	
SA21-30	11/15/2006	370 U	370 U		370 U		370 U		370 UJ	
SA22-0.5	11/16/2006	420 U	420 U		420 U		420 U		420 U	
SA22-10	11/16/2006	370 U	370 U		370 U		370 U		370 U	
SA22-20	11/16/2006	380 U	380 U		380 U		380 U		380 U	
SA23-0.5	11/09/2006	380 U	380 U		380 U		380 U		380 U	
SA23-10	11/09/2006	400 U	400 U		400 U		400 U		400 U	
SA23-20	11/09/2006	400 U	400 U		400 U		400 U		400 U	
SA23-20D	11/09/2006	380 U	380 U		380 U		380 U		380 U	
SA24-0.5	11/03/2006	380 U	380 U		380 U		380 U		380 U	
SA24-10	11/03/2006	360 U	360 U		360 U		360 U		360 U	
SA24-20	11/03/2006	350 U	350 U		350 U		350 U		350 U	
SA24-25	11/03/2006	370 U	370 U		370 U		370 U		370 U	
SA25-0.5	11/03/2006	370 U	370 U		370 U		370 U		370 U	
SA25-10	11/03/2006	370 U	370 U		370 U		370 U		370 U	
SA25-15	11/03/2006	360 U	360 U		360 U		360 U		360 U	
SA25-20	11/03/2006	430 U	430 U		430 U		430 U		430 U	
SA26-0.5	11/20/2006	360 U	360 U	7.1 U	360 U	7.1 U	360 U	**8.6**	360 U	7.1 U
SA26-0.5D	11/20/2006	360 U	360 U		360 U		360 U		360 U	
SA26-10	11/20/2006	370 U	370 U		370 U		370 U		370 U	
SA27-0.5	11/02/2006	350 U	350 U		350 U		350 U		350 U	
SA27-10	11/02/2006	350 U	350 U		350 U		350 U		350 U	
SA27-20	11/02/2006	370 U	370 U		370 U		370 U		370 U	

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Naphthalene	Naphthalene	Naphthalene	Nitrobenzene	Octachlorostyrene	Phenanthrene	Phenanthrene	Pyrene	Pyrene	Pyridine
	Chemical Name	SW 846 8260	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date										
SA1-0.5	11/03/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA1-05	11/03/2006	6.4 U	420 U		420 U	420 U	420 U		420 U		2000 U
SA1-10	11/03/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA2-0.5	11/03/2006	5.3 U	350 U	7.0 U	350 U	350 U	350 U	7.0 U	350 U	7.0 U	1700 U
SA2-10	11/03/2006	6.2 U	410 U		410 U	410 U	410 U		410 U		2000 U
SA2-20	11/03/2006	5.9 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA2-30	11/06/2006	5.9 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA2-40	11/06/2006	7.5 U	490 U		490 U	490 U	490 U		490 U		2400 U
SA2-50	11/06/2006	7.4 U	490 U		490 U	490 U	490 U		490 U		2400 U
SA2-60	11/06/2006	6.1 U	400 U		400 U	400 U	400 U		400 U		2000 U
SA3-0.5	11/13/2006	5.3 U	350 U	7.1 U	350 U	350 U	350 U	7.1 U	350 U	**7.0 J**	1700 U
SA3-0.5D	11/13/2006	5.3 U	350 U	7.0 U	350 U	350 U	350 U	7.0 U	350 U	7.0 U	1700 U
SA3-10	11/13/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA3-20	11/13/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA3-30	11/13/2006	6.4 U	430 U		430 U	430 U	430 U		430 U		2100 U
SA3-40	11/13/2006	7.4 UJ	490 U		490 U	490 U	490 U		490 U		2400 U
SA4-0.5	11/14/2006	5.5 U	360 U	7.3 U	360 U	360 U	360 U	7.3 U	360 U	7.3 U	1800 U
SA4-10	11/14/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA4-20	11/14/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA4-30	11/14/2006	5.7 U	380 U		380 U	380 U	380 U		380 U		1800 U
SA4-40	11/14/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA5-0.5	11/14/2006	6.5 U	430 U	8.5 U	430 U	430 U	430 U	8.5 U	430 U	8.5 U	2100 U
SA5-10	11/14/2006	5.8 U	380 U		380 U	380 U	380 U		380 U		1900 U
SA5-20	11/14/2006	5.9 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA5-30	11/14/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA5-37	11/14/2006	8.3 U	550 U		550 U	550 U	550 U		550 U		2700 U
SA6-0.5	11/14/2006	5.3 U	350 U	7.0 U	350 U	350 U	350 U	7.0 U	350 U	7.0 U	1700 U
SA6-0.5D	11/14/2006	5.8 U	380 U	7.7 U	380 U	380 U	380 U	7.7 U	380 U	7.7 U	1900 U
SA6-10	11/14/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA6-20	11/14/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA6-30	11/14/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA6-35	11/14/2006	7.4 U	490 U		490 U	490 U	490 U		490 U		2400 U
SA7-0.5	11/20/2006	5.3 U	350 U	7.0 U	350 U	350 U	350 U	7.0 U	350 U	7.0 U	1700 U
SA7-10	11/20/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA7-10D	11/20/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA7-20	11/20/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA7-30	11/20/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA7-34	11/20/2006	6.5 U	430 U		430 U	430 U	430 U		430 U		2100 U
SA8-0.5	11/17/2006	**0.79 J**	350 U	6.9 U	350 U	350 U	350 U	6.9 U	350 U	**12**	1700 U
SA8-10	11/17/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA8-20	11/17/2006	5.2 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA8-30	11/17/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA8-37	11/17/2006	6.8 U	450 U		450 U	450 U	450 U		450 U		2200 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Naphthalene	Naphthalene	Naphthalene	Nitrobenzene	Octachlorostyrene	Phenanthrene	Phenanthrene	Pyrene	Pyrene	Pyridine
	Chemical Name	SW 846 8260	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA9-0.5	11/06/2006	6.0 U	400 U	7.9 U	400 U	400 U	400 U	**10**	400 U	**23**	1900 U
SA9-10	11/06/2006	6.0 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA9-10D	11/06/2006	5.6 U	370 U		370 U	370 U	370 U		**78 J**		1800 U
SA9-20	11/07/2006	5.5 U	360 U		360 U	360 U	**59 J**		**160 J**		1700 U
SA9-30	11/07/2006	8.2 U	540 U		540 U	540 U	540 U		540 U		2600 U
SA9-40	11/07/2006	6.9 U	460 U		460 U	460 U	460 U		460 U		2200 U
SA10-0.5	11/07/2006	5.6 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA10-10	11/07/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA10-10D	11/07/2006	5.8 U	380 U		380 U	380 U	380 U		380 U		1800 U
SA10-20	11/07/2006	6.7 U	440 U		440 U	440 U	440 U		440 U		2200 U
SA10-30	11/07/2006	7.8 U	510 U		510 U	510 U	510 U		510 U		2500 U
SA10-40	11/07/2006	7.4 U	490 U		490 U	490 U	490 U		490 U		2400 U
SA11-0.5	11/09/2006	5.4 UJ	360 U		360 U	**210 J**	360 U		360 U		1700 U
SA11-0.5D	11/09/2006	9.1 U	380 U		380 U	380 U	380 U		380 U		1800 U
SA11-10	11/09/2006	5.4 UJ	350 U		350 U	350 U	350 U		350 U		1700 U
SA11-20	11/09/2006	5.2 UJ	350 U		350 U	350 U	350 U		350 U		1700 U
SA11-30	11/09/2006	8.2 UJ	540 U		540 U	540 U	540 U		540 U		2600 U
SA12-0.5	11/10/2006	5.6 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA12-10	11/10/2006	5.4 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA12-20	11/10/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA12-30	11/10/2006	8.1 U	530 U		530 U	530 U	530 U		530 U		2600 U
SA13-0.5	11/17/2006	5.8 U	380 U	7.7 U	380 U	380 U	380 U	7.7 U	380 U	7.7 U	1900 U
SA13-0.5D	11/17/2006	5.5 UJ	370 U	7.3 U	370 U	370 U	370 U	7.3 U	370 U	7.3 U	1800 U
SA13-10	11/17/2006	5.2 UJ	340 U		340 U	340 U	340 U		340 U		1700 U
SA13-20	11/17/2006	5.3 UJ	350 U		350 U	350 U	350 U		350 U		1700 U
SA13-30	11/17/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA13-40	11/17/2006	6.3 U	420 U		420 U	420 U	420 U		420 U		2000 U
SA14-0.5	11/08/2006	5.5 U	360 U	7.2 U	360 U	360 U	360 U	7.2 U	360 U	7.2 U	1800 U
SA14-10	11/08/2006	5.7 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA14-20	11/08/2006	6.2 U	410 U		410 U	410 U	410 U		410 U		2000 U
SA14-30	11/08/2006	8.0 U	530 U		530 U	530 U	530 U		530 U		2600 U
SA14-40	11/08/2006	6.2 U	410 U		410 U	410 U	410 U		410 U		2000 U
SA15-0.5	11/08/2006	5.8 U	380 U		380 U	**130 J**	380 U		380 U		1800 U
SA15-10	11/08/2006	5.9 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA15-10D	11/08/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA15-20	11/08/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA15-30	11/08/2006	6.8 UJ	450 U		450 U	450 U	450 U		450 U		2200 U
SA15-35	11/08/2006	6.9 U	450 U		450 U	450 U	450 U		450 U		2200 U
SA16-0.5	11/09/2006	5.3 UJ	350 U		350 U	350 U	350 U		350 U		1700 U
SA16-10	11/09/2006	5.6 UJ	370 U		370 U	370 U	370 U		370 U		1800 U
SA16-20	11/09/2006	5.4 UJ	360 U		360 U	360 U	360 U		360 U		1700 U
SA16-30	11/09/2006	8.1 UJ	530 U		530 U	530 U	530 U		530 U		2600 U
SA17-0.5	11/15/2006	5.9 U	390 U	7.7 U	390 U	390 U	390 U	7.7 U	390 U	7.7 U	1900 U
SA17-0.5D	11/15/2006	5.8 U	380 U		380 U	380 U	380 U		380 U		1800 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Naphthalene	Naphthalene	Naphthalene	Nitrobenzene	Octachlorostyrene	Phenanthrene	Phenanthrene	Pyrene	Pyrene	Pyridine
	Chemical Name	SW 846 8260	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SA17-10	11/15/2006	5.7 U	380 U		380 U	380 U	380 U		380 U		1800 U
SA17-20	11/15/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA17-25	11/15/2006	6.2 U	410 U		410 U	410 U	410 U		410 U		2000 U
SA18-0.5	11/15/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA18-0.5D	11/15/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA18-10	11/15/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA18-20	11/15/2006	5.4 U	350 U		350 U	350 U	350 U		350 U		1700 UJ
SA18-30	11/15/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA19-0.5	11/16/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA19-10	11/16/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA19-20	11/16/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA19-25	11/16/2006	5.8 U	380 U		380 U	380 U	380 U		380 U		1900 U
SA20-0.5	11/16/2006	5.6 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA20-0.5D	11/16/2006	6.2 U	410 U		410 U	410 U	410 U		410 U		2000 U
SA20-10	11/16/2006	5.9 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA20-20	11/16/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA20-25	11/16/2006	5.9 U	390 U		390 U	390 U	390 U		390 U		1900 U
SA21-0.5	11/15/2006	5.2 U	340 U	6.9 U	340 U	340 U	340 U	6.9 U	340 U	6.9 U	1700 U
SA21-10	11/15/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA21-20	11/15/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA21-20D	11/15/2006	5.2 U	340 U		340 U	340 U	340 U		340 U		1700 U
SA21-30	11/15/2006	5.6 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA22-0.5	11/16/2006	6.3 U	420 U		420 U	420 U	420 U		420 U		2000 U
SA22-10	11/16/2006	5.5 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA22-20	11/16/2006	5.8 U	380 U		380 U	380 U	380 U		380 U		1900 U
SA23-0.5	11/09/2006	5.8 UJ	380 U		380 U	380 U	380 U		380 U		1900 U
SA23-10	11/09/2006	6.0 UJ	400 U		400 U	400 U	400 U		400 U		1900 U
SA23-20	11/09/2006	6.0 UJ	400 U		400 U	400 U	400 U		400 U		1900 U
SA23-20D	11/09/2006	5.8 UJ	380 U		380 U	380 U	380 U		380 U		1800 U
SA24-0.5	11/03/2006	5.8 U	380 U		380 U	380 U	380 U		380 U		1800 U
SA24-10	11/03/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA24-20	11/03/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA24-25	11/03/2006	5.7 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA25-0.5	11/03/2006	5.6 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA25-10	11/03/2006	5.7 UJ	370 U		370 U	370 U	370 U		370 U		1800 U
SA25-15	11/03/2006	5.4 U	360 U		360 U	360 U	360 U		360 U		1700 U
SA25-20	11/03/2006	6.5 U	430 U		430 U	430 U	430 U		430 U		2100 U
SA26-0.5	11/20/2006	5.4 U	360 U	7.1 U	360 U	360 U	360 U	7.1 U	360 U	7.1 U	1700 U
SA26-0.5D	11/20/2006	5.5 U	360 U		360 U	360 U	360 U		360 U		1800 U
SA26-10	11/20/2006	5.6 U	370 U		370 U	370 U	370 U		370 U		1800 U
SA27-0.5	11/02/2006	5.2 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA27-10	11/02/2006	5.3 U	350 U		350 U	350 U	350 U		350 U		1700 U
SA27-20	11/02/2006	5.5 U	370 U		370 U	370 U	370 U		370 U		1800 U

Table 4-18
Semi-Volatile Organic Compounds (SVOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
ug/kg	Micrograms per kilogram.
Blank	Not analyzed.
Bold	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.

Table 4-19
Semi-Volatile Organic Compound (SVOC) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	1,4-Dioxane	2-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthene	Acenaphthylene	Acenaphthylene	Anthracene	Anthracene	Benz(a)anthracene	Benz(a)anthracene
	Analytic Method	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date											
IAR_12/01/2006	12/01/2006	10 U	10 U		10 U		10 UJ		10 U		10 U	
M100	12/04/2006	10 UJ	10 UJ		10 UJ		10 UJ		10 UJ		10 UJ	
M100D	12/04/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M11	12/06/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M11D	12/06/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M120	11/28/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M12A	12/05/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M13	12/01/2006	**9.9**	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U
M29	11/17/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M2A	12/04/2006	10 U	10 U		10 UJ		R		10 UJ		10 U	
M31A	12/06/2006	10 U	10 U	0.20 U	10 UJ	0.20 U	R	0.20 U	10 U	0.20 U	10 U	0.20 U
M39	12/05/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M48	12/06/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M55	12/07/2006	10 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U
M55D	12/07/2006	10 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U
M5A	12/07/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M76	12/04/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M7B	11/30/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M89	12/05/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M92	11/29/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M95	12/04/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M97	11/29/2006	10 U	10 U		10 U		10 U		10 U		10 U	
M98	11/30/2006	10 U	10 U		10 U		10 U		10 U		10 U	
MC45	12/06/2006	10 U	10 U		10 U		10 U		10 U		10 U	
PC40	12/01/2006	10 U	10 U		10 U		10 U		10 U		10 U	
GWSA2	11/06/2006	10 UJ	10 UJ		10 UJ		10 UJ		10 UJ		10 UJ	
GWSA9	11/07/2006	10 U	10 U		10 U		10 U		10 U		10 U	
GWSA10	11/07/2006	10 U	10 U		10 U		10 U		10 U		10 U	
GWSA14	11/08/2006	10 U	10 U		10 U		10 U		10 U		10 U	
GWSA15	11/08/2006	10 U	10 U		10 U		10 U		10 U		10 U	

Table 4-19
Semi-Volatile Organic Compound (SVOC) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Benzo(a)pyrene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(k)fluoranthene	bis(2-Ethylhexyl)phthalate
	Analytic Method	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date									
IAR_12/01/2006	12/01/2006	10 U		10 U		10 U		10 U		10 U
M100	12/04/2006	10 UJ		10 UJ		10 UJ		10 UJ		10 UJ
M100D	12/04/2006	10 U		10 U		10 U		10 U		10 U
M11	12/06/2006	10 U		10 U		10 U		10 U		10 U
M11D	12/06/2006	10 U		10 U		10 U		10 U		10 U
M120	11/28/2006	10 U		10 U		10 U		10 U		10 U
M12A	12/05/2006	10 U		10 U		10 U		10 U		10 U
M13	12/01/2006	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U
M29	11/17/2006	10 U		10 U		10 U		10 U		**1.5 J**
M2A	12/04/2006	10 U		10 U		10 U		10 U		10 U
M31A	12/06/2006	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U
M39	12/05/2006	10 U		10 U		10 U		10 U		10 U
M48	12/06/2006	10 U		10 U		10 U		10 U		10 U
M55	12/07/2006	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U
M55D	12/07/2006	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U
M5A	12/07/2006	10 U		10 U		10 U		10 U		10 U
M76	12/04/2006	10 U		10 U		10 U		10 U		10 U
M7B	11/30/2006	10 U		10 U		10 U		10 U		10 U
M89	12/05/2006	10 U		10 U		10 U		10 U		10 U
M92	11/29/2006	10 U		10 U		10 U		10 U		**3.2 J**
M95	12/04/2006	10 U		10 U		10 U		10 U		10 U
M97	11/29/2006	10 U		10 U		10 U		10 U		**1.5 J**
M98	11/30/2006	10 U		10 U		10 U		10 U		10 U
MC45	12/06/2006	10 U		10 U		10 U		10 U		10 U
PC40	12/01/2006	10 U		10 U		10 U		10 U		10 U
GWSA2	11/06/2006	10 UJ		10 UJ		10 UJ		10 UJ		**17 J**
GWSA9	11/07/2006	10 U		10 U		10 U		10 U		**1.4 J**
GWSA10	11/07/2006	10 U		10 U		10 U		10 U		10 U
GWSA14	11/08/2006	10 U		10 U		10 U		10 U		10 U
GWSA15	11/08/2006	10 U		10 U		10 U		10 U		**1.1 J**

Table 4-19
Semi-Volatile Organic Compound (SVOC) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Butyl benzyl phthalate	Chrysene	Chrysene	Dibenz(a,h)anthracene	Dibenz(a,h)anthracene	Diethyl phthalate	Dimethyl phthalate	Di-N-Butyl phthalate	Di-N-Octyl phthalate	Fluoranthene
	Analytic Method	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date										
IAR_12/01/2006	12/01/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M100	12/04/2006	10 UJ	10 UJ		10 UJ		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
M100D	12/04/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M11	12/06/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M11D	12/06/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M120	11/28/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M12A	12/05/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M13	12/01/2006	10 U	10 U	0.20 U	10 U	0.20 U	10 U	10 U	10 U	10 U	10 U
M29	11/17/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M2A	12/04/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M31A	12/06/2006	10 U	10 U	0.20 U	10 U	0.20 U	10 U	10 U	10 U	10 U	10 U
M39	12/05/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M48	12/06/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M55	12/07/2006	10 U	10 U	0.20 U	10 U	0.20 U	10 U	10 U	10 U	10 U	10 U
M55D	12/07/2006	10 U	10 U	0.20 U	10 U	0.20 U	10 U	10 U	10 U	10 U	10 U
M5A	12/07/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M76	12/04/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M7B	11/30/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M89	12/05/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M92	11/29/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M95	12/04/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M97	11/29/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
M98	11/30/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
MC45	12/06/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
PC40	12/01/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
GWSA2	11/06/2006	10 UJ	10 UJ		10 UJ		10 UJ	10 UJ	**1.0 J**	10 UJ	10 UJ
GWSA9	11/07/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
GWSA10	11/07/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
GWSA14	11/08/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U
GWSA15	11/08/2006	10 U	10 U		10 U		10 U	10 U	10 U	10 U	10 U

Table 4-19
Semi-Volatile Organic Compound (SVOC) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Fluoranthene	Fluorene	Fluorene	Hexachlorobenzene	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene	Naphthalene	Naphthalene	Naphthalene
	Analytic Method	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8260	SW 846 8270	SW 846 8270 SIM
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date										
IAR_12/01/2006	12/01/2006		10 U		10 U		10 U		5.0 U	10 U	
M100	12/04/2006		10 UJ		10 UJ		10 UJ		5.0 U	10 UJ	
M100D	12/04/2006		10 U		10 U		10 U		5.0 U	10 U	
M11	12/06/2006		10 U		10 U		10 UJ		5.0 U	10 UJ	
M11D	12/06/2006		10 U		10 U		10 UJ		5.0 U	10 UJ	
M120	11/28/2006		10 U		10 U		10 U		5.0 U	10 U	
M12A	12/05/2006		10 U		10 U		10 U		5.0 U	10 U	
M13	12/01/2006	0.20 U	10 U	0.20 U	10 U	0.20 U	10 U	0.20 U	5.0 U	10 U	0.20 U
M29	11/17/2006		10 U		10 U		10 U		5.0 U	10 U	
M2A	12/04/2006		10 U		10 U		10 U		5.0 U	10 U	
M31A	12/06/2006	0.23 U	10 U	0.20 U	10 U	0.20 U	10 UJ	0.20 U	5.0 U	10 UJ	0.20 U
M39	12/05/2006		10 U		10 U		10 U		5.0 U	10 U	
M48	12/06/2006		10 U		10 U		10 UJ		5.0 U	10 UJ	
M55	12/07/2006	0.23 U	10 U	0.20 U	10 U	0.20 U	10 UJ	0.20 U	5.0 U	10 UJ	0.20 U
M55D	12/07/2006	0.26 U	10 U	0.20 U	10 U	0.20 U	10 UJ	0.20 U	5.0 U	10 UJ	0.20 U
M5A	12/07/2006		10 U		10 U		10 UJ		5.0 U	10 UJ	
M76	12/04/2006		10 U		10 U		10 U		5.0 U	10 U	
M7B	11/30/2006		10 U		10 U		10 U		5.0 U	10 U	
M89	12/05/2006		10 U		10 U		10 U		5.0 U	10 U	
M92	11/29/2006		10 U		10 U		10 U		5.0 U	10 U	
M95	12/04/2006		10 U		10 U		10 U		5.0 U	10 U	
M97	11/29/2006		10 U		10 U		10 U		5.0 U	10 U	
M98	11/30/2006		10 U		10 U		10 U		5.0 U	10 U	
MC45	12/06/2006		10 U		10 U		10 UJ		5.0 U	10 UJ	
PC40	12/01/2006		10 U		10 U		10 U		5.0 U	10 U	
GWSA2	11/06/2006		10 UJ		10 UJ		10 UJ		5.0 U	10 UJ	
GWSA9	11/07/2006		10 U		10 U		10 U		500 U	10 U	
GWSA10	11/07/2006		10 U		10 U		10 U		5.0 U	10 U	
GWSA14	11/08/2006		10 U		10 U		10 U		500 U	**5.2 J**	
GWSA15	11/08/2006		10 U		10 U		10 U		5.0 U	10 U	

Table 4-19
Semi-Volatile Organic Compound (SVOC) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC	SVOC
	Chemical Name	Nitrobenzene	Octachlorostyrene	Phenanthrene	Phenanthrene	Pyrene	Pyrene	Pyridine
	Analytic Method	SW 846 8270	SW 846 8270	SW 846 8270	SW 846 8270 SIM	SW 846 8270	SW 846 8270 SIM	SW 846 8270
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date							
IAR_12/01/2006	12/01/2006	10 U	10 U	10 U		10 U		20 U
M100	12/04/2006	10 UJ	10 UJ	10 UJ		10 UJ		20 UJ
M100D	12/04/2006	10 U	10 U	10 U		10 U		20 UJ
M11	12/06/2006	10 U	10 U	10 U		10 U		20 U
M11D	12/06/2006	10 U	10 U	10 U		10 U		20 U
M120	11/28/2006	10 U	10 U	10 U		10 U		20 U
M12A	12/05/2006	10 U	10 U	10 U		10 U		20 U
M13	12/01/2006	10 U	10 U	10 U	0.20 U	10 U	0.20 U	20 U
M29	11/17/2006	10 U	10 U	10 U		10 U		20 U
M2A	12/04/2006	10 U	10 U	10 U		10 U		20 UJ
M31A	12/06/2006	10 U	10 U	10 U	0.20 U	10 U	0.20 U	20 U
M39	12/05/2006	10 U	10 U	10 U		10 U		20 U
M48	12/06/2006	10 U	10 U	10 U		10 U		20 U
M55	12/07/2006	10 U	10 U	10 U	0.20 U	10 U	0.20 U	20 U
M55D	12/07/2006	10 U	10 U	10 U	0.20 U	10 U	0.20 U	20 U
M5A	12/07/2006	10 U	10 U	10 U		10 U		20 U
M76	12/04/2006	10 U	10 U	10 U		10 U		20 UJ
M7B	11/30/2006	10 U	10 U	10 U		10 U		20 U
M89	12/05/2006	10 U	10 U	10 U		10 U		20 U
M92	11/29/2006	10 U	10 U	10 U		10 U		20 U
M95	12/04/2006	10 U	10 U	10 U		10 U		20 UJ
M97	11/29/2006	10 U	10 U	10 U		10 U		20 U
M98	11/30/2006	10 U	10 U	10 U		10 U		20 U
MC45	12/06/2006	10 U	10 U	10 U		10 U		20 U
PC40	12/01/2006	10 U	10 U	10 U		10 U		20 U
GWSA2	11/06/2006	10 UJ	10 UJ	10 UJ		10 UJ		20 UJ
GWSA9	11/07/2006	10 U	10 U	10 U		10 U		20 U
GWSA10	11/07/2006	10 U	10 U	10 U		10 U		20 U
GWSA14	11/08/2006	10 U	10 U	10 U		10 U		20 U
GWSA15	11/08/2006	10 U	10 U	10 U		10 U		20 U

Table 4-19
Semi-Volatile Organic Compound (SVOC) Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
R	The result was rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
ug/L	Micrograms per liter.
Blank	Not analyzed.
Bold	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.

Table 4-20
Total Petroleum Hydrocarbons (TPH) and Fuel Alcohols Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Fuel Alcohol	Fuel Alcohol	Fuel Alcohol	TPH	TPH	TPH
	Analytic Method	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B DRO	SW 846 8015B DRO	SW 846 8015B GRO
	Chemical Name	Ethanol	Ethylene glycol	Methanol	Oil Range Organics	Total petroleum hydrocarbon-diesel	Total petroleum hydrocarbon-gasoline
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date						
SA1-0.5	11/03/2006				**6.3 J**	26 U	0.11 U
SA1-05	11/03/2006				32 U	32 U	0.13 U
SA1-10	11/03/2006				27 U	27 U	0.11 U
SA2-0.5	11/03/2006				27 U	27 U	0.11 U
SA2-10	11/03/2006				31 U	31 U	0.12 U
SA2-20	11/03/2006				29 U	29 U	0.12 U
SA2-30	11/06/2006				30 U	30 U	0.12 U
SA2-40	11/06/2006				37 U	37 U	0.15 U
SA2-50	11/06/2006				37 U	37 U	0.15 U
SA2-60	11/06/2006				31 U	31 U	0.12 U
SA3-0.5	11/13/2006	53 UJ	92 UJ	53 UJ	27 U	27 U	0.11 U
SA3-0.5D	11/13/2006	53 UJ	87 UJ	53 UJ	27 U	27 U	0.11 U
SA3-10	11/13/2006	53 UJ	79 UJ	53 UJ	27 U	27 U	0.11 U
SA3-20	11/13/2006	55 UJ	89 UJ	55 UJ	27 U	27 U	0.11 U
SA3-30	11/13/2006	64 UJ	118 UJ	64 UJ	32 U	32 U	0.13 U
SA3-40	11/13/2006	74 UJ	115 UJ	74 UJ	37 U	37 U	0.15 U
SA4-0.5	11/14/2006				**43**	27 U	0.11 U
SA4-10	11/14/2006				27 U	27 U	0.11 U
SA4-20	11/14/2006				27 U	27 U	0.11 U
SA4-30	11/14/2006				29 U	29 U	0.11 U
SA4-40	11/14/2006				27 U	27 U	0.11 UJ
SA6-0.5	11/14/2006	53 UJ	69 UJ	53 UJ	27 U	27 U	0.11 U
SA6-0.5D	11/14/2006	58 UJ	75 UJ	58 UJ	29 U	29 U	0.12 U
SA6-10	11/14/2006	54 UJ	108 UJ	54 UJ	27 U	27 U	0.11 U
SA6-20	11/14/2006	54 UJ	85 UJ	54 UJ	27 U	27 U	0.11 U
SA6-30	11/14/2006	53 UJ	98 UJ	53 UJ	26 U	26 U	0.11 U
SA6-35	11/14/2006	74 UJ	112 UJ	74 UJ	37 U	37 U	0.15 U
SA7-0.5	11/20/2006				**26**	26 UJ	0.11 UJ
SA7-10	11/20/2006				26 U	26 U	0.11 UJ
SA7-10D	11/20/2006				27 U	27 U	0.11 UJ
SA7-20	11/20/2006				27 U	27 U	0.11 UJ
SA7-30	11/20/2006				27 U	27 U	0.11 UJ
SA7-34	11/20/2006				33 U	33 U	0.13 UJ
SA8-0.5	11/17/2006				530 U	**3600**	**0.13**
SA8-10	11/17/2006				27 U	27 U	0.11 U
SA8-20	11/17/2006				26 U	26 U	0.10 U
SA8-30	11/17/2006				27 U	27 U	0.11 U
SA8-37	11/17/2006				34 U	34 U	0.14 U
SA9-0.5	11/06/2006	60 UJ	110 UJ	60 UJ	30 U	30 U	0.12 U
SA9-10	11/06/2006	60 UJ	114 UJ	60 UJ	30 U	30 U	0.12 U

Table 4-20
Total Petroleum Hydrocarbons (TPH) and Fuel Alcohols Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Fuel Alcohol	Fuel Alcohol	Fuel Alcohol	TPH	TPH	TPH
	Analytic Method	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B DRO	SW 846 8015B DRO	SW 846 8015B GRO
	Chemical Name	Ethanol	Ethylene glycol	Methanol	Oil Range Organics	Total petroleum hydrocarbon-diesel	Total petroleum hydrocarbon-gasoline
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date						
SA9-10D	11/06/2006	56 UJ	100 UJ	56 UJ	28 U	28 U	0.11 U
SA9-20	11/07/2006	55 UJ	97 UJ	55 UJ	27 U	27 U	0.11 U
SA9-30	11/07/2006	82 UJ	142 UJ	82 UJ	41 U	41 U	0.16 U
SA9-40	11/07/2006	69 UJ	137 UJ	69 UJ	35 U	35 U	**3.2**
SA10-0.5	11/07/2006				28 U	28 U	0.11 U
SA10-10	11/07/2006				28 U	28 U	0.11 U
SA10-10D	11/07/2006				29 U	29 U	0.12 U
SA10-20	11/07/2006				34 U	34 U	0.13 U
SA10-30	11/07/2006				39 U	39 U	0.16 U
SA10-40	11/07/2006				37 U	37 U	0.15 U
SA11-0.5	11/09/2006				**86**	27 U	0.11 UJ
SA11-0.5D	11/09/2006				28 U	28 U	0.11 U
SA11-10	11/09/2006				27 U	27 U	0.11 U
SA11-20	11/09/2006				26 U	26 U	0.10 U
SA11-30	11/09/2006				41 U	41 U	0.16 U
SA14-0.5	11/08/2006				27 U	27 U	0.11 U
SA14-10	11/08/2006				28 U	28 U	0.11 U
SA14-20	11/08/2006				31 U	31 U	0.12 U
SA14-30	11/08/2006				40 U	40 U	0.16 U
SA14-40	11/08/2006				31 U	31 U	**0.89**
SA15-0.5	11/08/2006				29 U	29 U	0.12 U
SA16-0.5	11/09/2006				27 U	27 U	0.11 UJ
SA16-10	11/09/2006				28 U	28 U	0.11 U
SA16-20	11/09/2006				27 U	27 U	0.11 U
SA16-30	11/09/2006				40 U	40 U	0.16 U
SA17-0.5	11/15/2006				29 U	29 U	0.12 U
SA17-0.5D	11/15/2006				29 U	29 U	0.12 U
SA17-10	11/15/2006				28 U	28 U	0.11 U
SA17-20	11/15/2006				27 U	27 U	0.11 U
SA17-25	11/15/2006				31 U	31 U	0.12 U
SA18-0.5	11/15/2006				27 U	27 U	0.11 U
SA18-0.5D	11/15/2006				26 U	26 U	0.11 U
SA18-10	11/15/2006				27 U	27 U	0.11 U
SA18-20	11/15/2006				27 U	27 U	0.11 U
SA18-30	11/15/2006				28 U	28 U	0.11 U
SA21-0.5	11/15/2006				26 U	26 U	0.10 U
SA21-10	11/15/2006				28 U	28 U	0.11 U
SA21-20	11/15/2006				28 U	28 U	0.11 U
SA21-20D	11/15/2006				26 U	26 U	0.10 U
SA21-30	11/15/2006				28 U	28 U	0.11 U

Table 4-20
Total Petroleum Hydrocarbons (TPH) and Fuel Alcohols Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		Fuel Alcohol	Fuel Alcohol	Fuel Alcohol	TPH	TPH	TPH
Analytic Method		SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B DRO	SW 846 8015B DRO	SW 846 8015B GRO
Chemical Name		Ethanol	Ethylene glycol	Methanol	Oil Range Organics	Total petroleum hydrocarbon-diesel	Total petroleum hydrocarbon-gasoline
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date						
SA22-0.5	11/16/2006				32 U	32 U	0.13 UJ
SA22-10	11/16/2006				28 U	28 U	0.11 U
SA22-20	11/16/2006				29 U	29 U	0.12 U
SA24-0.5	11/03/2006				29 U	29 U	0.12 U
SA24-10	11/03/2006				27 U	27 U	0.11 U
SA24-20	11/03/2006				27 U	27 U	0.11 U
SA24-25	11/03/2006				28 U	28 U	0.11 U
SA25-0.5	11/03/2006				**26 J+**	**5.1 J+**	0.11 U
SA25-10	11/03/2006				28 U	28 U	0.11 U
SA25-15	11/03/2006				27 U	27 U	0.11 U
SA25-20	11/03/2006				32 U	32 U	**2.7**
SA26-0.5	11/20/2006	54 UJ	98 UJ	54 UJ	**150 J**	110 U	0.11 UJ
SA26-0.5D	11/20/2006	55 UJ	78 UJ	55 UJ	**52 J**	27 U	0.11 UJ
SA26-10	11/20/2006	56 UJ	79 UJ	56 UJ	28 U	28 U	0.11 UJ
SA27-0.5	11/02/2006	52 UJ	52 UJ	52 UJ	**4.0 J**	26 U	0.10 U
SA27-10	11/02/2006	53 UJ	53 UJ	53 UJ	27 U	27 U	0.11 U
SA27-20	11/02/2006	55 UJ	55 UJ	55 UJ	28 U	28 U	0.11 U

Notes:

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 high.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the quantitation limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
mg/kg	Milligrams per kilogram.
Blank	Not analyzed.
Bold	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.

Table 4-21
Total Petroleum Hydrocarbons (TPH) and Fuel Alcohols Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	Fuel Alcohol	Fuel Alcohol	Fuel Alcohol	TPH	TPH	TPH
	Analytic Method	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B FA	SW 846 8015B DRO	SW 846 8015B DRO	SW 846 8015B GRO
	Chemical Name	Ethanol	Ethylene glycol	Methanol	Oil Range Organics	Total petroleum hydrocarbon-diesel	Total petroleum hydrocarbon-gasoline
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Sample Date						
IAR_12/01/2006	12/01/2006	5.0 U	10 UJ	5.0 U			
M120	11/28/2006				0.50 U	0.50 U	0.10 U
M12A	12/05/2006	10 U	10 U	10 U			
M29	11/17/2006				0.50 U	0.50 U	0.10 U
M92	11/29/2006	5.0 U	10 UJ	5.0 U			
M95	12/04/2006	10 U	10 U	10 U			
PC40	12/01/2006	5.0 U	10 UJ	5.0 U			
GWSA2	11/06/2006				0.50 UJ	0.50 UJ	0.10 U
GWSA9	11/07/2006	**13 J**	10 UJ	5.0 UJ			

Table 4-21
Total Petroleum Hydrocarbons and Fuel Alcohols Concentrations in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J	The result is an estimated quantity. The associated numerical value is the approximate concentratior of the analyte in the sample.
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/L	Milligrams per liter.
Blank	Not analyzed.
Bold	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.

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Naphthalene	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA4-40	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 U	**0.54 J**	5.3 U	5.3 U	**1.9 J**	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 U	**0.37 J**	5.3 U	5.3 U	**1.4 J**	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA8-0.5	11/17/2006	**0.79 J**	5.3 UJ	**0.95 J**	5.3 UJ	5.3 UJ	**3.0 J**	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA8-20	11/17/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA8-30	11/17/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Naphthalene	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA9-10D	11/06/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
SA9-40	11/07/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
SA10-0.5	11/07/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA10-10	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA10-10D	11/07/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA10-20	11/07/2006	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
SA10-30	11/07/2006	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U
SA10-40	11/07/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA11-0.5	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 UJ	5.4 UJ
SA11-0.5D	11/09/2006	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	5.7 U	9.1 U
SA11-10	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 UJ	5.4 U
SA11-20	11/09/2006	5.2 UJ	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 UJ	5.2 U
SA11-30	11/09/2006	8.2 UJ	8.2 U	8.2 UJ	8.2 U	8.2 U	8.2 UJ	8.2 U
SA12-0.5	11/10/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U
SA13-0.5	11/17/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ
SA13-20	11/17/2006	5.3 UJ	5.3 UJ	**0.53 J**	5.3 UJ	5.3 UJ	**1.8 J**	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA14-10	11/08/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA14-20	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA14-30	11/08/2006	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U
SA14-40	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA15-0.5	11/08/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA15-10	11/08/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA15-10D	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA15-20	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA15-30	11/08/2006	6.8 UJ	6.8 U	6.8 UJ	6.8 U	6.8 U	6.8 UJ	6.8 UJ
SA15-35	11/08/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
SA16-0.5	11/09/2006	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 UJ	5.3 UJ
SA16-10	11/09/2006	5.6 UJ	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 UJ	5.6 UJ
SA16-20	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 UJ	5.4 UJ
SA16-30	11/09/2006	8.1 UJ	8.1 U	8.1 UJ	8.1 U	8.1 U	8.1 UJ	8.1 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA17-0.5D	11/15/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	**1.6 J**	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA18-0.5	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		VOC	VOC	VOC	VOC	VOC	VOC	VOC
Analytic Method		Naphthalene	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene
Chemical Name		SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
Units		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA18-0.5D	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-30	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-0.5	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-20	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-25	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA20-20	11/16/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA20-25	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-10	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**3.0 J**	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA22-20	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA23-0.5	11/09/2006	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 UJ	5.8 UJ
SA23-10	11/09/2006	6.0 UJ	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 UJ	6.0 UJ
SA23-20	11/09/2006	6.0 UJ	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 UJ	6.0 UJ
SA23-20D	11/09/2006	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 UJ	5.8 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA25-10	11/03/2006	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA25-15	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA25-20	11/03/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	**11**	6.5 U
SA26-0.5	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		VOC	VOC	VOC	VOC	VOC	VOC	VOC
Analytic Method		1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dichlorobenzene
Chemical Name		SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
Units		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 UJ	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA4-40	11/14/2006	5.3 U	**2.2 J**	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA8-0.5	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA8-20	11/17/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA8-30	11/17/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dichlorobenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA9-10D	11/06/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
SA9-40	11/07/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	**180**
SA10-0.5	11/07/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	**0.56 J**
SA10-10	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**0.19 J**
SA10-10D	11/07/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA10-20	11/07/2006	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
SA10-30	11/07/2006	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U
SA10-40	11/07/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA11-0.5	11/09/2006	5.4 U	**1.3 J**	5.4 U	**3.7 J**	5.4 UJ	5.4 U	5.4 UJ
SA11-0.5D	11/09/2006	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	5.7 U	5.7 U
SA11-10	11/09/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	5.4 U	5.4 UJ
SA11-20	11/09/2006	5.2 U	5.2 UJ	5.2 U	5.2 UJ	5.2 UJ	5.2 U	5.2 UJ
SA11-30	11/09/2006	8.2 U	8.2 UJ	8.2 U	8.2 UJ	8.2 UJ	8.2 U	8.2 UJ
SA12-0.5	11/10/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 UJ	8.1 U
SA13-0.5	11/17/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	12 U	5.8 UJ
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ
SA13-20	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U
SA14-10	11/08/2006	5.7 U	**4.8 J**	5.7 U	5.7 U	5.7 U	5.7 UJ	**0.29 J**
SA14-20	11/08/2006	6.2 U	**1400**	6.2 U	**1500**	6.2 U	6.2 UJ	**16**
SA14-30	11/08/2006	8.0 U	**4.2 J**	8.0 U	**8.5**	8.0 U	8.0 UJ	**1.2 J**
SA14-40	11/08/2006	6.2 U	6.2 U	6.2 U	**1.7 J**	6.2 U	6.2 UJ	**5.1 J**
SA15-0.5	11/08/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U
SA15-10	11/08/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U
SA15-10D	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U
SA15-20	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U
SA15-30	11/08/2006	6.8 U	6.8 UJ	6.8 U	6.8 UJ	6.8 UJ	6.8 U	6.8 UJ
SA15-35	11/08/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 UJ	6.9 U
SA16-0.5	11/09/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 UJ	5.3 U	5.3 UJ
SA16-10	11/09/2006	5.6 U	5.6 UJ	5.6 U	5.6 UJ	5.6 UJ	5.6 U	5.6 UJ
SA16-20	11/09/2006	5.4 U	**17 J**	5.4 U	**5.0 J**	5.4 UJ	5.4 U	5.4 UJ
SA16-30	11/09/2006	8.1 U	8.1 UJ	8.1 U	8.1 UJ	8.1 UJ	8.1 U	8.1 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA17-0.5D	11/15/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 U	6.2 U	**1.9 J**	6.2 U	6.2 U	**0.99 J**
SA18-0.5	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Units	VOC 1,1-Dichloropropene SW 846 8260 ug/kg	VOC 1,2,3-Trichlorobenzene SW 846 8260 ug/kg	VOC 1,2,3-Trichloropropane SW 846 8260 ug/kg	VOC 1,2,4-Trichlorobenzene SW 846 8260 ug/kg	VOC 1,2,4-Trimethylbenzene SW 846 8260 ug/kg	VOC 1,2-Dibromo-3-chloropropane SW 846 8260 ug/kg	VOC 1,2-Dichlorobenzene SW 846 8260 ug/kg
Sample ID	Sample Date							
SA18-0.5D	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-30	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**0.31 J**
SA19-0.5	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-20	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-25	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA20-20	11/16/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA20-25	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-10	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA22-20	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA23-0.5	11/09/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ
SA23-10	11/09/2006	6.0 U	**1.2 J**	6.0 U	6.0 UJ	6.0 UJ	6.0 U	6.0 UJ
SA23-20	11/09/2006	6.0 U	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ	6.0 U	6.0 UJ
SA23-20D	11/09/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA25-10	11/03/2006	5.7 U	5.7 UJ	5.7 U	5.7 UJ	5.7 UJ	5.7 UJ	5.7 UJ
SA25-15	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA25-20	11/03/2006	6.5 U	**6.3 J**	6.5 U	**30**	6.5 U	6.5 UJ	**140**
SA26-0.5	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	**1.3 J**	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	**2.2 J**	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	**1.5 J**	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	**1.2 J**	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA4-40	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 U	6.5 UJ	6.5 U	6.5 U	6.5 U	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	**0.32 J**	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA8-0.5	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	**16 J**	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U
SA8-20	11/17/2006	5.2 U	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 U
SA8-30	11/17/2006	5.5 U	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 U	6.8 UJ	6.8 U	6.8 U	6.8 U	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	**0.77 J**	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA9-10D	11/06/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
SA9-40	11/07/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	**760**	6.9 U
SA10-0.5	11/07/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	**1.9 J**	5.6 U
SA10-10	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA10-10D	11/07/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA10-20	11/07/2006	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
SA10-30	11/07/2006	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U
SA10-40	11/07/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA11-0.5	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	5.4 U	**1.7 J**	5.4 UJ
SA11-0.5D	11/09/2006	5.7 U	9.1 U	9.1 UJ	5.7 U	9.1 U	5.7 U	9.1 U
SA11-10	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ
SA11-20	11/09/2006	5.2 UJ	5.2 U	5.2 UJ	5.2 UJ	5.2 U	**0.92 J**	5.2 UJ
SA11-30	11/09/2006	8.2 UJ	8.2 U	8.2 UJ	8.2 UJ	8.2 U	**5.6 J**	8.2 UJ
SA12-0.5	11/10/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U
SA13-0.5	11/17/2006	5.8 U	5.8 U	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ	5.8 U
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ
SA13-20	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 U	6.3 UJ	6.3 U	6.3 U	6.3 U	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**0.93 J**	5.5 U
SA14-10	11/08/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	**0.99 J**	5.7 U
SA14-20	11/08/2006	6.2 U	6.2 U	6.2 U	**14**	6.2 U	**6.5**	6.2 U
SA14-30	11/08/2006	8.0 U	8.0 U	8.0 U	**15**	8.0 U	**2.6 J**	8.0 U
SA14-40	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	**7.1**	6.2 U
SA15-0.5	11/08/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA15-10	11/08/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA15-10D	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA15-20	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA15-30	11/08/2006	6.8 UJ	6.8 U	6.8 UJ	6.8 UJ	6.8 U	6.8 UJ	6.8 UJ
SA15-35	11/08/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
SA16-0.5	11/09/2006	5.3 UJ	5.3 U	5.3 UJ	5.3 UJ	5.3 U	5.3 UJ	5.3 UJ
SA16-10	11/09/2006	5.6 UJ	5.6 U	5.6 UJ	5.6 UJ	5.6 U	5.6 UJ	5.6 UJ
SA16-20	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ
SA16-30	11/09/2006	8.1 UJ	8.1 U	8.1 UJ	8.1 UJ	8.1 U	8.1 UJ	8.1 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA17-0.5D	11/15/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA18-0.5	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		VOC	VOC	VOC	VOC	VOC	VOC	VOC
Analytic Method		1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane
Chemical Name		SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
Units		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA18-0.5D	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-30	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**0.76 J**	5.5 U
SA19-0.5	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**17**	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**15**	5.5 U
SA19-20	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**15**	5.5 U
SA19-25	11/16/2006	**3.2 J**	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	**12**	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	**9.1**	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	**14**	5.9 U
SA20-20	11/16/2006	5.3 U	5.3 U	**0.30 J**	5.3 U	5.3 U	**11**	5.3 U
SA20-25	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	**9.0**	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-10	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	**1.2 J**	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA22-20	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	**8.7**	5.8 U
SA23-0.5	11/09/2006	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ
SA23-10	11/09/2006	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ
SA23-20	11/09/2006	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ
SA23-20D	11/09/2006	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA25-10	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	5.7 UJ	5.7 U
SA25-15	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	**0.12 J**	5.4 U
SA25-20	11/03/2006	**1.9 J**	6.5 U	6.5 U	6.5 U	6.5 U	**210**	6.5 U
SA26-0.5	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	2-Butanone	2-Chlorotoluene	2-Hexanone	2-Methoxy-2-methyl-butane	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA1-0.5	11/03/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA1-05	11/03/2006	13 U	6.4 U	13 UJ	6.4 U	6.4 U	6.4 U	13 U	13 U
SA1-10	11/03/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA2-0.5	11/03/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA2-10	11/03/2006	12 U	6.2 U	12 UJ	6.2 U	6.2 U	6.2 U	12 U	12 U
SA2-20	11/03/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 U	12 U
SA2-30	11/06/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 U	12 U
SA2-40	11/06/2006	15 U	7.5 U	15 UJ	7.5 U	7.5 U	7.5 U	15 U	15 U
SA2-50	11/06/2006	15 U	7.4 U	15 UJ	7.4 U	7.4 U	7.4 U	15 U	15 U
SA2-60	11/06/2006	12 U	6.1 U	12 UJ	6.1 U	6.1 U	6.1 U	12 U	12 U
SA3-0.5	11/13/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 UJ	11 U
SA3-0.5D	11/13/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 UJ	11 U
SA3-10	11/13/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 UJ	11 U
SA3-20	11/13/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 UJ	11 U
SA3-30	11/13/2006	13 U	6.4 U	13 UJ	6.4 U	6.4 U	6.4 U	13 UJ	13 U
SA3-40	11/13/2006	15 UJ	7.4 UJ	15 UJ	7.4 UJ	7.4 UJ	7.4 UJ	15 UJ	15 UJ
SA4-0.5	11/14/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA4-10	11/14/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA4-20	11/14/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA4-30	11/14/2006	11 U	5.7 U	11 UJ	5.7 U	5.7 U	5.7 U	11 U	11 U
SA4-40	11/14/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA5-0.5	11/14/2006	13 U	6.5 U	13 UJ	6.5 U	6.5 U	6.5 U	13 U	13 U
SA5-10	11/14/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	12 U
SA5-20	11/14/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 U	12 U
SA5-30	11/14/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA5-37	11/14/2006	17 U	8.3 U	17 UJ	8.3 U	8.3 U	8.3 U	17 U	17 U
SA6-0.5	11/14/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA6-0.5D	11/14/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	12 UJ
SA6-10	11/14/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA6-20	11/14/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA6-30	11/14/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA6-35	11/14/2006	15 U	7.4 U	15 UJ	7.4 U	7.4 U	7.4 U	15 U	15 U
SA7-0.5	11/20/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 UJ	**4.5 J**
SA7-10	11/20/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 UJ	**6.1 J**
SA7-10D	11/20/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 UJ	11 U
SA7-20	11/20/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 UJ	11 U
SA7-30	11/20/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 UJ	**21**
SA7-34	11/20/2006	13 U	6.5 U	13 UJ	6.5 U	6.5 U	6.5 U	13 UJ	**6.6 J**
SA8-0.5	11/17/2006	**14 J**	5.3 UJ	11 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ	**90 J**
SA8-10	11/17/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	**24**
SA8-20	11/17/2006	**38**	5.2 U	**3.8 J**	5.2 U	5.2 U	5.2 U	10 U	**250**
SA8-30	11/17/2006	**14**	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	**100**
SA8-37	11/17/2006	14 U	6.8 U	14 UJ	6.8 U	6.8 U	6.8 U	14 U	**45**
SA9-0.5	11/06/2006	12 U	6.0 U	12 UJ	6.0 U	6.0 U	6.0 U	12 U	12 U
SA9-10	11/06/2006	12 U	6.0 U	12 UJ	6.0 U	6.0 U	6.0 U	12 U	12 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Units	VOC 2-Butanone SW 846 8260 ug/kg	VOC 2-Chlorotoluene SW 846 8260 ug/kg	VOC 2-Hexanone SW 846 8260 ug/kg	VOC 2-Methoxy-2-methyl-butane SW 846 8260 ug/kg	VOC 4-Chlorotoluene SW 846 8260 ug/kg	VOC 4-Isopropyltoluene SW 846 8260 ug/kg	VOC 4-Methyl-2-pentanone SW 846 8260 ug/kg	VOC Acetone SW 846 8260 ug/kg
Sample ID	Sample Date								
SA9-10D	11/06/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 U	11 U
SA9-20	11/07/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA9-30	11/07/2006	16 U	8.2 U	16 UJ	8.2 U	8.2 U	8.2 U	16 U	16 U
SA9-40	11/07/2006	14 U	6.9 U	14 UJ	6.9 U	6.9 U	6.9 U	14 U	**5.6 J**
SA10-0.5	11/07/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 U	11 U
SA10-10	11/07/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA10-10D	11/07/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	12 U
SA10-20	11/07/2006	13 U	6.7 U	13 UJ	6.7 U	6.7 U	6.7 U	13 U	13 U
SA10-30	11/07/2006	16 U	7.8 U	16 UJ	7.8 U	7.8 U	7.8 U	16 U	16 U
SA10-40	11/07/2006	15 U	7.4 U	15 UJ	7.4 U	7.4 U	7.4 U	15 U	15 U
SA11-0.5	11/09/2006	11 U	5.4 U	11 U	5.4 U	5.4 UJ	5.4 UJ	11 U	11 UJ
SA11-0.5D	11/09/2006	11 U	5.7 U	18 UJ	9.1 U	5.7 U	9.1 U	18 U	11 U
SA11-10	11/09/2006	**1.7 J**	5.4 U	11 U	5.4 U	5.4 UJ	5.4 UJ	11 U	14 UJ
SA11-20	11/09/2006	10 U	5.2 U	10 U	5.2 U	5.2 UJ	5.2 UJ	10 U	10 UJ
SA11-30	11/09/2006	16 U	8.2 U	16 U	8.2 U	8.2 UJ	8.2 UJ	16 U	16 UJ
SA12-0.5	11/10/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 UJ	**4.3 J**
SA12-10	11/10/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 UJ	11 U
SA12-20	11/10/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 UJ	11 U
SA12-30	11/10/2006	16 U	8.1 U	16 UJ	8.1 U	8.1 U	8.1 U	16 UJ	16 U
SA13-0.5	11/17/2006	12 U	5.8 UJ	12 UJ	5.8 U	5.8 UJ	5.8 UJ	12 U	**5.1 J**
SA13-0.5D	11/17/2006	11 UJ	5.5 UJ	11 UJ	5.5 UJ	5.5 UJ	5.5 UJ	11 UJ	**9.8 J**
SA13-10	11/17/2006	10 UJ	5.2 UJ	10 UJ	5.2 UJ	5.2 UJ	5.2 UJ	10 UJ	10 UJ
SA13-20	11/17/2006	**5.2 J**	5.3 UJ	11 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ	**34 J**
SA13-30	11/17/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 UJ	11 U	11 U
SA13-40	11/17/2006	13 U	6.3 U	13 UJ	6.3 U	6.3 U	6.3 UJ	13 U	**14**
SA14-0.5	11/08/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 UJ	11 U
SA14-10	11/08/2006	11 U	5.7 U	11 UJ	5.7 U	5.7 U	5.7 U	11 UJ	11 U
SA14-20	11/08/2006	12 U	6.2 U	12 UJ	6.2 U	6.2 U	6.2 U	12 UJ	**27**
SA14-30	11/08/2006	16 U	8.0 U	16 UJ	8.0 U	8.0 U	8.0 U	16 UJ	16 U
SA14-40	11/08/2006	12 U	6.2 U	12 UJ	6.2 U	6.2 U	6.2 U	12 UJ	12 U
SA15-0.5	11/08/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 UJ	12 U
SA15-10	11/08/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 UJ	12 U
SA15-10D	11/08/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 UJ	11 U
SA15-20	11/08/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 UJ	11 U
SA15-30	11/08/2006	14 U	6.8 U	14 U	6.8 U	6.8 UJ	6.8 UJ	14 U	14 UJ
SA15-35	11/08/2006	14 U	6.9 U	14 UJ	6.9 U	6.9 U	6.9 U	14 UJ	14 U
SA16-0.5	11/09/2006	11 U	5.3 U	11 U	5.3 U	5.3 UJ	5.3 UJ	11 U	11 UJ
SA16-10	11/09/2006	11 U	5.6 U	11 U	5.6 U	5.6 UJ	5.6 UJ	11 U	11 UJ
SA16-20	11/09/2006	**2.0 J**	5.4 U	11 U	5.4 U	5.4 UJ	5.4 UJ	11 U	29 UJ
SA16-30	11/09/2006	16 U	8.1 U	16 U	8.1 U	8.1 UJ	8.1 UJ	16 U	16 UJ
SA17-0.5	11/15/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 U	12 UJ
SA17-0.5D	11/15/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	**71 J**
SA17-10	11/15/2006	11 U	5.7 U	11 UJ	5.7 U	5.7 U	5.7 U	11 U	**6.9 J**
SA17-20	11/15/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA17-25	11/15/2006	12 U	6.2 U	12 UJ	6.2 U	6.2 U	6.2 U	12 U	12 U
SA18-0.5	11/15/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	2-Butanone	2-Chlorotoluene	2-Hexanone	2-Methoxy-2-methyl-butane	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA18-0.5D	11/15/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA18-10	11/15/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA18-20	11/15/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA18-30	11/15/2006	**4.4 J**	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	**32**
SA19-0.5	11/16/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA19-10	11/16/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA19-20	11/16/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	22 U
SA19-25	11/16/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	24 UJ
SA20-0.5	11/16/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 U	11 U
SA20-0.5D	11/16/2006	12 U	6.2 U	12 UJ	6.2 U	6.2 U	6.2 U	12 U	12 U
SA20-10	11/16/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 U	12 U
SA20-20	11/16/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	29 U
SA20-25	11/16/2006	12 U	5.9 U	12 UJ	5.9 U	5.9 U	5.9 U	12 U	12 U
SA21-0.5	11/15/2006	10 U	5.2 U	10 UJ	5.2 U	5.2 U	5.2 U	10 U	**20**
SA21-10	11/15/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	**35**
SA21-20	11/15/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA21-20D	11/15/2006	10 U	5.2 U	10 UJ	5.2 U	5.2 U	5.2 U	10 U	10 U
SA21-30	11/15/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 U	**15**
SA22-0.5	11/16/2006	13 U	6.3 U	13 UJ	6.3 U	6.3 U	6.3 U	13 U	13 U
SA22-10	11/16/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U
SA22-20	11/16/2006	**4.2 J**	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	14 U
SA23-0.5	11/09/2006	12 U	5.8 U	12 U	5.8 U	5.8 UJ	5.8 UJ	12 U	12 UJ
SA23-10	11/09/2006	12 U	6.0 U	12 U	6.0 U	6.0 UJ	6.0 UJ	12 U	12 UJ
SA23-20	11/09/2006	12 U	6.0 U	12 U	6.0 U	6.0 UJ	6.0 UJ	12 U	12.0 UJ
SA23-20D	11/09/2006	12 U	5.8 U	12 U	5.8 U	5.8 UJ	5.8 UJ	12 U	12 UJ
SA24-0.5	11/03/2006	12 U	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	12 U	12 U
SA24-10	11/03/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA24-20	11/03/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA24-25	11/03/2006	11 U	5.7 U	11 UJ	5.7 U	5.7 U	5.7 U	11 U	11 U
SA25-0.5	11/03/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 U	11 U
SA25-10	11/03/2006	11 U	5.7 U	11 UJ	5.7 U	5.7 U	5.7 UJ	11 U	11 U
SA25-15	11/03/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 U	11 U
SA25-20	11/03/2006	13 U	**0.83 J**	13 UJ	6.5 U	6.5 U	6.5 U	13 UJ	13 U
SA26-0.5	11/20/2006	11 U	5.4 U	11 UJ	5.4 U	5.4 U	5.4 U	11 UJ	**12**
SA26-0.5D	11/20/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 UJ	**5.2 J**
SA26-10	11/20/2006	11 U	5.6 U	11 UJ	5.6 U	5.6 U	5.6 U	11 UJ	**45**
SA27-0.5	11/02/2006	10 U	5.2 U	10 UJ	5.2 U	5.2 U	5.2 U	10 U	10 U
SA27-10	11/02/2006	11 U	5.3 U	11 UJ	5.3 U	5.3 U	5.3 U	11 U	11 U
SA27-20	11/02/2006	11 U	5.5 U	11 UJ	5.5 U	5.5 U	5.5 U	11 U	11 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	13 U	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 U	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 U	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 U	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	15 U	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	15 U	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	12 U	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	13 U	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	15 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 U	5.7 U
SA4-40	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	13 U	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 U	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	17 U	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	15 U	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	13 UJ	6.5 U
SA8-0.5	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA8-20	11/17/2006	**0.62 J**	5.2 U	5.2 U	5.2 U	5.2 U	10 UJ	5.2 U
SA8-30	11/17/2006	**0.72 J**	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	14 UJ	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	12 U	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	12 U	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA9-10D	11/06/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 U	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	16 U	**15**
SA9-40	11/07/2006	**4100**	6.9 U	6.9 U	6.9 U	6.9 U	14 U	**16**
SA10-0.5	11/07/2006	**0.82 J**	5.6 U	5.6 U	5.6 U	5.6 U	11 U	5.6 U
SA10-10	11/07/2006	**0.31 J**	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA10-10D	11/07/2006	**0.20 J**	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA10-20	11/07/2006	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	13 U	6.7 U
SA10-30	11/07/2006	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	16 U	7.8 U
SA10-40	11/07/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	15 U	7.4 U
SA11-0.5	11/09/2006	5.4 UJ	5.4 U	5.4 U	5.4 UJ	5.4 U	11 UJ	5.4 UJ
SA11-0.5D	11/09/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 U	5.7 U
SA11-10	11/09/2006	5.4 UJ	5.4 U	5.4 U	5.4 UJ	5.4 U	11 UJ	5.4 UJ
SA11-20	11/09/2006	5.2 UJ	5.2 U	5.2 U	5.2 UJ	**0.93 J**	10 UJ	5.2 UJ
SA11-30	11/09/2006	8.2 UJ	8.2 U	8.2 U	8.2 UJ	8.2 U	16 UJ	8.2 UJ
SA12-0.5	11/10/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 U	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	16 U	8.1 U
SA13-0.5	11/17/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	11 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	10 UJ	5.2 UJ
SA13-20	11/17/2006	**0.19 J**	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	13 U	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA14-10	11/08/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 U	5.7 U
SA14-20	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 U	6.2 U
SA14-30	11/08/2006	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	16 U	**2.3 J**
SA14-40	11/08/2006	**1700**	6.2 U	6.2 U	6.2 U	6.2 U	12 U	**6.0 J**
SA15-0.5	11/08/2006	**0.84 J**	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA15-10	11/08/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 U	5.9 U
SA15-10D	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA15-20	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA15-30	11/08/2006	6.8 UJ	6.8 U	6.8 U	6.8 UJ	6.8 U	14 UJ	6.8 UJ
SA15-35	11/08/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	14 U	6.9 U
SA16-0.5	11/09/2006	5.3 UJ	5.3 U	5.3 U	5.3 UJ	5.3 U	11 UJ	5.3 UJ
SA16-10	11/09/2006	5.6 UJ	5.6 U	5.6 U	5.6 UJ	5.6 U	11 UJ	5.6 UJ
SA16-20	11/09/2006	5.4 UJ	5.4 U	5.4 U	5.4 UJ	5.4 U	11 UJ	5.4 UJ
SA16-30	11/09/2006	8.1 UJ	8.1 U	8.1 U	8.1 UJ	8.1 U	16 UJ	8.1 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 U	5.9 U
SA17-0.5D	11/15/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 U	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 U	6.2 U
SA18-0.5	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA18-0.5D	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA18-30	11/15/2006	**1.2 J**	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA19-0.5	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA19-20	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA19-25	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 U	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 U	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 U	5.9 U
SA20-20	11/16/2006	**0.37 J**	5.3 U	5.3 U	5.3 U	5.3 U	11 U	5.3 U
SA20-25	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 UJ	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	10 U	5.2 U
SA21-10	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	10 U	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 U	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	13 U	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	5.5 U
SA22-20	11/16/2006	**0.37 J**	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA23-0.5	11/09/2006	5.8 UJ	5.8 U	5.8 U	5.8 UJ	5.8 U	12 UJ	5.8 UJ
SA23-10	11/09/2006	6.0 UJ	6.0 U	6.0 U	6.0 UJ	6.0 U	12 UJ	6.0 UJ
SA23-20	11/09/2006	6.0 UJ	6.0 U	6.0 U	6.0 UJ	6.0 U	12 UJ	6.0 UJ
SA23-20D	11/09/2006	5.8 UJ	5.8 U	5.8 U	5.8 UJ	5.8 U	12 UJ	5.8 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 U	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 U	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 U	5.6 U
SA25-10	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 UJ	5.7 U
SA25-15	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 U	5.4 U
SA25-20	11/03/2006	**930**	6.5 U	6.5 U	6.5 U	6.5 U	13 U	6.5 U
SA26-0.5	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 UJ	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	10 UJ	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA1-0.5	11/03/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 UJ	6.4 U	6.4 UJ	6.4 U	6.4 U	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 UJ	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 UJ	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 UJ	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 UJ	7.5 U	7.5 UJ	7.5 U	7.5 U	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 UJ	7.4 U	7.4 UJ	7.4 U	7.4 U	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 UJ	6.1 U	6.1 UJ	6.1 U	6.1 U	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 UJ	**1.0 J**	6.4 UJ	6.4 U	6.4 U	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	**3.9 J**	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 UJ	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U
SA4-40	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 UJ	6.5 U	6.5 UJ	6.5 U	6.5 U	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 UJ	**0.79 J**	5.9 UJ	5.9 U	5.9 U	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 UJ	**19**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 UJ	**120**	8.3 UJ	8.3 U	8.3 U	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 UJ	**0.50 J**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 UJ	**28**	7.4 UJ	7.4 U	7.4 U	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 UJ	**0.40 J**	5.3 UJ	5.3 U	5.3 U	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 UJ	**0.51 J**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 UJ	**1.5 J**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 UJ	**1.9 J**	5.3 UJ	5.3 U	5.3 U	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 UJ	**20**	6.5 UJ	6.5 U	6.5 U	6.5 U
SA8-0.5	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA8-20	11/17/2006	5.2 U	5.2 UJ	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U
SA8-30	11/17/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 UJ	6.8 U	6.8 UJ	6.8 U	6.8 U	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 UJ	**0.18 J**	6.0 UJ	6.0 U	6.0 U	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 UJ	**2.0 J**	6.0 UJ	6.0 U	6.0 U	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA9-10D	11/06/2006	5.6 U	5.6 UJ	**2.0 J**	5.6 UJ	5.6 U	5.6 U	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 UJ	**7.3**	5.5 UJ	5.5 U	5.5 U	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 UJ	**1900**	8.2 UJ	8.2 U	8.2 U	8.2 U
SA9-40	11/07/2006	**12000**	6.9 UJ	**5400**	6.9 UJ	6.9 U	6.9 U	6.9 U
SA10-0.5	11/07/2006	**5.5 J**	5.6 UJ	**1.9 J**	5.6 UJ	5.6 U	5.6 U	5.6 U
SA10-10	11/07/2006	**3.1 J**	5.5 UJ	**1.2 J**	5.5 UJ	5.5 U	5.5 U	5.5 U
SA10-10D	11/07/2006	**1.4 J**	5.8 UJ	**0.92 J**	5.8 UJ	5.8 U	5.8 U	5.8 U
SA10-20	11/07/2006	**1.7 J**	6.7 UJ	**43**	6.7 Uj	6.7 U	6.7 U	6.7 U
SA10-30	11/07/2006	**1.1 J**	7.8 UJ	**170**	7.8 UJ	7.8 U	7.8 U	7.8 U
SA10-40	11/07/2006	**0.80 J**	7.4 UJ	**93**	7.4 UJ	7.4 U	7.4 U	7.4 U
SA11-0.5	11/09/2006	5.4 UJ	5.4 UJ	**150**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA11-0.5D	11/09/2006	5.7 U	5.7 UJ	**130**	5.7 UJ	9.1 U	9.1 U	5.7 U
SA11-10	11/09/2006	5.4 UJ	5.4 UJ	**14**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA11-20	11/09/2006	5.2 UJ	5.2 UJ	**48**	5.2 UJ	5.2 U	5.2 U	5.2 U
SA11-30	11/09/2006	8.2 UJ	8.2 UJ	**17**	8.2 UJ	8.2 U	8.2 U	8.2 U
SA12-0.5	11/10/2006	5.6 U	5.6 UJ	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 UJ	**0.31 J**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 UJ	**0.46 J**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 UJ	**56**	8.1 UJ	8.1 U	8.1 U	8.1 U
SA13-0.5	11/17/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ
SA13-20	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 UJ	**0.32 J**	5.3 UJ	5.3 U	5.3 U	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 UJ	**4.2 J**	6.3 UJ	6.3 U	6.3 U	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 UJ	**0.28 J**	5.5 UJ	5.5 U	5.5 U	5.5 U
SA14-10	11/08/2006	5.7 U	5.7 UJ	**0.78 J**	5.7 UJ	5.7 U	5.7 U	5.7 U
SA14-20	11/08/2006	6.2 U	6.2 UJ	**12**	6.2 UJ	6.2 U	6.2 U	6.2 U
SA14-30	11/08/2006	8.0 U	8.0 UJ	**2300**	8.0 UJ	8.0 U	8.0 U	8.0 U
SA14-40	11/08/2006	**7000**	6.2 UJ	**6800**	6.2 UJ	6.2 U	6.2 U	6.2 U
SA15-0.5	11/08/2006	**7.5**	5.8 UJ	**2.8 J**	5.8 UJ	5.8 U	5.8 U	5.8 U
SA15-10	11/08/2006	**1.9 J**	5.9 UJ	**0.59 J**	5.9 UJ	5.9 U	5.9 U	5.9 U
SA15-10D	11/08/2006	**1.2 J**	5.5 UJ	**0.54 J**	5.5 UJ	5.5 U	5.5 U	5.5 U
SA15-20	11/08/2006	**0.99 J**	5.5 UJ	**0.35 J**	5.5 UJ	5.5 U	5.5 U	5.5 U
SA15-30	11/08/2006	6.8 UJ	6.8 UJ	**8.3**	6.8 UJ	6.8 U	6.8 U	6.8 U
SA15-35	11/08/2006	6.9 U	6.9 UJ	**4.9 J**	6.9 UJ	6.9 U	6.9 U	6.9 U
SA16-0.5	11/09/2006	5.3 UJ	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA16-10	11/09/2006	5.6 UJ	5.6 UJ	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U
SA16-20	11/09/2006	5.4 UJ	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA16-30	11/09/2006	8.1 UJ	8.1 UJ	**240**	8.1 UJ	8.1 U	8.1 U	8.1 U
SA17-0.5	11/15/2006	5.9 U	5.9 UJ	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U
SA17-0.5D	11/15/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 UJ	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 UJ	**14**	6.2 UJ	6.2 U	6.2 U	6.2 U
SA18-0.5	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date							
SA18-0.5D	11/15/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 UJ	**0.28 J**	5.4 UJ	5.4 U	5.4 U	5.4 U
SA18-30	11/15/2006	**1.6 J**	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA19-0.5	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA19-20	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA19-25	11/16/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 UJ	**0.52 J**	5.6 UJ	5.6 U	5.6 U	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 UJ	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 UJ	**0.50 J**	5.9 UJ	5.9 U	5.9 U	5.9 U
SA20-20	11/16/2006	5.3 U	5.3 UJ	**0.90 J**	5.3 UJ	5.3 U	5.3 U	5.3 U
SA20-25	11/16/2006	5.9 U	5.9 UJ	**0.67 J**	5.9 UJ	5.9 U	5.9 U	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 UJ	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U
SA21-10	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 UJ	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 UJ	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 UJ	6.3 U	6.3 UJ	6.3 U	6.3 U	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA22-20	11/16/2006	5.8 U	5.8 UJ	**0.31 J**	5.8 UJ	5.8 U	5.8 U	5.8 U
SA23-0.5	11/09/2006	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA23-10	11/09/2006	6.0 UJ	6.0 UJ	**7.8**	6.0 UJ	6.0 U	6.0 U	6.0 U
SA23-20	11/09/2006	6.0 UJ	6.0 UJ	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 U
SA23-20D	11/09/2006	5.8 UJ	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA24-0.5	11/03/2006	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 UJ	**1.4 J**	5.3 UJ	5.3 U	5.3 U	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 UJ	**3.2 J**	5.7 UJ	5.7 U	5.7 U	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 UJ	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U
SA25-10	11/03/2006	5.7 U	5.7 UJ	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U
SA25-15	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA25-20	11/03/2006	**1100**	6.5 UJ	**16**	6.5 UJ	6.5 U	6.5 U	6.5 U
SA26-0.5	11/20/2006	5.4 U	5.4 UJ	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 UJ	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 UJ	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 UJ	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 UJ	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Dibromomethane	Dichlorodifluoromethane	Ethyl t-butyl ether	Ethylbenzene	Ethylene dibromide	Hexachlorobutadiene	isopropyl ether	Isopropylbenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA1-0.5	11/03/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 UJ	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 UJ	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 UJ	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 UJ	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 UJ	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA4-40	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 UJ	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 UJ	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 UJ	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 UJ	6.5 U	6.5 U	6.5 U	**1.4 J**	6.5 U	6.5 U
SA8-0.5	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA8-20	11/17/2006	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA8-30	11/17/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 UJ	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Dibromomethane	Dichlorodifluoromethane	Ethyl t-butyl ether	Ethylbenzene	Ethylene dibromide	Hexachlorobutadiene	isopropyl ether	Isopropylbenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA9-10D	11/06/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 UJ	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
SA9-40	11/07/2006	6.9 U	6.9 UJ	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
SA10-0.5	11/07/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA10-10	11/07/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA10-10D	11/07/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA10-20	11/07/2006	6.7 U	6.7 UJ	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
SA10-30	11/07/2006	7.8 U	7.8 UJ	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U
SA10-40	11/07/2006	7.4 U	7.4 UJ	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U
SA11-0.5	11/09/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	**4.5 J**	5.4 U	5.4 UJ
SA11-0.5D	11/09/2006	5.7 U	5.7 UJ	9.1 U	9.1 U	5.7 U	9.1 U	9.1 U	9.1 U
SA11-10	11/09/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	5.4 UJ
SA11-20	11/09/2006	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 U	5.2 UJ
SA11-30	11/09/2006	8.2 U	8.2 UJ	8.2 U	8.2 U	8.2 U	8.2 UJ	8.2 U	8.2 UJ
SA12-0.5	11/10/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 UJ	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U
SA13-0.5	11/17/2006	5.8 U	12 UJ	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	5.8 UJ
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ
SA13-20	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 UJ	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA14-10	11/08/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	**0.38 J**	5.7 U	5.7 U
SA14-20	11/08/2006	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U	**11**	6.2 U	6.2 U
SA14-30	11/08/2006	8.0 U	8.0 UJ	8.0 U	8.0 U	8.0 U	**1.1 J**	8.0 U	8.0 U
SA14-40	11/08/2006	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA15-0.5	11/08/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA15-10	11/08/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA15-10D	11/08/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA15-20	11/08/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA15-30	11/08/2006	6.8 U	6.8 UJ	6.8 U	6.8 U	6.8 U	6.8 UJ	6.8 U	6.8 UJ
SA15-35	11/08/2006	6.9 U	6.9 UJ	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
SA16-0.5	11/09/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	5.3 UJ
SA16-10	11/09/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	5.6 UJ
SA16-20	11/09/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	5.4 UJ
SA16-30	11/09/2006	8.1 U	8.1 UJ	8.1 U	8.1 U	8.1 U	8.1 UJ	8.1 U	8.1 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA17-0.5D	11/15/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA18-0.5	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Dibromomethane	Dichlorodifluoromethane	Ethyl t-butyl ether	Ethylbenzene	Ethylene dibromide	Hexachlorobutadiene	isopropyl ether	Isopropylbenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA18-0.5D	11/15/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA18-30	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-0.5	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-20	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA19-25	11/16/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA20-20	11/16/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA20-25	11/16/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-10	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 UJ	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA22-20	11/16/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA23-0.5	11/09/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	5.8 UJ
SA23-10	11/09/2006	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 U	6.0 UJ	6.0 U	6.0 UJ
SA23-20	11/09/2006	6.0 U	6.0 UJ	6.0 U	6.0 U	6.0 U	6.0 UJ	6.0 U	6.0 UJ
SA23-20D	11/09/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	5.8 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA25-10	11/03/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	5.7 U
SA25-15	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA25-20	11/03/2006	6.5 U	6.5 UJ	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
SA26-0.5	11/20/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 UJ	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Methyl tert butyl ether	Methylene chloride	N-Butylbenzene	N-Propylbenzene	sec-Butylbenzene	Styrene	t-Butyl alcohol	tert-Butylbenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA1-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA1-05	11/03/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	13 UJ	6.4 U
SA1-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA2-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA2-10	11/03/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 UJ	6.2 U
SA2-20	11/03/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 UJ	5.9 U
SA2-30	11/06/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 UJ	5.9 U
SA2-40	11/06/2006	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	15 UJ	7.5 U
SA2-50	11/06/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	15 UJ	7.4 U
SA2-60	11/06/2006	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	12 UJ	6.1 U
SA3-0.5	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA3-0.5D	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA3-10	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA3-20	11/13/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA3-30	11/13/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	13 UJ	6.4 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	15 UJ	7.4 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA4-10	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA4-20	11/14/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA4-30	11/14/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	11 UJ	5.7 U
SA4-40	11/14/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA5-0.5	11/14/2006	6.5 U	6.5 U	6.5 UJ	6.5 UJ	6.5 UJ	6.5 U	13 UJ	6.5 U
SA5-10	11/14/2006	5.8 U	5.8 UJ	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA5-20	11/14/2006	5.9 U	5.9 U	5.9 UJ	5.9 UJ	5.9 UJ	5.9 U	12 UJ	5.9 U
SA5-30	11/14/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA5-37	11/14/2006	8.3 U	8.3 UJ	8.3 U	8.3 U	8.3 U	8.3 U	17 UJ	8.3 U
SA6-0.5	11/14/2006	5.3 U	5.3 U	5.3 UJ	5.3 UJ	5.3 UJ	5.3 U	11 UJ	5.3 U
SA6-0.5D	11/14/2006	5.8 U	5.8 U	5.8 UJ	5.8 UJ	5.8 UJ	5.8 U	12 UJ	5.8 U
SA6-10	11/14/2006	5.4 U	5.4 U	5.4 UJ	5.4 UJ	5.4 UJ	5.4 U	11 UJ	5.4 U
SA6-20	11/14/2006	5.4 U	5.4 U	5.4 UJ	5.4 UJ	5.4 UJ	5.4 U	11 UJ	5.4 U
SA6-30	11/14/2006	5.3 U	5.3 U	5.3 UJ	5.3 UJ	5.3 UJ	5.3 U	11 UJ	5.3 U
SA6-35	11/14/2006	7.4 U	7.4 UJ	7.4 U	7.4 U	7.4 U	7.4 U	15 UJ	7.4 U
SA7-0.5	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA7-10	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA7-10D	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA7-20	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA7-30	11/20/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA7-34	11/20/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	13 UJ	6.5 U
SA8-0.5	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ	5.3 UJ
SA8-10	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	5.3 U	11 UJ	5.3 U
SA8-20	11/17/2006	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 UJ	5.2 U	10 UJ	5.2 U
SA8-30	11/17/2006	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA8-37	11/17/2006	6.8 U	6.8 U	6.8 U	6.8 UJ	6.8 UJ	6.8 U	14 UJ	6.8 U
SA9-0.5	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	12 UJ	6.0 U
SA9-10	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	12 UJ	6.0 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Methyl tert butyl ether	Methylene chloride	N-Butylbenzene	N-Propylbenzene	sec-Butylbenzene	Styrene	t-Butyl alcohol	tert-Butylbenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA9-10D	11/06/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 UJ	5.6 U
SA9-20	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA9-30	11/07/2006	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	16 UJ	8.2 U
SA9-40	11/07/2006	6.9 U	**8.3**	6.9 U	6.9 U	6.9 U	6.9 U	14 UJ	6.9 U
SA10-0.5	11/07/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 UJ	5.6 U
SA10-10	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA10-10D	11/07/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA10-20	11/07/2006	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	13 UJ	6.7 U
SA10-30	11/07/2006	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	16 UJ	7.8 U
SA10-40	11/07/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	15 UJ	7.4 U
SA11-0.5	11/09/2006	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	17 UJ	5.4 UJ
SA11-0.5D	11/09/2006	9.1 U	9.1 U	5.7 UJ	9.1 UJ	5.7 UJ	9.1 U	23 UJ	5.7 U
SA11-10	11/09/2006	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	14.0 UJ	5.4 UJ
SA11-20	11/09/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	13 UJ	5.2 UJ
SA11-30	11/09/2006	8.2 UJ	14 UJ	8.2 UJ	8.2 UJ	8.2 UJ	8.2 UJ	22 UJ	8.2 UJ
SA12-0.5	11/10/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 UJ	5.6 U
SA12-10	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA12-20	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA12-30	11/10/2006	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	16 UJ	8.1 U
SA13-0.5	11/17/2006	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 UJ	5.8 U	12 UJ	5.8 UJ
SA13-0.5D	11/17/2006	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	11 UJ	5.5 UJ
SA13-10	11/17/2006	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	10 UJ	5.2 UJ
SA13-20	11/17/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ	5.3 UJ
SA13-30	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	5.3 U	11 UJ	5.3 U
SA13-40	11/17/2006	6.3 U	6.3 U	6.3 U	6.3 UJ	6.3 UJ	6.3 U	13 UJ	6.3 U
SA14-0.5	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA14-10	11/08/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	11 UJ	5.7 U
SA14-20	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 UJ	6.2 U
SA14-30	11/08/2006	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	16 UJ	8.0 U
SA14-40	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	12 UJ	6.2 U
SA15-0.5	11/08/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA15-10	11/08/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	12 UJ	5.9 U
SA15-10D	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA15-20	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA15-30	11/08/2006	6.8 UJ	6.8 UJ	6.8 UJ	6.8 UJ	6.8 UJ	6.8 UJ	16 UJ	6.8 UJ
SA15-35	11/08/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	14 UJ	6.9 U
SA16-0.5	11/09/2006	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	12 UJ	5.3 UJ
SA16-10	11/09/2006	5.6 UJ	5.6 UJ	5.6 UJ	5.6 UJ	5.6 UJ	5.6 UJ	15 UJ	5.6 UJ
SA16-20	11/09/2006	5.4 UJ	15 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	16 UJ	5.4 UJ
SA16-30	11/09/2006	8.1 UJ	8.1 UJ	8.1 UJ	8.1 UJ	8.1 UJ	8.1 UJ	21.0 UJ	8.1 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 UJ	5.9 U	5.9 U	5.9 U	5.9 U	12 UJ	5.9 U
SA17-0.5D	11/15/2006	5.8 U	23 UJ	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA17-10	11/15/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	11 UJ	5.7 U
SA17-20	11/15/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA17-25	11/15/2006	6.2 U	6.2 UJ	6.2 U	6.2 U	6.2 U	6.2 U	12 UJ	6.2 U
SA18-0.5	11/15/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Methyl tert butyl ether	Methylene chloride	N-Butylbenzene	N-Propylbenzene	sec-Butylbenzene	Styrene	t-Butyl alcohol	tert-Butylbenzene
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA18-0.5D	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	5.3 U	11 UJ	5.3 U
SA18-10	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 UJ	5.4 U	11 UJ	5.4 U
SA18-20	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 UJ	5.4 U	11 UJ	5.4 U
SA18-30	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA19-0.5	11/16/2006	5.5 U	5.5 U	5.5 UJ	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA19-10	11/16/2006	5.5 U	5.5 U	5.5 UJ	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA19-20	11/16/2006	5.5 U	**10**	5.5 UJ	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA19-25	11/16/2006	5.8 U	**4.4 J**	5.8 UJ	5.8 UJ	5.8 UJ	5.8 U	11 UJ	5.8 U
SA20-0.5	11/16/2006	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 UJ	5.6 U	11 UJ	5.6 U
SA20-0.5D	11/16/2006	6.2 U	6.2 U	6.2 U	6.2 UJ	6.2 UJ	6.2 U	12 UJ	6.2 U
SA20-10	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 UJ	5.9 U	12 UJ	5.9 U
SA20-20	11/16/2006	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	5.3 U	11 UJ	5.3 U
SA20-25	11/16/2006	5.9 U	**3.8 J**	5.9 UJ	5.9 UJ	5.9 UJ	5.9 U	12 UJ	5.9 U
SA21-0.5	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 UJ	5.2 U	10 UJ	5.2 U
SA21-10	11/15/2006	5.5 U	**40**	5.5 UJ	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA21-20	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA21-20D	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 UJ	5.2 U	10 UJ	5.2 U
SA21-30	11/15/2006	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 UJ	5.6 U	11 UJ	5.6 U
SA22-0.5	11/16/2006	6.3 U	6.3 U	6.3 U	6.3 UJ	6.3 UJ	6.3 U	13 UJ	6.3 U
SA22-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 UJ	5.5 U	11 UJ	5.5 U
SA22-20	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 UJ	5.8 U	12 UJ	5.8 U
SA23-0.5	11/09/2006	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	15 UJ	5.8 UJ
SA23-10	11/09/2006	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	16 UJ	6.0 UJ
SA23-20	11/09/2006	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	16.0 UJ	6.0 UJ
SA23-20D	11/09/2006	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	18 UJ	5.8 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	12 UJ	5.8 U
SA24-10	11/03/2006	5.4 U	5.4 UJ	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA24-20	11/03/2006	5.3 U	5.3 UJ	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA24-25	11/03/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 U	11 UJ	5.7 U
SA25-0.5	11/03/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 UJ	5.6 U
SA25-10	11/03/2006	5.7 U	5.7 UJ	5.7 UJ	5.7 U	5.7 UJ	5.7 U	11 UJ	5.7 UJ
SA25-15	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA25-20	11/03/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	13 UJ	6.5 U
SA26-0.5	11/20/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	11 UJ	5.4 U
SA26-0.5D	11/20/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 UJ	5.5 U
SA26-10	11/20/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	11 UJ	5.6 U
SA27-0.5	11/02/2006	5.2 U	5.2 UJ	5.2 U	5.2 U	5.2 U	5.2 U	10 UJ	5.2 U
SA27-10	11/02/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	11 UJ	5.3 U
SA27-20	11/02/2006	5.5 U	5.5 UJ	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Tetrachloroethene	Toluene	trans-1,2-Dichloroethylene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinylchloride	Xylene (Total)
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA1-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA1-05	11/03/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 UJ	6.4 U	13 U
SA1-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA2-0.5	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA2-10	11/03/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 UJ	6.2 U	12 U
SA2-20	11/03/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA2-30	11/06/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA2-40	11/06/2006	7.5 U	7.5 U	7.5 U	7.5 U	**6.5 J**	7.5 UJ	7.5 U	15 U
SA2-50	11/06/2006	7.4 U	7.4 U	7.4 U	7.4 U	**1.7 J**	7.4 UJ	7.4 U	15 U
SA2-60	11/06/2006	6.1 U	6.1 U	6.1 U	6.1 U	**4.3 J**	6.1 UJ	6.1 U	12 U
SA3-0.5	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA3-0.5D	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA3-10	11/13/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA3-20	11/13/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA3-30	11/13/2006	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 UJ	6.4 U	13 U
SA3-40	11/13/2006	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	7.4 UJ	15 UJ
SA4-0.5	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA4-10	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA4-20	11/14/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA4-30	11/14/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	11 U
SA4-40	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA5-0.5	11/14/2006	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 UJ	6.5 U	13 U
SA5-10	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA5-20	11/14/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA5-30	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA5-37	11/14/2006	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 UJ	8.3 U	17 U
SA6-0.5	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA6-0.5D	11/14/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA6-10	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA6-20	11/14/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA6-30	11/14/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA6-35	11/14/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 UJ	7.4 U	15 U
SA7-0.5	11/20/2006	5.3 U	**0.36 J**	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	11 U
SA7-10	11/20/2006	5.3 U	**0.58 J**	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	11 U
SA7-10D	11/20/2006	5.4 U	**0.31 J**	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 UJ	11 U
SA7-20	11/20/2006	5.4 U	**0.31 J**	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 UJ	11 U
SA7-30	11/20/2006	5.3 U	**0.45 J**	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	11 U
SA7-34	11/20/2006	**2.1 J**	**0.37 J**	6.5 U	6.5 U	6.5 U	6.5 UJ	6.5 UJ	13 U
SA8-0.5	11/17/2006	5.3 UJ	**0.82 J**	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ
SA8-10	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA8-20	11/17/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 U	10 U
SA8-30	11/17/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA8-37	11/17/2006	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 UJ	6.8 U	14 U
SA9-0.5	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 UJ	6.0 U	12 U
SA9-10	11/06/2006	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 UJ	6.0 U	12 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type Analytic Method Chemical Name Units	VOC Tetrachloroethene SW 846 8260 ug/kg	VOC Toluene SW 846 8260 ug/kg	VOC trans-1,2-Dichloroethylene SW 846 8260 ug/kg	VOC trans-1,3-Dichloropropene SW 846 8260 ug/kg	VOC Trichloroethene SW 846 8260 ug/kg	VOC Trichlorofluoromethane SW 846 8260 ug/kg	VOC Vinylchloride SW 846 8260 ug/kg	VOC Xylene (Total) SW 846 8260 ug/kg
Sample ID	Sample Date								
SA9-10D	11/06/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	11 U
SA9-20	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA9-30	11/07/2006	**0.90 J**	8.2 U	8.2 U	8.2 U	8.2 U	**1.2 J**	8.2 U	16 U
SA9-40	11/07/2006	**8.1**	6.9 U	6.9 U	6.9 U	6.9 U	**14 J**	6.9 U	14 U
SA10-0.5	11/07/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	11 U
SA10-10	11/07/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA10-10D	11/07/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA10-20	11/07/2006	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 UJ	6.7 U	13 U
SA10-30	11/07/2006	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 UJ	7.8 U	16 U
SA10-40	11/07/2006	7.4 U	7.4 U	7.4 U	7.4 U	7.4 U	7.4 UJ	7.4 U	15 U
SA11-0.5	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 U	11 UJ
SA11-0.5D	11/09/2006	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 UJ	9.1 U	18 U
SA11-10	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	5.4 UJ	5.4 UJ	5.4 U	11 UJ
SA11-20	11/09/2006	5.2 UJ	5.2 U	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 U	10 UJ
SA11-30	11/09/2006	8.2 UJ	8.2 U	8.2 UJ	8.2 UJ	**1.4 J**	8.2 UJ	8.2 U	16 UJ
SA12-0.5	11/10/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	11 U
SA12-10	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA12-20	11/10/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA12-30	11/10/2006	8.1 U	8.1 U	8.1 U	8.1 U	**8.0 J**	8.1 UJ	8.1 U	16 U
SA13-0.5	11/17/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA13-0.5D	11/17/2006	5.5 UJ	**0.28 J**	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	5.5 UJ	11 UJ
SA13-10	11/17/2006	5.2 UJ	**0.28 J**	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	5.2 UJ	10 UJ
SA13-20	11/17/2006	5.3 UJ	**0.67 J**	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	11 UJ
SA13-30	11/17/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ	11 U
SA13-40	11/17/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 UJ	6.3 U	13 U
SA14-0.5	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA14-10	11/08/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	11 U
SA14-20	11/08/2006	**0.66 J**	6.2 U	6.2 U	6.2 U	6.2 U	6.2 UJ	6.2 U	12 U
SA14-30	11/08/2006	**2.0 J**	8 U	8.0 U	8.0 U	8.0 U	8.0 UJ	8.0 U	16 U
SA14-40	11/08/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	**1.6 J**	6.2 U	12 U
SA15-0.5	11/08/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA15-10	11/08/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA15-10D	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA15-20	11/08/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA15-30	11/08/2006	6.8 UJ	6.8 U	6.8 UJ	6.8 UJ	6.8 UJ	6.8 UJ	6.8 U	14 UJ
SA15-35	11/08/2006	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 UJ	6.9 U	14 U
SA16-0.5	11/09/2006	5.3 UJ	5.3 U	5.3 UJ	5.3 UJ	5.3 UJ	5.3 UJ	5.3 U	11 UJ
SA16-10	11/09/2006	5.6 UJ	5.6 U	5.6 UJ	5.6 UJ	5.6 UJ	5.6 UJ	5.6 U	11 UJ
SA16-20	11/09/2006	5.4 UJ	5.4 U	5.4 UJ	5.4 UJ	**1.1 J**	5.4 UJ	5.4 U	11 UJ
SA16-30	11/09/2006	8.1 UJ	8.1 U	8.1 UJ	8.1 UJ	**8.8 J**	8.1 UJ	8.1 U	16 UJ
SA17-0.5	11/15/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA17-0.5D	11/15/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA17-10	11/15/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	11 U
SA17-20	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA17-25	11/15/2006	**1.1 J**	6.2 U	6.2 U	6.2 U	6.2 U	6.2 UJ	6.2 U	12 U
SA18-0.5	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Analytic Method	Tetrachloroethene	Toluene	trans-1,2-Dichloroethylene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinylchloride	Xylene (Total)
	Chemical Name	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample ID	Sample Date								
SA18-0.5D	11/15/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA18-10	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA18-20	11/15/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA18-30	11/15/2006	5.5 U	**0.25 J**	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA19-0.5	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA19-10	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA19-20	11/16/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA19-25	11/16/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA20-0.5	11/16/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	11 U
SA20-0.5D	11/16/2006	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 UJ	6.2 U	12 U
SA20-10	11/16/2006	5.9 U	**0.48 J**	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA20-20	11/16/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA20-25	11/16/2006	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 UJ	5.9 U	12 U
SA21-0.5	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 U	10 U
SA21-10	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA21-20	11/15/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA21-20D	11/15/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 U	10 U
SA21-30	11/15/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	11 U
SA22-0.5	11/16/2006	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 UJ	6.3 U	13 U
SA22-10	11/16/2006	5.5 U	**0.31 J**	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U
SA22-20	11/16/2006	5.8 U	**0.34 J**	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA23-0.5	11/09/2006	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	5.8 U	12 UJ
SA23-10	11/09/2006	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	6.0 U	12 UJ
SA23-20	11/09/2006	6.0 UJ	6.0 U	6.0 UJ	6.0 UJ	6.0 UJ	6.0 UJ	6.0 U	12 UJ
SA23-20D	11/09/2006	5.8 UJ	5.8 U	5.8 UJ	5.8 UJ	5.8 UJ	5.8 UJ	5.8 U	12 UJ
SA24-0.5	11/03/2006	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 UJ	5.8 U	12 U
SA24-10	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA24-20	11/03/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA24-25	11/03/2006	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	11 U
SA25-0.5	11/03/2006	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 U	11 U
SA25-10	11/03/2006	5.7 U	5.7 UJ	5.7 U	5.7 U	5.7 U	5.7 UJ	5.7 U	11 U
SA25-15	11/03/2006	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 U	11 U
SA25-20	11/03/2006	**1.9 J**	6.5 U	6.5 U	6.5 U	6.5 U	6.5 UJ	6.5 U	13 U
SA26-0.5	11/20/2006	5.4 U	**0.30 J**	5.4 U	5.4 U	5.4 U	5.4 UJ	5.4 UJ	11 U
SA26-0.5D	11/20/2006	5.5 U	**0.89 J**	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 UJ	11 U
SA26-10	11/20/2006	5.6 U	**0.46 J**	5.6 U	5.6 U	5.6 U	5.6 UJ	5.6 UJ	11 U
SA27-0.5	11/02/2006	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 UJ	5.2 U	10 U
SA27-10	11/02/2006	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 U	11 U
SA27-20	11/02/2006	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 UJ	5.5 U	11 U

Table 4-22
Volatile Organic Compounds (VOC) Concentrations in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
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.
ug/kg	Micrograms per kilogram.
Bold	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.

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	Naphthalene	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date									
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M100	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M100D	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M11	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M11D	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M120	11/28/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M12A	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M13	12/01/2006	5.0 U	5.0 U	**1.6 J**	5.0 U	5.0 U	**2.6 J**	**2.7 J**	5.0 U	5.0 U
M29	11/17/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M2A	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**0.83 J**	5.0 U	5.0 U
M31A	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M39	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M48	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M55	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M55D	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M5A	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M76	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M7B	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.1 J**	5.0 U	5.0 U	5.0 U
M89	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M92	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**14**	5.0 U	5.0 U
M95	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M97	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**5.4**	5.0 U	5.0 U
M98	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MC45	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**1.6 J**
PC40	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**20**	5.0 U	5.0 U	**1.4 J**
GWSA2	11/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
GWSA9	11/07/2006	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
GWSA10	11/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
GWSA14	11/08/2006	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
GWSA15	11/08/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date								
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	**0.49 J**	5.0 U	5.0 U	5.0 U
M100	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	**0.48 J**	5.0 U	5.0 U	5.0 U
M100D	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	**0.60 J**	5.0 U	5.0 U	5.0 U
M11	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M11D	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M120	11/28/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M12A	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M13	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M29	11/17/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M2A	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M31A	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M39	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M48	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	**1.3 J**	5.0 U	5.0 U	5.0 U
M55	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	**0.61 J+**	5.0 UJ	5.0 U	5.0 U
M55D	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	**0.55 J**	5.0 U	5.0 U	5.0 U
M5A	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	**0.72 J+**	5.0 UJ	5.0 U	5.0 U
M76	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M7B	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M89	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M92	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M95	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 UJ	**2.0 J**	5.0 U	5.0 U	5.0 U
M97	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M98	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MC45	12/06/2006	5.0 U	**7.1**	5.0 U	5.0 U	**5.6**	5.0 U	5.0 U	5.0 U
PC40	12/01/2006	5.0 U	**5.7**	5.0 U	5.0 U	**7.1**	**1.3 J**	5.0 U	5.0 U
GWSA2	11/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
GWSA9	11/07/2006	500 U	500 U	500 U	500 U	**720**	500 U	500 U	500 U
GWSA10	11/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	**0.28 J**	5.0 U	5.0 U	5.0 U
GWSA14	11/08/2006	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
GWSA15	11/08/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date							
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M100	12/04/2006	**0.60 J**	5.0 U	**1.5 J**	5.0 U	10 U	5.0 U	10 U
M100D	12/04/2006	**0.73 J**	5.0 U	**0.72 J**	5.0 U	10 U	5.0 U	10 U
M11	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M11D	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M120	11/28/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M12A	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 U
M13	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M29	11/17/2006	5.0 U	5.0 U	**0.92 J**	5.0 U	10 U	5.0 U	10 UJ
M2A	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 U
M31A	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M39	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 U
M48	12/06/2006	**1.4 J**	5.0 U	**0.80 J**	5.0 U	10 U	5.0 U	10 UJ
M55	12/07/2006	5.0 U	5.0 U	**0.68 J+**	5.0 U	10 U	5.0 U	10 U
M55D	12/07/2006	5.0 U	5.0 U	**0.71 J**	5.0 U	10 U	5.0 U	10 UJ
M5A	12/07/2006	5.0 U	5.0 U	**1.2 J+**	5.0 U	10 U	5.0 U	10 U
M76	12/04/2006	5.0 U	5.0 U	**0.86 J**	5.0 U	10 U	5.0 U	10 U
M7B	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M89	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 U
M92	11/29/2006	5.0 U	5.0 U	**0.76 J**	5.0 U	10 U	5.0 U	10 UJ
M95	12/04/2006	**2.5 J**	5.0 U	**1.6 J**	5.0 U	10 U	5.0 U	10 U
M97	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
M98	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
MC45	12/06/2006	5.0 U	5.0 U	**8.3**	5.0 U	10 U	5.0 U	10 UJ
PC40	12/01/2006	**2.8 J**	5.0 U	**5.8**	5.0 U	10 U	5.0 U	10 UJ
GWSA2	11/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ
GWSA9	11/07/2006	500 U	500 U	**1600**	500 U	1000 U	500 U	1000 UJ
GWSA10	11/07/2006	5.0 U	5.0 U	**0.50 J**	5.0 U	10 U	5.0 U	10 UJ
GWSA14	11/08/2006	500 U	500 U	500 U	500 U	1000 U	500 U	1000 UJ
GWSA15	11/08/2006	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	10 UJ

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	2-Methoxy-2-methyl-butane	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date								
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
M100	12/04/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M100D	12/04/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M11	12/06/2006	5.0 UJ	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M11D	12/06/2006	5.0 UJ	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M120	11/28/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
M12A	12/05/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M13	12/01/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
M29	11/17/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M2A	12/04/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 UJ	5.0 U	5.0 U	5.0 U
M31A	12/06/2006	5.0 UJ	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M39	12/05/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M48	12/06/2006	5.0 UJ	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M55	12/07/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 UJ	5.0 U	5.0 U	5.0 U
M55D	12/07/2006	5.0 UJ	5.0 U	5.0 U	10 UJ	10 U	5.0 U	**0.38 J**	5.0 U
M5A	12/07/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 UJ	**0.64 J+**	5.0 U	5.0 U
M76	12/04/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M7B	11/30/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
M89	12/05/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M92	11/29/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
M95	12/04/2006	5.0 U	5.0 U	5.0 U	10 UJ	10 U	5.0 U	5.0 U	5.0 U
M97	11/29/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
M98	11/30/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
MC45	12/06/2006	5.0 UJ	5.0 U	5.0 U	10 UJ	10 U	**0.22 J**	5.0 U	5.0 U
PC40	12/01/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
GWSA2	11/06/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U
GWSA9	11/07/2006	500 U	500 U	500 U	1000 U	1000 U	**19000**	500 U	500 U
GWSA10	11/07/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	**0.40 J**	5.0 U	5.0 U
GWSA14	11/08/2006	500 U	500 U	500 U	1000 U	1000 U	**4800**	500 U	500 U
GWSA15	11/08/2006	5.0 U	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date								
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	**0.92 J**	5.0 U	5.0 U	5.0 UJ	**21**	**2.7 J**
M100	12/04/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 U	**36**	5.0 U
M100D	12/04/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 U	**38**	5.0 U
M11	12/06/2006	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	**130**	5.0 U
M11D	12/06/2006	5.0 U	**4.8 J**	10 U	5.0 U	5.0 U	5.0 U	**130**	5.0 U
M120	11/28/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 UJ	**1.1 J**	5.0 UJ
M12A	12/05/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 U	**1600 J+**	5.0 U
M13	12/01/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 UJ	**40**	5.0 UJ
M29	11/17/2006	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 UJ	**4.1 J**	5.0 UJ
M2A	12/04/2006	5.0 U	5.0 U	10 UJ	**1.2 J**	5.0 U	5.0 U	**1300 J+**	5.0 U
M31A	12/06/2006	5.0 U	**4.8 J**	10 U	5.0 U	5.0 U	5.0 U	**930 J+**	5.0 U
M39	12/05/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 U	**820 J+**	5.0 U
M48	12/06/2006	5.0 U	5.0 U	10 U	**1.4 J**	5.0 U	5.0 U	**99 J**	5.0 U
M55	12/07/2006	5.0 U	**4.4 J+**	10 UJ	5.0 U	5.0 U	5.0 U	**690**	5.0 U
M55D	12/07/2006	**0.43 J**	**12 J**	10 U	5.0 U	5.0 U	5.0 U	**660 J+**	5.0 U
M5A	12/07/2006	5.0 U	5.0 U	10 UJ	5.0 U	**100 J+**	5.0 U	5.0 U	5.0 U
M76	12/04/2006	5.0 U	5.0 U	10 UJ	**1.0 J**	5.0 U	5.0 U	**290 J+**	5.0 U
M7B	11/30/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 UJ	**2.3 J**	5.0 UJ
M89	12/05/2006	5.0 U	**3.4 J**	10 UJ	**1.3 J**	5.0 U	5.0 U	**1700 J+**	5.0 U
M92	11/29/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 UJ	**30**	5.0 UJ
M95	12/04/2006	5.0 U	**1.9 J**	10 UJ	**6.1**	5.0 U	5.0 U	**350 J+**	5.0 U
M97	11/29/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 UJ	**12**	5.0 UJ
M98	11/30/2006	5.0 U	5.0 U	10 UJ	**9.6 J+**	5.0 U	5.0 UJ	**810 J+**	5.0 UJ
MC45	12/06/2006	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	**3.0 J**	5.0 U
PC40	12/01/2006	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 UJ	**4.0 J**	5.0 UJ
GWSA2	11/06/2006	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 UJ
GWSA9	11/07/2006	500 U	500 U	1000 U	**560**	**44000**	500 UJ	**20000**	500 UJ
GWSA10	11/07/2006	5.0 U	5.0 U	10 U	**5.7**	**2.5 J**	5.0 UJ	**300**	**0.77 J**
GWSA14	11/08/2006	500 U	500 U	1000 U	500 U	**13000**	500 UJ	**19000**	500 UJ
GWSA15	11/08/2006	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 UJ	**41**	5.0 UJ

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethyl t-butyl ether	Ethylbenzene	Ethylene dibromide
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date								
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M100	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M100D	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M11	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
M11D	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
M120	11/28/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M12A	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M13	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M29	11/17/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M2A	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M31A	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
M39	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M48	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
M55	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M55D	12/07/2006	5.0 U	5.0 U	**0.50 J**	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
M5A	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M76	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M7B	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M89	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M92	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M95	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M97	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
M98	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
MC45	12/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
PC40	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
GWSA2	11/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
GWSA9	11/07/2006	500 U	500 U	500 U	500 U	500 UJ	500 U	500 U	500 U
GWSA10	11/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
GWSA14	11/08/2006	500 U	500 U	500 U	500 U	500 UJ	500 U	500 U	500 U
GWSA15	11/08/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type		VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
Chemical Name		Hexachlorobutadiene	isopropyl ether	Isopropylbenzene	Methyl tert butyl ether	Methylene chloride	N-Butylbenzene	N-Propylbenzene	sec-Butylbenzene	Styrene
Analytic Method		SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date									
IAR_12/01/2006	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	R
M100	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M100D	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M11	12/06/2006	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M11D	12/06/2006	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M120	11/28/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M12A	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M13	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M29	11/17/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M2A	12/04/2006	5.0 U	5.0 U	5.0 U	**0.67 J**	5.0 U	5.0 U	5.0 U	5.0 U	R
M31A	12/06/2006	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M39	12/05/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M48	12/06/2006	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 UJ
M55	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M55D	12/07/2006	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
M5A	12/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M76	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M7B	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U
M89	12/05/2006	5.0 U	5.0 U	5.0 U	**0.94 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M92	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M95	12/04/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M97	11/29/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
M98	11/30/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U
MC45	12/06/2006	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
PC40	12/01/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
GWSA2	11/06/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
GWSA9	11/07/2006	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
GWSA10	11/07/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
GWSA14	11/08/2006	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
GWSA15	11/08/2006	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	Chemical Name	t-Butyl alcohol	tert-Butylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethylene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinylchloride	Xylene (Total)
	Analytic Method	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260	SW 846 8260
	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	Sample Date										
IAR_12/01/2006	12/01/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	10 U
M100	12/04/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M100D	12/04/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M11	12/06/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ
M11D	12/06/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ
M120	11/28/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	10 U
M12A	12/05/2006	10 UJ	5.0 U	**0.93 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M13	12/01/2006	10 UJ	5.0 U	**0.44 J**	5.0 U	5.0 U	5.0 U	**33**	5.0 UJ	5.0 UJ	10 U
M29	11/17/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	10 U
M2A	12/04/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**25**	5.0 U	5.0 U	10 U
M31A	12/06/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ
M39	12/05/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M48	12/06/2006	10 UJ	5.0 U	**0.65 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ
M55	12/07/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**12 J+**	5.0 U	5.0 U	10 U
M55D	12/07/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**9.9**	5.0 U	5.0 U	10 UJ
M5A	12/07/2006	10.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M76	12/04/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M7B	11/30/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	10 U
M89	12/05/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**12**	5.0 U	5.0 U	10 U
M92	11/29/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**3.8 J**	5.0 UJ	5.0 UJ	10 U
M95	12/04/2006	10 UJ	5.0 U	**1.3 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
M97	11/29/2006	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	10 U
M98	11/30/2006	10 UJ	5.0 U	**0.54 J+**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	10 U
MC45	12/06/2006	10 UJ	5.0 U	**0.55 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ
PC40	12/01/2006	10 UJ	5.0 U	**6.2**	5.0 U	5.0 U	5.0 U	**4.5 J**	5.0 UJ	5.0 UJ	10 U
GWSA2	11/06/2006	10 UJ	5.0 U	5.0 U	5 U	5.0 U	5.0 U	**8.6**	5.0 UJ	5.0 U	10 U
GWSA9	11/07/2006	1000 UJ	500 U	**44 J**	500 U	500 U	500 U	500 U	**220 J**	500 U	1000 U
GWSA10	11/07/2006	10 UJ	5.0 U	5.0 U	**19**	5.0 U	5.0 U	**2.1 J**	5.0 UJ	5.0 U	10 U
GWSA14	11/08/2006	1000 UJ	500 U	500 U	500 U	500 U	500 U	500 U	500 UJ	500 U	1000 U
GWSA15	11/08/2006	10 UJ	5.0 U	5.0 U	5 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	10 U

Table 4-23
Volatile Organic Compounds (VOC) in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

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 high.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
R	The result was rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
ug/L	Micrograms per liter.
Bold	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.

Table 4-24
Long Asbestos Fibers in Respirable Soil Fraction
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Analyte Type	ASB	ASB
	Analytic Method	EPA-540-R97-028M	EPA-540-R97-028M
	Chemical Name	Long Amphibole Protocol Structures	Long Chrysotile Protocol Structures
	Units	s/gPM10	s/gPM10
Sample ID	Sample Date		
SA1	12/05/2006	2947000 U	2947000 U
SA10	12/05/2006	2951000 U	2951000 U
SA11	12/02/2006	**2940000**	**5890000**
SA11D	12/02/2006	2922000 U	**5840000**
SA12	12/02/2006	2925000 U	2925000 U
SA12D	12/02/2006	2962000 U	**2960000**
SA13	12/08/2006	**3000000**	2996000 U
SA14	12/08/2006	2996000 U	**12000000**
SA15	12/08/2006	**5990000**	**5990000**
SA16	12/02/2006	**5900000**	**14800000**
SA17	12/07/2006	2995000 U	2995000 U
SA18	12/03/2006	2995000 U	**5990000**
SA18D	12/02/2006	2989000 U	**5980000**
SA19	12/07/2006	**10100000**	**10100000**
SA2	12/07/2006	2989000 U	2989000 U
SA20	12/07/2006	2942000 U	2942000 U
SA21	12/02/2006	2935000 U	2935000 U
SA22	12/02/2006	2883000 U	2883000 U
SA23	12/02/2006	2939000 U	**2940000**
SA24	12/01/2006	2993000 U	2993000 U
SA25	12/05/2006	2940000 U	2940000 U
SA26	12/05/2006	2947000 U	2947000 U
SA26D	12/05/2006	2916000 U	2916000 U
SA27	12/04/2006	2968000 U	2968000 U
SA3	12/02/2006	**7970000**	**7970000**
SA4	12/07/2006	2946000 U	**38300000**
SA5	12/07/2006	2980000 U	**35800000**
SA6	12/07/2006	2846000 U	2846000 U
SA7	12/07/2006	2988000 U	**2990000**
SA8	12/07/2006	2997000 U	**5990000**
SA9	12/02/2006	**2990000**	**5970000**

Table 4-24
Long Asbestos Fibers in Respirable Soil Fraction
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Notes:

U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
s/gPM10	Revised protocol structures per gram PM10 fraction dust.
Bold	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.

Table 5-1
Summary of Historical, Current, and Proposed Future Use of Evaluation Areas
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
EA1	2	SA25	GWSA25	Northwest drainage ditch	**The northwest drainage ditch** conveyed surface run off water that could have contained a wide variety of chemicals. Soil in the area was sampled in 1993. Eight surface soil samples were collected from 0-1 foot bgs. Three samples were collected in the ditch and the other eight were collected from areas adjacent to the ditch. Three additional samples were collected from the 4-5 foot depth interval. No significant concentrations of contaminants of concern were identified.	Vacant/undeveloped.	Commercial/light industrial
		SA27	PC40	LOU 67 - Recycle / salvage yard soil stain	**Storage and salvage yard:** The leased property was located in the northeast corner of EA1 and was used as a storage and salvage yard. The property was leased from 1976 through 1995. Kerr-McGee removed the material and trash that was left on-site and disposed of it at the Silver State Landfill in Apex, Nevada.	Vacant/undeveloped.	
EA2	2	SA24	M48	LOU 69 - Dillon Potter Site	**Livestock management & Storage:** This area was located in the lower east portion of EA2. Dillon Potter leased a 2-acre portion of the Kerr-McGee property. The area was used for livestock management and to store approximately 25 vehicles. The NDEP required no further action for LOU #69.	Vacant/undeveloped.	Commercial/light industrial
		SA26	M95	LOU 68 - Auto salvage yard soil stain	**Southern Nevada Auto Parts Site:** The leased property was located in the southwestern portion of EA2 and was used to store wrecked, impounded and repossessed vehicles. Operations also included insurance adjustment and auction of vehicles. Stained soil was present in some areas.	Auto salvage yard.	
EA3	1	SA22	M98	LOU 6 - Northwest Drainage Ditch	**Northwest Drainage ditch:** The ditch is located along the northern boundary of EA3. This ditch is also referred to as the Northwest Drainage ditch and was used by more than one BMI company. Soil in the area was sampled in 1993. Eight surface soil samples were collected from 0-1 foot bgs. Three samples were collected in the ditch and the other eight were collected from areas adjacent to the ditch. Three additional samples were collected from the 4-5 foot depth interval. No significant concentrations of contaminants of concern were identified.	Mostly vacant, some structures, Northwest Drainage Ditch is still present in EA3. Area contains >30 monitoring wells (installed by Montrose Chemical) associated with the groundwater extraction/treatment unit operated by Montrose on Montrose's adjacent property to the west.	Commercial/light industrial
EA4	1	SA21	M7B	LOUs 1 & 10 - Trade effluent pond area and closed on-site hazardous waste landfill and trash pits	**Trade Effluent Settling Pond Area**: The former Trade Effluent (TE) settling pond area is located north of the ammonium perchlorate storage area and west of the existing ponds, WC-East and WC- West. The TE ponds were operated by the U.S. government from the fall of 1942 to fall 1944 as unlined storage impoundments for acid waste neutralized with caustic liquor. The waste was apparently evenly distributed in the ponds, with no segregation of materials in different areas. Each TE pond was approximately 20 acres and the average liquid depth was 7.5 feet. **Hazardous Waste Landfill:** After decommissioning, portions of the TE pond area have been utilized for other activities. Kerr-McGee constructed and operated a hazardous waste landfill in the northwestern portion of the TE pond area between 1980 and 1983. Chromium tailings or slag deposits reportedly buried in landfill.The landfill was closed and capped in 1985 in accordance with RCRA interim status requirements. This landfill was closed consistent with the approved closure and post closure plans. A letter dated January 17, 1986 the NDEP appro Trash pits are located adjacent to and east of the hazardous waste landfill. Pits contain tires and other unknown debris.	Closed (capped) RCRA landfill still onsite, area remains off limits to Tronox personnel.	Area will remain unchanged from present use.

Table 5-1
Summary of Historical, Current, and Proposed Future Use of Evaluation Areas
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
EA5	4	SA18	M5A	LOU 2 - Disturbed area	**Open Area:** This area is due south of Trade Effluent settling ponds.	Currently vacant and undeveloped.	EA 5 will remain unchanged for the long term future(15-20 years). Only Tronox contractors allowed to work in area to perform operations and maintenance of groundwater treatment units.
		SA19	IAR	LOU 56, 57 & 58 - Vicinity of D-1 (old and new) AP blending area including washdown areas.	**Ammonia Perchlorate Blending Area:** The AP process-to-pond transfer lines extended from the AP process to the sodium chlorate ponds or process. The ponds and lines were in service from 1974 to 1995. The transfer lines occasionally released process solution to the ground. The lines were repaired, replaced or serviced on an as-needed basis.	Equipment has been decommissioned. Groundwater treatment units (chromium destruction unit and perchlorate destruction unit) located in this area along with groundwater barrier wall, groundwater interceptor wells (extraction).	
		SA20	M55	LOU 30 & 55 - Vicinity of AP drum storage pad 35, drum pad burn area	**AP Drum Storage Pad 35:** This area was used for accumulation of drummed common trash potentially contaminated with perchlorate and other industrial wastes, such as cooling tower sludge and iron oxide sludge. **Drum Pad Burn Area:** On July 18, 1990, a fire occurred in the AP drum storage pad area. The fire burned for approximately 45 minutes. The soil around the fire area was impacted with ammonium perchlorate, which was washed off the concrete pad by the fire suppression water. The impacted soil was collected and returned to the AP process to recover residual perchlorate. The burned asphalt and soil surrounding the area (approximately 30 cubic yards of material) were removed and sent to the US Ecology disposal facility in Beatty, Nevada.	Equipment has been decommissioned. Groundwater treatment units (chromium destruction unit and perchlorate destruction unit) located in this area along with groundwater barrier wall, groundwater interceptor wells (extraction).	
		SA23	M100	LOU 1, 22, & 23 - Trade effluent ponds and WC-West(1)	**Trade Effluent Settling Pond Area:** The Trade Effluent (TE) settling pond area is located north of the ammonium perchlorate storage area and west of the existing ponds, WC-East and WC-West. The TE ponds were operated by the U.S. government from the fall of 1942 to fall 1944 as unlined storage impoundments for acid waste neutralized with caustic liquor. The waste was apparently evenly distributed in the ponds, with no segregation of materials in different areas. Each TE pond was approximately 20 acres and the average liquid depth was 7.5 feet.	Although not identified as an LOU, the GW-11 pond currently receives water for treatment. This pond is double-lined with leak detection wells between the liners. The GW-11 pond is located in the area of the former trade effluent ponds (LOU #1). Ponds WC-West (WC-1) and WC-East (WC-2) are both double-lined process water surface impoundments. They were constructed within the former Trade Effluent settling pond area. For WC-1, the bottom liner is composed of 40-mil HDPE and the upper liner is composed of 60-mil HDPE with leak detection between the two liners. For WC-2 the bottom liner is composed of 40-mil HDPE, the middle liner is 60-mil HDPE, and the top liner is 40-mil HDPE. The current top liner was installed as a UV protective liner because the original top liner (now the middle liner) did not have sufficient carbon content to meet Kerr-McGee construction specifications. WC-1 has a surface area of 1.55 acres and WC-2 has a surface area of 2.03 acres. The soil beneath WC-1 and WC-2 was sampled for VOCs and eight RCRA metals prior to construction.	

Table 5-1
Summary of Historical, Current, and Proposed Future Use of Evaluation Areas
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
EA5 (continued)		SA22	M98	LOU 1	**Trade Effluent Settling Pond Area:** The Trade Effluent (TE) settling pond area is located north of the ammonium perchlorate storage area and west of the existing ponds, WC-East and WC-West. The TE ponds were operated by the U.S. government from the fall of 1942 to fall 1944 as unlined storage impoundments for acid waste neutralized with caustic liquor. The waste was apparently evenly distributed in the ponds, with no segregation of materials in different areas. Each TE pond was approximately 20 acres and the average liquid depth was 7.5 feet.	Same as above.	EA 5 will remain unchanged for the long term future(15-20 years). Only Tronox contractors allowed to work in area to perform operations and maintenance of groundwater treatment units.
				LOU 32 - Groundwater Remediation Unit		**Groundwater Remediation Unit:** The groundwater remediation unit occupies an area approximately 1,200 feet by 650 feet. It includes a line of groundwater interceptor wells, the groundwater barrier wall, and two recharge trenches. The groundwater treatment unit is also in the area on a 60-foot by 20-foot concrete pad. Portions of the recharge trenches became plugged and required modifications. At times treated water was discharged to near surface soils due to pipeline plugging (Kerr-McGee, 1996b). System modifications have been implemented and treated water is no longer delivered.	
EA6	4	SA11	M76	LOU 8 - Old P-3 Pond and Associated Piping	**The old P-3 surface impoundment:** Was a lined pond used from 1978 to 1986 to collect and concentrate dilute sodium chlorate solutions. The concentrated solutions were recycled back into the sodium chlorate production process. This pond was 0.3 acres in size. The pond liner was single layer synthetic. During closure the remaining solids, liner and underlying soils were removed and disposed offsite.	Ponds are inactive and have been decommissioned (residual material removed and ponds liners removed). Bare earthen ponds remain at the site.	Area will remain as is. There are currently no plans to reactivate ponds and no plans to redevelop this area for other use.
		SA12	M2A	LOU 13 & 14 - Ponds S-1 and P-1	**S-1 and P-1 Ponds:** These ponds were single-lined surface impoundments used by the sodium chlorate process. The S-1 pond footprint was approximately 47,500 ft2. The liner was constructed of 20-mil PVC on the bottom and 30-mil cross-linked polyethylene (CPE) on the sides. Pond P-1's footprint and liner were similar to S-1. The ponds were closed in 1983 and final closure was approved by the NDEP on December 5, 1985. During closure, approximately two feet of soil from beneath the floor of each pond was also removed and soils sampled and analyzed to confirm adequate soil removal.	Same as above.	Same as above.
		SA15	GWSA15	LOU 57 - AP Process Cooling Tower Site of AP process liquor cooling tower and adjacent to dryer building sump	**AP Process Cooling Tower:** The AP process-to-pond transfer lines extended from the AP process to the sodium chlorate ponds or process. The ponds and lines were in service from 1974 to 1995. The transfer lines occasionally released process solution to the ground. The lines were repaired, replaced or serviced on an as-needed basis.	Area is inactive with equipment in the process of being decommissioned (demolished).	Future use of EA6 will remain unchanged from present-day use.

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
EA6 (continued)		SA19	IAR	LOU 56 - Vicinity of D-1 (old and new) AP blending area including washdown areas.	**AP Blending Area:** During material handling, mixing and blending, small amounts of AP dust fell to the old D-1 building floor. While housekeeping in the area was maintained by dry sweeping, about once every other month, the building was also washed-down after sweeping. The wash-down water contained dissolved AP and drained onto the asphalt pad surrounding the building. Some of the wash water also drained onto the soil adjacent to the asphalt.	Area is inactive; equipment/buildings have been decommissioned (demolished). Highest levels of perchlorate in soil and groundwater in this area.	Future use of EA6 will remain unchanged from present-day use.
		SA16	M89	LOU 16, 17, 18 and 19 AP-1, AP-2, AP-3, AP-4 and AP-5 Ponds and Associated Transfer Lines	**AP Ponds and Transfer lines:** Five synthetically lined surface impoundments (AP-1, AP-2, AP-3, AP-4, and AP-5) were part of the ammonium perchlorate (AP) manufacturing process.	Ponds have been decommissioned, closed, scarified, and pond liners in process of being removed.	
				LOU 31 - Drum Crushing and Recycling Area	**The drum crushing area:** (serving the ammonium perchlorate production) consisted of a drum crusher located on an 18 feet by 18 feet concrete pad located just east of the old D-1 building. Drums destined for disposal were emptied and rinsed prior to delivery to this area. Soils adjacent to the drum crushing area were transported to the AP-4 pond for recovery of the residual perchlorate. This area is located up-gradient of the on-Site groundwater interception system/groundwater barrier wall.	Area is inactive with infrastructure being decommissioned.	
				LOU 52 - AP Plant Area Screening Building, Dryer Building, and Associated Sump	**AP Plant Area:** The Dryer and Screening buildings shared a common sump and floor drain system. The sump collected wash-down water and, on rare occasions, overflowed. Secondary containment was installed around the sump and a lined collection ditch was constructed completely around the building. Soil exhibiting white stains was collected and recycled for perchlorate recovery.		
		SA15	GWSA15	LOU 53 - AP Plant Area Tank Farm	**The AP Tank Farm:** contained a number of vertical open-top and closed-top tanks used for process solution storage. The tank farm was equipped with secondary containment and a sump. Contained spills were reported from the tanks in the past.	Area is inactive and vacant. ASTs have been removed. Area undergoing decommissioning.	
		SA16	M89	LOU 5 - Floor of Beta ditch mid-way across property	**The Beta Ditch:** Ditch could have carried a wide variety of chemicals throughout its history.	Ditch still onsite and continues to be used as a stormwater run-off ditch.	
				LOU 34 - Leach Beds and Associated Conveyance Facilities for Manganese Ore Piles	**Manganese Surface Impoundments:** Prior to 1975, tailings from the beneficiation of manganese dioxide ores were transported as a slurry to unlined surface impoundments/leach beds to the west of the current tailings area.	Leach beds are currently empty.	
				LOU 45 - Diesel Fuel Storage Tank	**Former Diesel Fuel Storage**: The former diesel fuel storage above-ground storage tank (AST) located south of old P-2 pond was removed by Kerr-McGee in 1994.	Impoundment area remains empty	
		SA11		LOU 7 and 8 - Old P-2 and P-3 Ponds and Associated Conveyance Facilities	**Surface impoundments:** used to collect and concentrate dilute sodium chlorate solutions as part of the sodium chlorate production process. The concentrated solutions were recycled from the ponds back into the process. Old P-2 and P-3 were lined ponds used for this process from 1978 to 1986. Old P-2 encompassed approximately 0.1 acre and P-3 encompassed approximately 0.3 acre. The ponds were constructed with single layer synthetic liners. The ponds were taken out of service prior to 1987 and the remaining solids, liner, and underlying soils were removed and disposed at the U.S. Ecology waste disposal facility in Beatty, Nevada.	Ponds are currently empty.	

Table 5-1
Summary of Historical, Current, and Proposed Future Use of Evaluation Areas
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
EA7	3	SA09	GWSA09	LOU 35 - stained soil from trucking activity	**Truck Unloading:** The truck unloading area was previously used for the unloading of inorganic materials. Based on the analytical results the truck unloading area has not been adversely impacted.	Inactive land; unlined surface ponds located in this area.	A warehouse type lumber yard is planned for this area.
		SA10	GWSA10	LOU 64 - Koch Materials Company Site	**Asphalt emulsion batch plant:** Koch Materials Company leased an area west of the diesel storage tank for use as an asphalt emulsion batch plant. TPH spills were evident at the leased property and Koch removed visibly stained soils.		A warehouse type lumber yard is planned for this area.
		SA14	GWSA14	LOU 5 - Entrance of beta ditch onto site and downgradient of the lab septic leach bed and lab satellite waste storage area	**The Beta Ditch: The ditch** could have carried a wide variety of chemicals throughout its history.	Ditch still onsite and continues to be used as a stormwater run-off ditch.	No changes planned. Beta ditch will continue to be used for stormwater run-off.
			M97	LOU 65 - Nevada Pre-cast Concrete Products, Green Ventures International, Buckles Construction Company, and Ebony Construction Sites	**Office Activities and Steel Fabrication:** Nevada Pre-Cast Concrete utilized office space near the J.B. Kelley operations from January 1973 to May 1978. Green Ventures International leased the S-1 change house from August 1980 to September 1981 for use as a marketing office for alfalfa sprouts. Only office activities were conducted by Nevada Pre-Cast Concrete & Green Ventures International. Buckles Construction Company leased a portion of Unit 1 from August 1973 to June 1989. Buckles Construction Company activities, including steel fabrication and equipment storage, were conducted in the crane bay located in the northwest corner of Unit 1 in the crane bay.	Vacant land.	A warehouse type lumber yard is planned for this area.
				LOU 38 & 39 Satellite Accumulation Points	**Former Satellite Accumulation Points:** This satellite accumulation point is located outside the north wall of the laboratory. It was used to store hazardous chemicals used in the on-site laboratory. Once the containers were full they were placed in 55-gallon drums packed with vermiculite and shipped off site for appropriate disposal. The second former satellite accumulation point was located at the AP Maintenance Shop. Used oil drums were stored at this accumulation point.		Area will remain unchanged.
			M92	LOU 63 - J.B. Kelley, Inc. Trucking Site	**Trucking operation:** J.B. Kelley, Inc. leased property from Kerr-McGee immediately south and east of the truck unloading area and operated a trucking operation on Site. The company hauled commodities such as lime and soda ash. The area of interest at the J.B. Kelley, Inc. site included a UST that stored diesel (excavated in 1991) and the open concrete vaults which formerly served as foundations for peat storage buildings.		A warehouse type lumber yard is planned for this area.
EA8	4	SA07	M11	LOU 43 & 61 - Unit 4 and 5 Basements - include historic chlorate, perchlorate and current manganese dioxide production operations	**Units 4 and 5 Basements:** Sodium chlorate was historically produced in electrolytic cells located in Units 4 and 5. Additionally, these Units were used to produce sodium perchlorate at times. Both of these electrolytic processes contained chlorate and perchlorate as well as sodium dichromate (hexavalent chromium). In support of the chlorate and perchlorate production, the basements of Units 4 and 5 were used as sumps to collect spillage and wash-water. Operation of the electrolytic cells in Units 4 and 5 was discontinued in the late 1990s, but the buildings and structures remain for future use.	Portions of these buildings actively participate in the manufacturing process. Other portions of the buildings are in good condition and may be utilized for active manufacturing in the future.	Land use will remain unchanged.

Table 5-1
Summary of Historical, Current, and Proposed Future Use of Evaluation Areas
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
EA8 (continued)				LOU 40	**PCB Spill:** The PCB transformer spill occurred at the south end of Unit 5. On November 26, 1990, approximately 1.75 pounds of PCB-containing fluid was released. The fluid dripped through access holes and collected on the concrete floor of the basement of Unit 5. The fluid was cleaned up with absorbents and portions of the concrete were also removed. The concrete was 8 inches thick. In August 1991, a small amount of soil was removed from beneath the concrete in preparation for replacing the concrete flooring.		Land use will remain unchanged.
		SA08	GWSA08	LOU 44 & 37- Unit 6 Basement	**Unit 6 Basement:** High-purity, battery-active manganese dioxide has been produced in electrolytic cells in Unit 6. The basement beneath the cells collected process spillage and wash water and was identified as a source of soil and groundwater impact. Remediation measures were undertaken in 1986. The basement was cleaned, the concrete floor was removed, and the subsurface soil was re-contoured.	At present, the basement is lined with a 100-mil HDPE liner. The integrity of the basement liner system is periodically checked and serviced.	Land use will remain unchanged.
		SA13	M31A	LOU 48, 49 & 50 - Leach Plant Process Equipment	**Manganese Dioxide Production**: A variety of process equipment is used to beneficiate the manganese dioxide ore and produce high-quality, battery-grade manganese dioxide. The analyte tanks are housed within a containment berm and are used to hold a manganese sulfate solution, that was used in the Unit 6 electrolytic cells, until the used solution is fortified and returned to the electrolytic cells. The sulfuric acid tank is housed on a containment pad and is used to hold this process chemical until needed by the process. The leaching tanks are housed on containment pads and are used to leach the manganese dioxide ore to gain its manganese value for use in the Unit 6 electrolytic cells.	Structures are currently used in the manganese ore production.	This area will remain unchanged with continued production on manganese ore (id., industrial production area) and onsite storage of manganese tailings.
		SA17	M39	LOU 5 - East end (downstream end) of beta ditch from site and downgradient of C-1 and Mn-1 ponds	**The Beta Ditch:** The ditch could have carried a wide variety of chemicals throughout its history.	Ditch still onsite and continues to be used as a stormwater run-off ditch.	Land use will remain unchanged.
				LOU 20 - Pond C-1 and Associated Piping	The pond was used to evaporate non-hazardous process water.	The C-1 pond is currently in use. The C-1 pond was constructed and lined with a single 60-mil PVC liner. C-1 pond covered 1.58 acres (69,000 ft2).	No plans to change use of this area. Area will continue to be used for active industrial purposes as surface ponds.
				LOU 21 - Pond Mn-1 and Associated Piping	**The Mn-1surface impoundment:** The Mn-1 surface impoundment was put into operation in May 1983 and received non-hazardous liquid wastes, including manganese dioxide cell fed filter waste and potassium phosphate cathode wash water. The wastewater contains high TDS.	Pond Mn-1 is currently not in use. Pond Mn-1 is a double-lined surface impoundment and has leak detection between the liners. The top liner is composed of 60-mil HDPE and the bottom liner is 4 to 6 inches of compacted bentonite clay with a permeability of 10-6 centimeters per second. Mn-1 has a surface area of 1.22 acres (53,000 ft2).	

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EA8 (continued)				LOU 33 - Unit 5 Building	**Platinum Recovery Filter Press:** The platinum recovery filter press was located on a 75 foot by 100 foot concrete pad east of the Unit 5 cell floor. The pad was equipped with a sump that collected and contained liquids, including process liquids and wash-down water. Cracks in the floor, noted during the Phase I investigation, were coated with a Chevron industrial membrane material that provided a continuous cover over the floor.	Area continues to be used for industrial purposes - Platinum recovery filter presses. Area only open to Tronox personnel.	No plans to change use of theis area. This area will contiue to be used for industrial production.
				LOU 47 - Vicinity of Mn tailings	**Manganese Ore:** Manganese ore has been stored and processed at the Site since 1951. Historically manganese ore piles were 10 to 15 feet high and over 300 feet long. The manganese ore was normally crushed with particles varying in size but typically 0.25 inch and smaller.	The ponds and structures on site are currently used in the manganese production.	Land use will remain unchanged.
				LOU 51 - Leach Plant Area Transfer Lines	**US Vanadium:** Area was leased to US Vanadium in 1946.	Area used as temporary storage of manganese ore that is awaiting processing for production of MnO_2.	This area will continue to be used for industrial purposes accessible only to Tronox personnel.
				LOU 24 and 34 Leach Beds - Associated Conveyance Facilities and Former Manganese Tailings Area	**Mn Tailings:** Prior to 1975, tailings from the beneficiation of manganese dioxide ores were transported as a slurry to unlined surface impoundments/leach beds to the west of the current tailings area. After 1975, filtering of the tailings yielded a semi-dry filter cake. The tailings pile was graded periodically to maintain the desired shape and drainage. Placement of demolition debris into the tailings pile was allowed by NDEP.	Area continues to be used as Mn tailings waste storage area; tailings ~9 to 21 feet deep.	No plans to change the use of this area. Area will continue to be used for industial purposes as storage area for Mn waste tailings.
EA9	4	SA04		LOU 4 - Hardesty Chemical Site	**Hardesty Chemical Company (Hardesty): Hardesty** leased property in the vicinity of Unit 2 (as well as elsewhere in the BMI complex) in September 1945. In 1947, AMECCO gave notice that it had purchased the Hardesty interest in the BMI complex, and it appears AMEECO ceased operations prior to June 1949. Products listed for proposed production included muriatic acid, synthetic hydrochloric acid, monochlorobenzene, paradicyhlorobenzene, orthodichlorobenzene, DDT, and soda arsenite solution. A portion of the Hardesty area was later leased by J. B. Kelley, Inc.	EA9 is slowly being decommissioned. Units 1 & 2 have been partially decommissioned and only the building in the northeast portion of EA9 is currently in use. It is expected that demolition of all structures in this area will occur over the next ~10 years.	Land use will remain unchanged.
		SA05		LOU 11 - Sodium Chlorate Filter Cake Drying Pad area	**Sodium Chlorate Filter Cake Drying Pad Area:** Prior to the early 1990s the Filter Cake Drying Pad was used to dry particulate material removed from the sodium chlorate process. In the early 1990s a new tank containment system was constructed in the drying pad location. Before construction, the existing pad structure was demolished and the material generated was managed as hazardous waste (due to total chromium content of the upper surface) and appropriately disposed off Site.	EA9 is slowly being decommissioned. Units 1 & 2 have been partially decommissioned and only the building in the northeast portion of EA9 is currently in use. It is expected that demolition of all structures in this area will occur over the next ~10 years.	Land use will remain unchanged.
				LOU 12 - Hazardous Waste Storage Area	**Hazardous Waste Storage Area:** LOU #12 is located to the northwest of Unit 4 and was the location where waste from the sodium chlorate process was stored in a semi-dump trailer, in preparation for transportation to a commercial hazardous waste disposal site (TSDF). The waste was initially transferred from the process to the trailer by a front-end loader, but in the later years of operation the material was transferred by dumping from a collection bin into the trailer. The semi-dump trailer was periodically transported off Site to the TSDF.		

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
				LOU 25 - Process Hardware Storage Area	**Process Hardware Storage Area:** The process hardware storage area is located between Units 1 and 2. The area is about 50 feet wide and 200 feet long and was used to store process hardware since 1989. The process hardware stored in this area consisted of scrap metal parts and equipment from decommissioning of the former sodium chlorate and perchlorate processes from Units 4 and 5. Parts, tanks and other equipment destined for this storage area were rinsed or otherwise decontaminated prior to placement on the pad.		
EA9 (continued)				LOU 26 - Trash Storage Area	**Trash Storage Area:** The trash storage area is located north of Units 1 and 2. The area consists of two asphalt- surfaced areas measuring approximately 56 feet by 100 feet and 65 feet by 50 feet. Common trash from the sodium chlorate and sodium perchlorate processes was placed in 55-gallon drums and delivered to this staging area. The area was used from approximately 1990 to closure of the sodium chlorate process.	EA9 is slowly being decommissioned. Units 1 & 2 have been partially decommissioned and only the building in the northeast portion of EA9 is currently in use. It is expected that demolition of all structures in this area will occur over the next ~10 years.	
				LOU 28 - Hazardous Waste Storage Area	**The Hazardous Waste Staging Area: This area** was originally located north of Unit 2 and consisted of a 65 foot by 15 foot concrete pad segregated into four areas with concrete curbing. The staging pad area was constructed for compliance with RCRA requirements and used for both hazardous and non-hazardous waste staging, although the types were segregated. The wastes handled consisted of used oil, flammable maintenance parts washing wastes, hexavalent chromium-contaminated material, and miscellaneous compatible wastes. Material placed on these pads was contained in drums.		
				LOU 36 - Former Satellite Accumulation Point	**Former Satellite Accumulation Point:** This satellite accumulation point is located at the southwest corner of Unit 3. It includes a parts washer and the adjacent open area where lead acid storage batteries and waste from the parts washer were stored. From 1989 to 1991 a solvent-based washer was used and after 1991 a caustic detergent was used for washing. Waste stored in this area included drums of oil and grease, solvents (mainly 1,1,1-TCA), sludge, caustic detergent and metal parts.		
		SA03		LOU 41 - Tenant Stains	**Unit 1 Tenant Stains**: These stains were investigated as part of the 1997 Phase II ECA field investigation. Visibly stained soils were removed.		
				LOU 42 - Unit 2 Salt Redler	**The Salt Redler: The salt redler** was a rubber belt conveyor and was located at the southeast corner of Unit 2. During the period of sodium chlorate production, transfer of salt from storage in Unit 2 to the conveyor feed hopper resulted in some salt spillage to the ground. Spilled salt was swept up and returned to Unit 2.		

Evaluation Area	Number of Phase A Borings	Soil Borings Located in EA	Groundwater Wells/Grab Samples in EA	LOUs within Evaluation Area	Historical Evaluation Area Uses	Present Evaluation Area Use	Proposed Future Evaluation Area Use
				LOU 43 & 61 - Unit 4 and 5 Basements - include historic chlorate, perchlorate and current manganese dioxide production operations	**Units 4 and 5 Basements:** Sodium chlorate was historically produced in electrolytic cells located in Units 4 and 5. Additionally, these Units were used to produce sodium perchlorate at times. Both of these electrolytic processes contained chlorate and perchlorate as well as sodium dichromate (hexavalent chromium). In support of the chlorate and perchlorate production, the basements of Units 4 and 5 were used as sumps to collect spillage and wash-water. Operation of the electrolytic cells in Units 4 and 5 was discontinued in the late 1990s, but the buildings and structures remain for future use.	Portions of these buildings actively participate in the manufacturing process. Other portions of the buildings are in good condition and may be utilized for active manufacturing in the future.	
				LOU 65 - Nevada Pre-cast Concrete Products, Green Ventures International, Buckles Construction Company, and Ebony Construction Sites	**Nevada Pre-cast Concrete Products, Green Ventures International, Buckles Construction Company, and Ebony Construction Sites:** Nevada Pre-Cast Concrete utilized office space near the J.B. Kelley operations from January 1973 to May 1978. Only office activities were conducted by Nevada Pre-cast Concrete (Kleinfelder, 1993). Green Ventures International leased the S-1 change house from August 1980 to September 1981 for use as a marketing office for alfalfa sprouts. Only office activities were conducted by Green Ventures International (Kleinfelder, 1993). Buckles Construction Company leased a portion of Unit 1 from August 1973 to June 1989. Buckles Construction Company activities, including steel fabrication and equipment storage, were conducted in the crane bay located in the northwest corner of Unit 1 in the crane bay.		
EA9 (continued)				LOU 66 - Above Ground Diesel Storage tank leased by Flintkote	**Diesel AST:** Flintkote Company leased a diesel AST from July 1973 through 1975. The tank was located near the southwest corner of the Chemstar property. The tank has been removed.		
				LOU 60 - Acid Drain System	**Acid Drain System:** The acid drain system consists of a network of pipes, manholes and sumps used to collect acid effluent from throughout the BMI complex. The construction included the use of acid resistant materials. The system has a single outfall at the acid effluent neutralization plant. Kerr-McGee plugged the acid drain system beneath the operating portions of the facility in 1984. Acid drains in the non-operating portions of the facility (Units 1 and 2) have been filled with concrete debris and soil.		
		SA04		LOU 27 - PCB storage area - Unit 2 former leased area, former buried tanks and PCB waste staging areas	**PCB Storage Area:** The PCB storage area is located in the northern portion of Unit 2. The PCB storage area consists of three 12 foot by 15 foot vaults with floors that are 12 inches lower than the surrounding area. The vault walls are concrete that is 8 inches thick and the floors are covered with black 6-mil plastic sheeting. The vault area was reserved as a PCB waste staging areas.		

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		SA05	M13	LOU 59 - Storm Sewer System	**Storm Sewer System:** The storm sewer system consists of a network of concrete, clay and tile storm drains, manholes and outfalls. Outfalls occur along Beta Ditch, tributaries to Beta Ditch, and other drainage ditches. Between 1941 and 1976 the storm sewer system conveyed storm water and process effluent. In January 1976 Kerr-McGee achieved "zero discharge" of industrial process wastewater. Kerr-McGee process solutions are controlled in vessels or in lined surface impoundments. The storm sewer is used to convey storm water and non-contact cooling water. The storm drain system is subsurface, ranging from 25 to 45 feet below grade. **Unit 3 Accumulation Point:** This satellite accumulation point is located within the northeast portion of Unit 3. It includes a parts washer and the drum for temporary storage of parts washer waste. From 1989 to 1991 a solvent-based washer was used and after 1991 a caustic detergent was used for washing. Waste stored in this area included drums of oil and grease, solvents (mainly 1,1,1-TCA), sludge, caustic detergent and metal parts.		
		SA06	M12A	LOU 15 - Platinum Drying Unit	**Platinum Drying Unit:** The platinum drying unit was a 20 foot by 32 foot concrete floored and concrete bermed containment pad. In this area, a sodium perchlorate process by-product that contained recoverable platinum was processed.		
EA10	1	SA02	GWSA2	LOU 62 (State Industries) - former surface impoundment	**State Industries:** State Industries leased portions of the Kerr-McGee property for the manufacture and storage of hot water heaters. State Industries operated two surface impoundments between 1974 and 1988. Both surface impoundments have been closed.	Warehouse building used to store and load finished manganese product.	Commercial/light industrial
EA11	0		M-120	No LOUs located in this area	No known historical use.	Most of the EA11 area is vacant, undeveloped and up for sale. Tronox has one building on this area that is used for training and purchasing.	Big box retail stores.

Table 5-2
Selection of Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

		Groundwater												Soil				
Analyte	**Site-Related Chemical? (Yes or No)**	**Water Units**	**USEPA MCL (b)**		**Nevada Secondary MCL (a)**		**TW PRG (c)**		**TW PRG (1/10) (d)**		**Selected Comparison Level (e)**	**Selected Comparison Level Reference (ss)**		**Soil Units**	**Industrial Soil PRG (f)**		**Selected Comparison Level (g)**	
Metals																		
Aluminum	Yes	ug/l	5.00E+01	(j)	2.00E+02		3.65E+04		3.65E+03		5.00E+01	SMCL		mg/kg	9.21E+05	(oo)	9.23E+04	(oo)
Antimony	Yes	ug/l	6.00E+00		--		1.46E+01		1.46E+00		6.00E+00	MCL		mg/kg	4.09E+02		4.09E+01	
Arsenic	Yes	ug/l	1.00E+01		--		4.48E-02		4.48E-03		1.00E+01	MCL		mg/kg	1.59E+00		1.59E-01	
Barium	Yes	ug/l	2.00E+03		--		2.55E+03		2.55E+02		2.00E+03	MCL		mg/kg	6.66E+04		6.66E+03	
Beryllium	Yes	ug/l	4.00E+00		--		7.30E+01		7.30E+00		4.00E+00	MCL		mg/kg	1.94E+03		1.94E+02	
Boron	Yes	ug/l	--		--		7.30E+03		7.30E+02		7.30E+02	PRG		mg/kg	2.00E+05	(oo)	2.00E+04	(oo)
Cadmium	Yes	ug/l	5.00E+00		--		1.80E+01		1.80E+00		5.00E+00	MCL		--	4.50E+02		4.50E+01	
Calcium	Yes	--	--		--		--		--		--	--		--	--		--	
Chromium (hexavalent)	Yes	ug/l	--		--		1.09E+02		1.09E+01		1.09E+01	PRG		mg/kg	6.40E+01		6.40E+00	
Chromium (total)	Yes	ug/l	1.00E+02		--		1.10E+02	(ll)	1.10E+01	(ll)	1.00E+02	MCL		mg/kg	4.48E+02		4.48E+01	
Cobalt	Yes	ug/l	--		--		7.30E+02		7.30E+01		7.30E+01	PRG		mg/kg	1.92E+03		1.92E+02	
Copper	Yes	ug/l	1.30E+03	(p)	1.00E+00		1.46E+03		1.46E+02		1.30E+03	TTAL		mg/kg	4.09E+04		4.09E+03	
Iron	Yes	ug/l	3.00E+02	(j)	6.00E+02		1.09E+04		1.09E+03		3.00E+02	SMCL		mg/kg	3.00E+05	(oo)	3.00E+04	(oo)
Lead	Yes	ug/l	1.50E+01	(u)	--		--		--		1.50E+01	TTAL		mg/kg	8.00E+02		8.00E+01	
Magnesium	Yes	ug/l	--		1.50E+05		--		--		1.50E+05	SMCL-NV		--	--		--	
Manganese	Yes	ug/l	5.00E+01	(j)	1.00E+02		8.76E+02		8.76E+01		5.00E+01	SMCL		mg/kg	1.95E+04		1.95E+03	
Mercury	Yes	ug/l	2.00E+00		--		1.10E+01	(t)	1.10E+00	(t)	2.00E+00	MCL		mg/kg	3.10E+02	(t)	3.10E+01	(t)
Molybdenum	Yes	ug/l	--		--		1.82E+02		1.82E+01		1.82E+01	PRG		mg/kg	5.11E+03		5.11E+02	
Nickel	Yes	ug/l	--		--		7.30E+02		7.30E+01		7.30E+01	PRG		mg/kg	2.04E+04		2.04E+03	
Platinum	Yes		--		--		--		--		--	--		--	--		--	
Potassium	Yes	--	--		--		--		--		--	--		--	--		--	
Selenium	Yes	ug/l	5.00E+01		--		1.82E+02		1.82E+01		5.00E+01	MCL		mg/kg	5.11E+03		5.11E+02	
Silver	Yes	ug/l	1.00E+02	(j)	1.00E+02		1.82E+02		1.82E+01		1.00E+02	SMCL		mg/kg	5.11E+03		5.11E+02	
Sodium	Yes	--	--		--		--		--		--	--		--	--		--	
Strontium	Yes	ug/l	--		--		2.19E+04		2.19E+03		2.19E+03	PRG		mg/kg	6.12E+05	(oo)	6.12E+04	(oo)
Thallium	Yes	ug/l	2.00E+00		--		2.41E+00		2.41E-01		2.00E+00	MCL		mg/kg	6.75E+01		6.75E+00	
Tin	Yes	ug/l	--		--		2.19E+04		2.19E+03		2.19E+03	PRG		mg/kg	6.12E+05	(oo)	6.12E+04	(oo)
Titanium	Yes	ug/l	--		--		1.46E+05		1.46E+04		1.46E+04	PRG		mg/kg	3.80E+06	(oo)	3.80E+05	(oo)
Tungsten	Yes	--	--		--		--		--		--	--		--	--		--	
Uranium	Yes	ug/l	3.00E+01		--		7.30E+00		7.30E-01		3.00E+01	MCL		mg/kg	2.04E+02		2.04E+01	
Vanadium	Yes	ug/l	--		--		3.65E+01		3.65E+00		3.65E+00	PRG		mg/kg	1.02E+03		1.02E+02	
Zinc	Yes	ug/l	5.00E+03	(j)	5.00E+03		1.09E+04		1.09E+03		5.00E+03	SMCL		mg/kg	3.10E+05	(oo)	3.10E+04	(oo)
Wet Chemistry																		
Alkalinity (total, CO3--, HCO3-)	Yes	--	--		--		--		--		--	--		--	--		--	
Ammonia	Yes	ug/l	--		--		--		--		--	--		--	--		--	
Asbestos	Yes	MFL	7.00E+00	(rr)	--		--		--		7.00E+00	MCL	(rr)	--	--		--	
Bromide	Yes	--	--		--		--		--		--	--		--	--		--	
Chlorate	Yes	--	--		--		--		--		--	--		--	--		--	
Chloride	Yes	ug/l	2.50E+05	(j)	4.00E+05		--		--		2.50E+05	SMCL		--	--		--	
Conductivity	Yes	--	--		--		--		--		--	--		--	--		--	
Cyanide (total)	Yes	ug/l	2.00E+02		--		7.30E+02		7.30E+01		2.00E+02	MCL		mg/kg	1.20E+04		1.20E+03	
Nitrate	Yes	ug/l	1.00E+04		--		1.00E+04		1.00E+03		1.00E+04	MCL		--	--		--	

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		Groundwater												Soil				
Analyte	Site-Related Chemical? (Yes or No)	Water Units	USEPA MCL (b)		Nevada Secondary MCL (a)		TW PRG (c)		TW PRG (1/10) (d)		Selected Comparison Level (e)	Selected Comparison Level Reference (ss)		Soil Units	Industrial Soil PRG (f)		Selected Comparison Level (g)	
Nitrite	Yes	ug/l	1.00E+03		--		1.00E+03		1.00E+02		1.00E+03	MCL		--	--		--	
Perchlorate	Yes	ug/l	--		1.80E+01	(m)	3.60E+00		3.60E-01		1.80E+01	NDEP	(m)	mg/kg	1.00E+02		1.00E+01	
pH	Yes	--	--		--		--		--		--	--		--	--		--	
Phosphate (ortho)	Yes	--	--		--		--		--		--	--		--	--		--	
Sulfate	Yes	ug/l	2.50E+05	(j)	5.00E+05		--		--		2.50E+05	SMCL		--	--		--	
Surfactants (MBAS)	Yes	--	--		--		--		--		--	--		--	--		--	
Total Dissolved Solids (TDS)	Yes	ug/l	5.00E+05	(j)	1.90E+06	(s)	--		--		1.90E+06	NDEP	(s)	--	--		--	
Total Organic Carbon (TOC)	Yes	--	--		--		--		--		--	--		--	--		--	
Total Suspended Solids (TSS)	Yes	--	--		--		--		--		--	--		--	--		--	
Total Petroleum Hydrocarbons (TPH) and Fuel Alcohols																		
GRO (C6 -C10)	Yes	--	--		--		--		--		--	--		mg/kg	1.00E+02	(vv)	1.00E+01	(vv)
DRO (C10 -C28)	Yes	--	--		--		--		--		--	--		mg/kg	1.00E+02	(vv)	1.00E+01	(vv)
ORO (C28 -C38)	Yes	--	--		--		--		--		--	--		mg/kg	1.00E+02	(vv)	1.00E+01	(vv)
Methanol	Yes	ug/l	--		--		1.82E+04		1.82E+03		1.82E+03	PRG		mg/kg	3.08E+05	(oo)	3.08E+04	(oo)
Ethanol	Yes	--	--		--		--		--		--	--		--	--		--	
Ethylene glycol	Yes	ug/l	--		--		7.30E+04		7.30E+03		7.30E+03	PRG		mg/kg	1.23E+06	(oo)	1.23E+05	(oo)
Organochlorine Pesticides (OCPs)																		
4,4'-DDD	Yes	ug/l	--		--		2.80E-01		2.80E-02		2.80E-02	PRG		mg/kg	9.95E+00		9.95E-01	
4,4'-DDE	Yes	ug/l	--		--		1.98E-01		1.98E-02		1.98E-02	PRG		mg/kg	7.02E+00		7.02E-01	
4,4'-DDT	Yes	ug/l	--		--		1.98E-01		1.98E-02		1.98E-02	PRG		mg/kg	7.02E+00		7.02E-01	
Aldrin	Yes	ug/l	--		--		4.00E-03		4.00E-02		4.00E-02	PRG		mg/kg	1.00E-01		1.00E-02	
alpha-BHC	Yes	ug/l	--		--		1.10E-02	(bbb)	1.10E-03	(bbb)	1.10E-03	PRG		mg/kg	3.59E-01	(bbb)	3.59E-02	(bbb)
alpha-Chlordane	Yes	ug/l	2.00E+00	(l)	--		1.90E-01	(y)	1.90E-02	(y)	2.00E+00	MCL	(l)	mg/kg	6.47E+00	(y)	6.47E-01	(y)
beta-BHC	Yes	ug/l	--		--		3.74E-02	(bbb)	3.74E-03	(bbb)	3.74E-03	PRG		mg/kg	1.26E+00	(bbb)	1.26E-01	(bbb)
Chlordane, technical	Yes	ug/l	2.00E+00	(l)	--		1.92E-01		1.92E-02		2.00E+00	MCL	(l)	mg/kg	6.47E+00		6.47E-01	
delta-BHC	Yes	ug/l	--		--		1.10E-02	(z)	1.10E-03	(z)	1.10E-03	PRG	(z)	mg/kg	3.59E-01	(z)	3.59E-02	(z)
Dieldrin	Yes	ug/l	--		--		4.20E-03		4.20E-02		4.20E-02	PRG		mg/kg	1.10E-01		1.10E-02	
Endosulfan I	Yes	ug/l	--		--		2.19E+02	(aa)	2.19E+01	(aa)	2.19E+01	PRG	(aa)	mg/kg	3.70E+03	(aa)	3.70E+02	(aa)
Endosulfan II	Yes	ug/l	--		--		2.19E+02	(aa)	2.19E+01	(aa)	2.19E+01	PRG	(aa)	mg/kg	3.70E+03	(aa)	3.70E+02	(aa)
Endosulfan sulfate	Yes	ug/l	--		--		2.19E+02	(aa)	2.19E+01	(aa)	2.19E+01	PRG	(aa)	mg/kg	3.70E+03	(aa)	3.70E+02	(aa)
Endrin	Yes	ug/l	2.00E+00		--		1.09E+01		1.09E+00		2.00E+00	MCL		mg/kg	1.85E+02		1.85E+01	
Endrin aldehyde	Yes	ug/l	--		--		1.09E+01	(k)	1.09E+00	(k)	1.09E+00	PRG	(k)	mg/kg	1.85E+02	(k)	1.85E+01	(k)
Endrin Ketone	Yes	ug/l	--		--		1.09E+01	(k)	1.09E+00	(k)	1.09E+00	PRG	(k)	mg/kg	1.85E+02	(k)	1.85E+01	(k)
gamma-BHC (Lindane)	Yes	ug/l	2.00E-01		--		5.17E-02	(bbb)	5.17E-03	(bbb)	2.00E-01	MCL		mg/kg	1.74E+00	(bbb)	1.74E-01	(bbb)
gamma-Chlordane	Yes	ug/l	2.00E+00	(l)	--		1.92E-01	(y)	1.92E-02	(y)	2.00E+00	MCL	(l)	mg/kg	6.47E+00	(y)	6.47E-01	(y)
Heptachlor	Yes	ug/l	4.00E-01		--		1.49E-02		1.49E-03		4.00E-01	MCL		mg/kg	3.83E-01		3.83E-02	
Heptachlor epoxide	Yes	ug/l	2.00E-01		--		7.39E-03		7.39E-04		2.00E-01	MCL		mg/kg	1.89E-01		1.89E-02	
Methoxychlor	Yes	ug/l	4.00E+01		--		1.82E+02		1.82E+01		4.00E+01	MCL		mg/kg	3.08E+03		3.08E+02	
Toxaphene	Yes	ug/l	3.00E+00		--		6.11E-02		6.11E-03		3.00E+00	MCL		mg/kg	1.57E+00		1.57E-01	
Polychlorinated Biphenyl (PCB) Compounds																		
Aroclor 1016	Yes	ug/l	5.00E-01	(bb)	--		9.60E-01		9.60E-02		5.00E-01	MCL		mg/kg	1.00E+01	(i)	1.00E+00	(i)
Aroclor 1221	Yes	ug/l	5.00E-01	(bb)	--		3.40E-02	(ee)	3.40E-01	(ee)	5.00E-01	MCL	(ee)	mg/kg	1.00E+01	(i)	1.00E+00	(i)
Aroclor 1232	Yes	ug/l	5.00E-01	(bb)	--		3.40E-02	(ee)	3.40E-01	(ee)	5.00E-01	MCL	(ee)	mg/kg	1.00E+01	(i)	1.00E+00	(i)
Aroclor 1242	Yes	ug/l	5.00E-01	(bb)	--		3.40E-02	(ee)	3.40E-01	(ee)	5.00E-01	MCL	(ee)	mg/kg	1.00E+01	(i)	1.00E+00	(i)
Aroclor 1248	Yes	ug/l	5.00E-01	(bb)	--		3.40E-02	(ee)	3.40E-01	(ee)	5.00E-01	MCL	(ee)	mg/kg	1.00E+01	(i)	1.00E+00	(i)
Aroclor 1254	Yes	ug/l	5.00E-01	(bb)	--		3.40E-02	(ee)	3.40E-01	(ee)	5.00E-01	MCL	(ee)	mg/kg	1.00E+01	(i)	1.00E+00	(i)
Aroclor 1260	Yes	ug/l	5.00E-01	(bb)	--		3.40E-02	(ee)	3.40E-01	(ee)	5.00E-01	MCL	(ee)	mg/kg	1.00E+01	(i)	1.00E+00	(i)

Table 5-2
Selection of Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	Site-Related Chemical? (Yes or No)	Groundwater Water Units	USEPA MCL (b)		Nevada Secondary MCL (a)		TW PRG (c)		TW PRG (1/10) (d)		Selected Comparison Level (e)	Selected Comparison Level Reference (ss)		Soil Soil Units	Industrial Soil PRG (f)		Selected Comparison Level (g)	
Dioxins and Furans																		
PCDD/PCDFs total TEQ as 2,3,7,8-TCDD	Yes	ug/l	3.00E-05	(h)	--		4.48E-07	(h)	4.48E-08	(h)	3.00E-05	MCL	(h)	mg/kg	1.00E-02	(h,v)	1.00E-03	(h,x)
1,2,3,4,6,7,8,9-Ocatchlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,4,6,7,8,9-Ocatchlorodibenzo-p-dioxin	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,4,6,7,8-Heptatchlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,4,6,7,8-Heptatchlorodibenzo-p-dioxin	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,4,7,8,9-Heptatchlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,4,7,8-Hexachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,6,7,8-Hexachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,7,8,9-Hexachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,7,8-Pentachlorodibenzof-p-dioxin	Yes	--	--		--		--		--		--	--		--	--		--	
1,2,3,7,8-Pentachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
2,3,4,6,7,8-Hexachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
2,3,4,7,8-Pentachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
2,3,7,8-Tetrachlorodibenzofuran	Yes	--	--		--		--		--		--	--		--	--		--	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Yes	ug/l	3.00E-05	(h)	--		4.48E-07	(h)	4.48E-08	(h)	3.00E-05	MCL	(h)	mg/kg	1.00E-02	(h,v)	1.00E-03	(h,x)
Radionuclides																		
Radium 226 + 228	Yes	pCi/L	5.00E+00		--		--		--		5.00E+00	MCL		--	--		--	
Radium 226	Yes	pCi/L	--		--		8.16E-04	(dd)	8.16E-05	(dd)	NA	NA	(aaa)	pCi/g	2.60E-02	(dd)	2.60E-03	(dd)
Radium 228	Yes	pCi/L	--		--		4.58E-02	(dd)	4.58E-03	(dd)	NA	NA	(aaa)	pCi/g	1.50E-01	(dd)	1.50E-02	(dd)
Thorium 228	Yes	pCi/L	--		--		1.59E-01	(dd)	1.59E-02	(dd)	1.59E-02	RPRG		pCi/g	2.55E-01	(dd)	2.55E-02	(dd)
Thorium 230	Yes	pCi/L	--		--		5.23E-01	(dd)	5.23E-02	(dd)	5.23E-02	RPRG		pCi/g	2.02E+01	(dd)	2.02E+00	(dd)
Thorium 232	Yes	pCi/L	--		--		4.71E-01	(dd)	4.71E-02	(dd)	4.71E-02	RPRG		pCi/g	1.90E+01	(dd)	1.90E+00	(dd)
Uranium 234	Yes	pCi/L	--		--		6.74E-01	(dd)	6.74E-02	(dd)	6.74E-02	RPRG		pCi/g	3.24E+01	(dd)	3.24E+00	(dd)
Uranium 235	Yes	pCi/L	--		--		6.63E-01	(dd)	6.63E-02	(dd)	6.63E-02	RPRG		pCi/g	3.98E-01	(dd)	3.98E-02	(dd)
Uranium 238	Yes	pCi/L	--		--		5.47E-01	(dd)	5.47E-02	(dd)	5.47E-02	RPRG		pCi/g	1.80E+00	(dd)	1.80E-01	(dd)
Organophosphorous Pesticides (OPPs)																		
Azinphos-methyl	Yes	--	--		--		--		--		--	--		--	--		--	
Bolstar	Yes	--	--		--		--		--		--	--		--	--		--	
Chlorpyrifos	Yes	ug/l	--		--		1.09E+02		1.09E+01		1.09E+01	PRG		mg/kg	1.85E+03		1.85E+02	
Coumaphos	Yes	ug/l	--		--		--		--		--	--		--	--		--	
Demeton-O	Yes	ug/l	--		--		1.46E+00	(cc)	1.46E-01	(cc)	1.46E-01	PRG	(cc)	mg/kg	2.46E+01	(cc)	2.46E+00	(cc)
Demeton-S	Yes	ug/l	--		--		1.46E+00	(cc)	1.46E-01	(cc)	1.46E-01	PRG	(cc)	mg/kg	2.46E+01	(cc)	2.46E+00	(cc)
Diazinon	Yes	ug/l	--		--		3.28E+01		3.28E+00		3.28E+00	PRG		mg/kg	5.54E+02		5.54E+01	
Dichlorvos	Yes	ug/l	--		--		2.32E-01		2.32E-02		2.32E-02	PRG		mg/kg	5.94E+00		5.94E-01	
Dimethoate	Yes	ug/l	--		--		7.30E+00		7.30E-01		7.30E-01	PRG		mg/kg	1.23E+02		1.23E+01	
Disulfoton	Yes	ug/l	--		--		1.46E+00		1.46E-01		1.46E-01	PRG		mg/kg	2.46E+01		2.46E+00	
EPN (Ethyl p-nitrophenyl phenylphosphorothioate	Yes	ug/l	--		--		3.65E-01		3.65E-02		3.65E-02	PRG		mg/kg	6.16E+00		6.16E-01	
Ethoprop	Yes	ug/l	--		--		--		--		--	--		--	--		--	
Famphur	Yes	--	--		--		--		--		--	--		--	--		--	
Fensulfothion	Yes	--	--		--		--		--		--	--		--	--		--	
Fenthion	Yes	ug/l	--		--		9.10E+00	(ff)	9.10E-01	(ff)	9.10E-01	PRG	(ff)	mg/kg	1.50E+02	(ff)	1.50E+01	(ff)
Malathion	Yes	ug/l	--		--		7.30E+02		7.30E+01		7.30E+01	PRG		mg/kg	1.23E+04		1.23E+03	
Merphos	Yes	ug/l	--		--		1.09E+00		1.09E-01		1.09E-01	PRG		mg/kg	1.85E+01		1.85E+00	
Mevinphos	Yes	ug/l	--		--		--		--		--	--		--	--		--	
Naled	Yes	ug/l	--		--		7.30E+01		7.30E+00		7.30E+00	PRG		mg/kg	1.23E+03		1.23E+02	
Parathion-ethyl (Ethyl Parathion)	Yes	ug/l	--		--		9.12E+00	(tt)	9.12E-01	(tt)	9.12E-01	PRG	(tt)	mg/kg	1.54E+02	(tt)	1.54E+01	(tt)

Analyte	Site-Related Chemical? (Yes or No)	Groundwater: Water Units	USEPA MCL (b)		Nevada Secondary MCL (a)		TW PRG (c)		TW PRG (1/10) (d)		Selected Comparison Level (e)	Selected Comparison Level Reference (ss)		Soil: Soil Units	Industrial Soil PRG (f)		Selected Comparison Level (g)	
Parathion-methyl (Methyl Parathion)	Yes	ug/l	--		--		9.12E+00		9.12E-01		9.12E-01	PRG		mg/kg	1.54E+02		1.54E+01	
Phorate	Yes	ug/l	--		--		7.30E+00		7.30E-01		7.30E-01	PRG		mg/kg	1.23E+02		1.23E+01	
Ronnel	Yes	ug/l	--		--		1.82E+03		1.82E+02		1.82E+02	PRG		mg/kg	3.08E+04		3.08E+03	
Stirphos	Yes	--	--		--		--		--		--	--		--	--		--	
Sulfotepp (Tetraethyldithiopyrophosphate)	Yes	ug/l	--		--		1.82E+01		1.82E+00		1.82E+00	PRG		mg/kg	3.08E+02		3.08E+01	
Thionazin	Yes	--	--		--		--		--		--	--		--	--		--	
Tokuthion	Yes	--	--		--		--		--		--	--		--	--		--	
Trichloronate	Yes	--	--		--		--		--		--	--		--	--		--	
Organochlorine Herbicides																		
Silvex (2-(2,4,5-trichlorophenoxy) propionic acid)	Yes	ug/l	5.00E+01		--		2.92E+02		2.92E+01		5.00E+01	MCL		mg/kg	4.92E+03		4.92E+02	
Volatile Organic Compounds (VOCs)																		
1,1,1,2-Tetrachloroethane	No	ug/l	--		--		4.32E-01		4.32E-02		4.32E-02	PRG		mg/kg	7.28E+00		7.28E-01	
1,1,1-Trichloroethane	Yes	ug/l	2.00E+02		--		3.17E+03		3.17E+02		2.00E+02	MCL		mg/kg	6.90E+03	(mm)	6.90E+02	(mm)
1,1,2,2-Tetrachloroethane	No	ug/l	--		--		5.53E-02		5.53E-03		5.53E-03	PRG		mg/kg	9.29E-01		9.29E-02	
1,1,2-Trichloroethane	No	ug/l	5.00E+00		--		2.00E-01		2.00E-02		5.00E+00	MCL		mg/kg	1.61E+00		1.61E-01	
1,1-Dichloroethane	No	ug/l	--		--		8.11E+02		8.11E+01		8.11E+01	PRG		mg/kg	1.74E+03		1.74E+02	
1,1-Dichloroethene	No	ug/l	7.00E+00		--		3.39E+02		3.39E+01		7.00E+00	MCL		mg/kg	4.13E+02		4.13E+01	
1,1-Dichloropropene	No	ug/l	--		--		3.95E-01	(gg)	3.95E-02	(gg)	3.95E-02	PRG	(gg)	mg/kg	1.76E+00	(gg)	1.76E-01	(gg)
1,2,3-Trichlorobenzene	No	ug/l	--		--		7.16E+00	(hh)	7.16E-01	(hh)	7.00E+01	PRG	(hh)	mg/kg	2.16E+02	(hh)	2.16E+01	(hh)
1,2,3-Trichloropropane	No	ug/l	--		--		5.60E-03	(yy)	5.60E-04	(yy)	5.60E-04	PRG	(yy)	mg/kg	7.60E-02	(yy)	7.60E-03	(yy)
1,2,4-Trichlorobenzene	No	ug/l	7.00E+01		--		7.16E+00		7.16E-01		7.00E+01	MCL		mg/kg	2.16E+02		2.16E+01	
1,2,4-Trimethylbenzene	Yes	ug/l	--		--		1.23E+01		1.23E+00		1.23E+00	PRG		mg/kg	1.70E+02		1.70E+01	
1,2-Dibromo-3-chloropropane	No	ug/l	2.00E-01		--		4.80E-02		4.80E-03		2.00E-01	MCL		mg/kg	2.02E+00		2.02E-01	
1,2-Dibromoethane (Ethylene Dibromide)	No	ug/l	5.00E-02		--		5.60E-03		5.60E-04		5.00E-02	MCL		mg/kg	7.30E-02		7.30E-03	
1,2-Dichlorobenzene	Yes	ug/l	6.00E+02		--		3.70E+02		3.70E+01		6.00E+02	MCL		mg/kg	4.00E+03	(mm)	4.00E+02	(mm)
1,2-Dichloroethane	No	ug/l	5.00E+00		--		1.23E-01		1.23E-02		5.00E+00	MCL		mg/kg	6.03E-01		6.03E-02	
1,2-Dichloropropane	No	ug/l	5.00E+00		--		1.65E-01		1.65E-02		5.00E+00	MCL		mg/kg	7.42E-01		7.42E-02	
1,3,5-Trimethylbenzene	Yes	ug/l	--		--		1.23E+01		1.23E+00		1.23E+00	PRG		mg/kg	6.97E+01		6.97E+00	
1,3-Dichlorobenzene	Yes	ug/l	--		--		1.83E+02		1.83E+01		1.83E+01	PRG		mg/kg	2.10E+03	(mm)	2.10E+02	(mm)
1,3-Dichloropropane	No	ug/l	--		--		1.22E+02		1.22E+01		1.22E+01	PRG		mg/kg	3.61E+02		3.61E+01	
1,4-Dichlorobenzene	Yes	ug/l	7.50E+01		--		5.02E-01		5.02E-02		7.50E+01	MCL		mg/kg	7.87E+00		7.87E-01	
2,2-Dichloropropane	No	ug/l	--		--		1.65E-01	(ii)	1.65E-02	(ii)	1.65E-02	PRG	(ii)	mg/kg	7.42E-01	(ii)	7.42E-02	(ii)
2-Butanone	Yes	ug/l	--		--		6.97E+03		6.97E+02		6.97E+02	PRG		mg/kg	1.13E+05		1.13E+04	
2-Chlorotoluene	No	ug/l	--		--		1.22E+02		1.22E+01		1.22E+01	PRG		mg/kg	5.60E+02		5.60E+01	
2-Hexanone	Yes	ug/l	--		--		2.00E+03	(nn)	2.00E+02	(nn)	2.00E+02	PRG	(nn)	mg/kg	4.70E+04	(nn)	4.70E+03	(nn)
4-Chlorotoluene	No	ug/l	--		--		1.22E+02	(ww)	1.22E+01	(ww)	1.22E+01	PRG	(ww)	mg/kg	5.60E+02	(ww)	5.60E+01	(ww)
4-Methyl-2-pentanone	Yes	ug/l	--		--		1.99E+03		1.99E+02		1.99E+02	PRG		mg/kg	4.70E+04		4.70E+03	
Acetone	Yes	ug/l	--		--		5.48E+03		5.48E+02		5.48E+02	PRG		mg/kg	5.43E+04		5.43E+03	
Benzene	Yes	ug/l	5.00E+00		--		3.54E-01		3.54E-02		5.00E+00	MCL		mg/kg	1.41E+00		1.41E-01	
Bromobenzene	No	ug/l	--		--		2.03E+01		2.03E+00		2.03E+00	PRG		mg/kg	9.22E+01		9.22E+00	
Bromochloromethane	No	ug/l	--		--		1.81E-01	(qq)	1.81E-02	(qq)	1.81E-02	PRG	(qq)	mg/kg	1.83E+00	(qq)	1.83E-01	(qq)
Bromodichloromethane	No	ug/l	8.00E+01	(r)	--		1.81E-01		1.81E-02		8.00E+01	MCL	(r)	mg/kg	1.83E+00		1.83E-01	
Bromoform	No	ug/l	8.00E+01	(r)	--		8.51E+00		8.51E-01		8.00E+01	MCL	(r)	mg/kg	2.18E+02		2.18E+01	
Bromomethane	No	ug/l	--		--		8.66E+00		8.66E-01		8.66E-01	PRG		mg/kg	1.31E+01		1.31E+00	
Carbon Tetrachloride	No	ug/l	5.00E+00		--		1.71E-01		1.71E-02		5.00E+00	MCL		mg/kg	5.49E-01		5.49E-02	
Chlorobenzene	Yes	ug/l	1.00E+02	(o)	--		1.06E+02		1.06E+01		1.00E+02	MCL	(o)	mg/kg	5.30E+02		5.30E+01	
Chloroethane	No	ug/l	--		--		4.64E+00		4.64E-01		4.64E-01	PRG		mg/kg	6.49E+00		6.49E-01	
Chloroform	Yes	ug/l	8.00E+01	(r)	--		1.66E-01		1.66E-02		8.00E+01	MCL	(r)	mg/kg	4.70E-01		4.70E-02	
Chloromethane	No	ug/l	--		--		1.58E+02		1.58E+01		1.58E+01	PRG		mg/kg	1.56E+02		1.56E+01	
cis-1,2-Dichloroethene	No	ug/l	7.00E+01		--		6.08E+01		6.08E+00		7.00E+01	MCL		mg/kg	1.46E+02		1.46E+01	
cis-1,3-Dichloropropene	No	ug/l	--		--		3.95E-01	(gg)	3.95E-02	(gg)	3.95E-02	PRG	(gg)	mg/kg	1.76E+00	(gg)	1.76E-01	(gg)
Dibromochloromethane	No	ug/l	8.00E+01	(r)	--		1.33E-01		1.33E-02		8.00E+01	MCL	(r)	mg/kg	2.55E+00		2.55E-01	
Dibromomethane	No	ug/l	--		--		6.08E+01	(xx)	6.08E+00	(xx)	6.08E+00	PRG	(xx)	mg/kg	2.34E+02	(xx)	2.34E+01	(xx)
Dichlorodifluoromethane	No	ug/l	--		--		3.95E+02		3.95E+01		3.95E+01	PRG		mg/kg	3.08E+02		3.08E+01	

Table 5-2
Selection of Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

		Groundwater												Soil				
Analyte	**Site-Related Chemical? (Yes or No)**	**Water Units**	**USEPA MCL (b)**		**Nevada Secondary MCL (a)**		**TW PRG (c)**		**TW PRG (1/10) (d)**		**Selected Comparison Level (e)**	**Selected Comparison Level Reference (ss)**		**Soil Units**	**Industrial Soil PRG (f)**		**Selected Comparison Level (g)**	
Diisopropyl ether (DIPE)	Yes	--	--		--		--		--		--	--		--	--		--	
Ethylbenzene	Yes	ug/l	7.00E+02		--		1.34E+03		1.34E+02		7.00E+02	MCL		mg/kg	7.40E+03	(mm)	7.40E+02	(mm)
Ethyl-tert-butyl ether (ETBE)	Yes	ug/l	--		--		1.10E+01	(kk)	1.10E+00	(kk)	1.10E+00	PRG	(kk)	mg/kg	3.64E+01	(kk)	3.64E+00	(kk)
Hexachlorobutadiene	No	ug/l	--		--		8.62E-01		8.62E-02		8.62E-02	PRG		mg/kg	2.21E+01		2.21E+00	
Isopropyl Benzene (Cumene)	Yes	ug/l	--		--		6.58E+02	(zz)	6.58E+01	(zz)	6.58E+01	PRG	(zz)	mg/kg	2.00E+03	(zz)	2.00E+02	(zz)
Methylene Chloride	No	ug/l	5.00E+00		--		4.28E+00		4.28E-01		5.00E+00	MCL		mg/kg	2.05E+01		2.05E+00	
Methyl-tert-butyl ether (MTBE)	Yes	ug/l	--		2.00E+01	(uu)	1.10E+01		1.10E+00		2.00E+01	SMCL-NV	(uu)	mg/kg	3.64E+01		3.64E+00	
Naphthalene	Yes	ug/l	--		--		6.20E+00		6.20E-01		6.20E-01	PRG		mg/kg	1.88E+02		1.88E+01	
n-Butylbenzene	Yes	ug/l	--		--		2.43E+02		2.43E+01		2.43E+01	PRG		mg/kg	2.19E+03	(mm)	2.19E+02	(mm)
n-Propylbenzene	Yes	ug/l	--		--		2.43E+02		2.43E+01		2.43E+01	PRG		mg/kg	2.19E+03	(mm)	2.19E+02	(mm)
p-Isopropyltoluene	Yes	ug/l	--		--		2.06E+02	(q)	2.06E+01	(q)	2.06E+01	PRG	(q)	mg/kg	9.00E+02	(q,mm)	9.00E+01	(q,mm)
sec-Butylbenzene	Yes	ug/l	--		--		2.43E+02		2.43E+01		2.43E+01	PRG		mg/kg	1.63E+03	(mm)	1.63E+02	(mm)
Styrene	No	ug/l	1.00E+02		--		1.64E+03		1.64E+02		1.00E+02	MCL		mg/kg	1.80E+04	(mm)	1.80E+03	(mm)
tert-Amyl-methyl ether (TAME)	Yes	--	--		--		--		--		--	--		--	--		--	
tert-Butyl alcohol (TBA)	Yes	--	--		--		--		--		--	--		--	--		--	
tert-Butylbenzene	Yes	ug/l	--		--		2.43E+02		2.43E+01		2.43E+01	PRG		mg/kg	1.97E+03	(mm)	1.97E+02	(mm)
Tetrachloroethene	Yes	ug/l	5.00E+00		--		1.04E-01		1.04E-02		5.00E+00	MCL		mg/kg	1.31E+00		1.31E-01	
Toluene	Yes	ug/l	1.00E+03		--		7.23E+02		7.23E+01		1.00E+03	MCL		mg/kg	2.20E+03	(mm)	2.20E+02	(mm)
trans-1,2-Dichloroethene	No	ug/l	1.00E+02		--		1.22E+02		1.22E+01		1.00E+02	MCL		mg/kg	2.35E+02		2.35E+01	
trans-1,3-Dichloropropene	No	ug/l	--		--		3.95E-01		3.95E-02		3.95E-02	PRG		mg/kg	1.76E+00	(gg)	1.76E-01	(gg)
Trichloroethene	Yes	ug/l	5.00E+00		--		2.80E-02		2.80E-03		5.00E+00	MCL		mg/kg	1.15E-01		1.15E-02	
Trichlorofluoromethane	No	ug/l	--		--		1.29E+03		1.29E+02		1.29E+02	PRG		mg/kg	1.28E+03	(mm)	1.28E+02	(mm)
Vinyl Chloride	No	ug/l	2.00E+00		--		1.98E-02		1.98E-03		2.00E+00	MCL		mg/kg	7.46E-01		7.46E-02	
Xylenes (total)	Yes	ug/l	1.00E+04		--		2.06E+02		2.06E+01		1.00E+04	MCL		mg/kg	9.00E+02	(mm)	9.00E+01	(mm)
Semi-Volatile Organic Compounds (SVOCs)																		
1,4-Dioxane	Yes	ug/l	--		--		6.11E+00		6.11E-01		6.11E-01	PRG		mg/kg	1.57E+02		1.57E+01	
2-Methylnaphthalene	Yes	ug/l	--		--		6.20E+00	(jj)	6.20E-01	(jj)	6.20E-01	PRG	(jj)	mg/kg	1.88E+02	(jj)	1.88E+01	(jj)
Acenaphthene	Yes	ug/l	--		--		3.65E+02		3.65E+01		3.65E+01	PRG		mg/kg	2.92E+04		2.92E+03	
Acenaphthylene	Yes	ug/l	--		--		3.65E+02	(pp)	3.65E+01	(pp)	3.65E+01	PRG	(pp)	mg/kg	2.92E+04	(pp)	2.92E+03	(pp)
Anthracene	Yes	ug/l	--		--		1.83E+03		1.83E+02		1.83E+02	PRG		mg/kg	2.40E+05	(oo)	2.40E+04	(oo)
Benzo(a)anthracene	Yes	ug/l	--		--		9.21E-02		9.21E-03		9.21E-03	PRG		mg/kg	2.11E+00		2.11E-01	
Benzo(a)pyrene	Yes	ug/l	2.00E-01		--		9.21E-03		9.21E-04		2.00E-01	MCL		mg/kg	2.11E-01		2.11E-02	
Benzo(b)fluoranthene	Yes	ug/l	--		--		9.21E-02		9.21E-03		9.21E-03	PRG		mg/kg	2.11E+00		2.11E-01	
Benzo(g,h,i)perylene	Yes	ug/l	--		--		1.83E+02	(w)	1.83E+01	(w)	1.83E+01	PRG	(w)	mg/kg	2.91E+04	(w)	2.91E+03	(w)
Benzo(k)fluoranthene	Yes	ug/l	--		--		9.21E-01		9.21E-02		9.21E-02	PRG		mg/kg	2.11E+01		2.11E+00	
Bis(2-ethylhexyl)phthalate	Yes	ug/l	6.00E+00		--		4.80E+00		4.80E-01		6.00E+00	MCL		mg/kg	1.23E+02		1.23E+01	
Butylbenzylphthalate	Yes	ug/l	--		--		7.30E+03		7.30E+02		7.30E+02	PRG		mg/kg	1.23E+05	(oo)	1.23E+04	(oo)
Chrysene	Yes	ug/l	--		--		9.21E+00		9.21E-01		9.21E-01	PRG		mg/kg	2.11E+02		2.11E+01	
Dibenzo(a,h)anthracene	Yes	ug/l	--		--		9.21E-03		9.21E-04		9.21E-04	PRG		mg/kg	2.11E-01		2.11E-02	
Diethylphthalate	Yes	ug/l	--		--		2.92E+04		2.92E+03		2.92E+03	PRG		mg/kg	4.92E+05	(oo)	4.92E+04	(oo)
Dimethylphthalate	Yes	ug/l	--		--		3.65E+05		3.65E+04		3.65E+04	PRG		mg/kg	6.16E+06	(oo)	6.16E+05	(oo)
Di-n-butylphthalate	Yes	ug/l	--		--		3.65E+03		3.65E+02		3.65E+02	PRG		mg/kg	6.16E+04		6.16E+03	
Di-n-octylphthalate	Yes	ug/l	--		--		1.46E+03		1.46E+02		1.46E+02	PRG		mg/kg	2.46E+04		2.46E+03	
Fluoranthene	Yes	ug/l	--		--		1.46E+03		1.46E+02		1.46E+02	PRG		mg/kg	2.20E+04		2.20E+03	
Fluorene	Yes	ug/l	--		--		2.43E+02		2.43E+01		2.43E+01	PRG		mg/kg	2.63E+04		2.63E+03	
Hexachlorobenzene	Yes	ug/l	1.00E+00		--		4.20E-02		4.20E-03		1.00E+00	MCL		mg/kg	1.08E+00		1.08E-01	
Indeno(1,2,3-cd)pyrene	Yes	ug/l	--		--		9.21E-02		9.21E-03		9.21E-03	PRG		mg/kg	2.11E+00		2.11E-01	
Naphthalene	Yes	ug/l	--		--		6.20E+00		6.20E-01		6.20E-01	PRG		mg/kg	1.88E+02		1.88E+01	
Nitrobenzene	Yes	ug/l	--		--		3.40E+00		3.40E-01		3.40E-01	PRG		mg/kg	1.03E+02		1.03E+01	
Octachlorostyrene	Yes	--	--		--		--		--		--	--		--	--		--	
Phenanthrene	Yes	ug/l	--		--		1.80E+03	(n)	1.80E+02	(n)	1.80E+02	PRG	(n)	mg/kg	2.40E+05	(n)	2.40E+04	(n)
Pyrene	Yes	ug/l	--		--		1.83E+02		1.83E+01		1.83E+01	PRG		mg/kg	2.91E+04		2.91E+03	
Pyridine	Yes	ug/l	--		--		3.65E+01		3.65E+00		3.65E+00	PRG		mg/kg	6.16E+02		6.16E+01	

Table 5-2
Selection of Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	Site-Related Chemical? (Yes or No)	Groundwater							Soil		
		Water Units	USEPA MCL (b)	Nevada Secondary MCL (a)	TW PRG (c)	TW PRG (1/10) (d)	Selected Comparison Level (e)	Selected Comparison Level Reference (ss)	Soil Units	Industrial Soil PRG (f)	Selected Comparison Level (g)

Acronyms:
-- = Indicates no value available.
ATSDR - Agency for Toxic Substances and Disease Registry.
MCL = Maximum Contaminant Level.
MFL = Million Fibers per Liter.
NAC = Nevada Administration Code.
NDEP = Nevada Division of Environmental Protection.
OSWER = Office of Solid Waste and Emergency Response.
PRG = USEPA Region 9 Preliminary Remediation Goals (PRG). October 2004.
TCDD = Tetrachlorodibenzo-p-dioxin.
TEQ = Toxic Equivalents.
TW = Tap Water.
USEPA = United States Environmental Protection Agency.

Notes:
(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).
(d) Value from (c) divided by 10 for both carcinogenic and noncarcinogenic constituents.
(e) The comparison level is equal to the Nevada standard if lower than the USEPA MCL. If not, the comparison level is equal to the USEPA MCL. If there is neither a Nevada standard or USEPA MCL, the comparison level is equal to the Tapwater PRG divided by 10 (see footnotes (c,d)). Exceptions are noted on a per chemical basis.
(f) Equal to the USEPA Region 9 Preliminary Remediation Goals (PRGs) for industrial soil (October, 2004) except for dioxins (see footnote (v,x)), PCBs (see footnote (i)), and radionuclides (see footnote (dd)). In addition, Calcium, Magnesium, and Potassium were not evaluated because they are essential nutrients (EN).
(g) See footnote (f). Value for industrial soil divided by 10 for noncarcinogens and potential carcinogens.
(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.
(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).
(j) See footnote (b). Secondary Drinking Water Regulation value.
(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.
(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].
(n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.
(o) See footnote (b). Listed under synonym monochlorobenzene.
(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.
(q) Value for xylenes used as surrogate for p-isopropyltoluene based on structural similarities.
(r) Value for total trihalomethanes.
(s) NAC.445A.201. Nevada Administrative Code: Water Controls, Chapter 445A. Standards for Water Quality. Sections 445A.199. Upper Las Vegas Wash. Requirements to maintain existing higher quality. URL [http://ndep.nv.gov/bwqp/standards.htm].
(t) Value for mercury and compounds.
(u) See footnote (b). Treatment technology action level.

Table 5-2
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Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	Site-Related Chemical? (Yes or No)	Groundwater: Water Units	Groundwater: USEPA MCL (b)	Groundwater: Nevada Secondary MCL (a)	Groundwater: TW PRG (c)	Groundwater: TW PRG (1/10) (d)	Groundwater: Selected Comparison Level (e)	Groundwater: Selected Comparison Level Reference (ss)	Soil: Soil Units	Soil: Industrial Soil PRG (f)	Soil: Selected Comparison Level (g)

(v) USEPA, 1998. Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April, 1998. Midpoint of the range of 0.005 to 0.02 mg/kg for commercial/industrial soils.
(w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
(x) One-tenth the value from footnote (v). This value is consistent with NDEP's and USEPA's (1998) residential comparison level of 1 ppb.
(y) Value for chlordane (technical) used as surrogate for alpha-chlordane and gamma-chlordane based on 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.
(bb) Value for total PCBs.
(cc) Value for demeton used as surrogate for demeton-o and demeton-s based on structural similarities.
(dd) 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. Comparison level is 1/10th the PRG.
(ee) Value for PCBs, high risk (e.g., Aroclor 1254).
(ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.
(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.
(jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
(kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.
(ll) Value for chromium (hexavalent).
(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.
(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 acenapthylene based on structural similarities.
(qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.
(rr) Applies to fibers >10 um in length.
(ss) MCL = Selected comparision level equal to the USEPA MCL (see footnote (b)).
SMCL-NV = Selected comparision level equal to the NDEP secondary standard (see footnote (a)).
PRG = Selected comparision level equal to 1/10th USEPA PRG for tapwater (see footnote (c)).
SMCL = Selected comparison level equal to the USEPA secondary standard (see footnote (b,j)).
TTAL = Selected comparison level equal to Treatment Technology Action Level (see footnote (b,v)).
RPRG = Selected comparision level equal to 1/10th the radionuclide PRG (see footnote (dd)).
(tt) Value for parathion-methyl used as surrogate for parathion-ethyl 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].
(vv) Nevada Administrative Code 445A.2272. Contamination of soil: Establishment of action levels. NAC 445A.2272.1.b.
(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.
(aaa) Radium 226 and Radium 228 will be evaluated as Total Radium 226 + 228 using the MCL as the comparison level.
(bbb) BHC listed as HCH in the PRG table.

Table 5-3
Selection of Comparison Levels for Soil for the Soil To Groundwater Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Detected in Soil (h)	USEPA Region 9 PRG-SSL (DAF = 1) (a) (mg/kg)	USEPA Region 9 PRG-SSL (DAF = 20) (a) (mg/kg)	Selected Groundwater Comparison Level (b) (mg/L)	Soil/Water Partitioning Coefficient (Kd) for Inorganics (c) (L/kg)	Soil/Organic Carbon Partitioning Coefficient (Koc) for Organics (c) (L/kg)	Source of Kd/Koc Data	Henry's Law Constant (K_H) (c) (Unitless)	Source of K_H Data	Site-Specific Soil Screening Level (ssSSL) (DAF = 1) (e) (mg/kg)	Site-Specific Soil Screening Level (ssSSL) (DAF = 20) (e) (mg/kg)	Comparison Level (DAF=1) (f) (mg/kg)	Comparison Level (DAF=20) (f) (mg/kg)
VOLATILE ORGANIC COMPOUNDS												
1,1,1-Trichloroethane	1.0E-01	2.0E+00									1.00E-01	2.00E+00
1,1-Dichloroethane	1.0E+00	2.3E+01									1.00E+00	2.30E+01
1,2,3-Trichlorobenzene			7.00E-02	--	2.27E+03	(6, 8)	3.64E-01	(6)	2.34E-01	4.68E+00	2.34E-01	4.68E+00
1,2,4-Trichlorobenzene	3.0E-01	5.0E+00									3.00E-01	5.00E+00
1,2-Dichlorobenzene	9.0E-01	1.7E+01									9.00E-01	1.70E+01
1,2-Dichloroethane	1.0E-03	2.0E-02									1.00E-03	2.00E-02
1,3,5-Trimethylbenzene			1.23E-03	--	8.19E+02	(1)	3.16E-01	(1)	1.60E-03	3.19E-02	1.60E-03	3.19E-02
1,3-Dichlorobenzene			1.83E-02	--	6.17E+02	(1)	7.79E-02	(1)	1.80E-02	3.60E-01	1.80E-02	3.60E-01
1,4-Dichlorobenzene	1.0E-01	2.0E+00									1.00E-01	2.00E+00
2-Butanone (MEK)			6.90E-01	--	2.30E+00	(2)	2.29E-03	(2)	7.82E-02	1.56E+00	7.82E-02	1.56E+00
2-Chlorotoluene			1.22E-02	--	1.60E+02	(1)	1.44E-01	(1)	4.30E-03	8.59E-02	4.30E-03	8.59E-02
2-Hexanone			2.00E-01	--	1.48E+01	(6, 8)	7.16E-02	(6)	2.79E-02	5.59E-01	2.79E-02	5.59E-01
Acetone	8.0E-01	1.6E+01									8.00E-01	1.60E+01
Benzene	2.0E-03	3.0E-02									2.00E-03	3.00E-02
Bromoform	4.0E-02	8.0E-01									4.00E-02	8.00E-01
Carbon tetrachloride	3.0E-03	7.0E-02									3.00E-03	7.00E-02
Chlorobenzene	7.0E-02	1.0E+00									7.00E-02	1.00E+00
Chloroform	3.0E-02	6.0E-01									3.00E-02	6.00E-01
Hexachlorobutadiene	1.0E-01	2.0E+00									1.00E-01	2.00E+00
Methylene chloride	1.0E-03	2.0E-02									1.00E-03	2.00E-02
Tetrachloroethylene (PCE)	3.0E-03	6.0E-02									3.00E-03	6.00E-02
Toluene	6.0E-01	1.2E+01									6.00E-01	1.20E+01
Trichloroethylene (TCE)	3.0E-03	6.0E-02									3.00E-03	6.00E-02
Trichlorofluoromethane			1.29E-01	--	1.60E+02	(1)	3.98E+00	(1)	1.09E-01	2.17E+00	1.09E-01	2.17E+00
SEMI-VOLATILE ORGANIC COMPOUNDS												
Benzo(a)anthracene	8.0E-02	2.0E+00									8.00E-02	2.00E+00
Benzo(a)pyrene	4.0E-01	8.0E+00									4.00E-01	8.00E+00
Benzo(b)fluoranthene	2.0E-01	5.0E+00									2.00E-01	5.00E+00
Benzo(g,h,i)perylene			1.83E-02	--	2.80E+06	(5)	5.73E-06	(6)	7.17E+01	1.43E+03	7.17E+01	1.43E+03
Benzo(k)fluoranthene	2.0E+00	4.9E+01									2.00E+00	4.90E+01
bis(2-Ethylhexyl)phthalate			6.00E-03	--	1.51E+07	(4)	4.18E-06	(4)	1.27E+02	2.54E+03	1.27E+02	2.54E+03
Chrysene	8.0E+00	1.6E+02									8.00E+00	1.60E+02
Diethyl phthalate			2.92E+00	--	2.88E+02	(4)	1.85E-05	(4)	1.50E+00	3.00E+01	1.50E+00	3.00E+01
Di-n-butyl phthalate	2.7E+02	2.3E+03									2.70E+02	2.30E+03
Fluoranthene	2.1E+02	4.3E+03									2.10E+02	4.30E+03
Hexachlorobenzene	1.0E-01	2.0E+00									1.00E-01	2.00E+00
Indeno(1,2,3-cd)pyrene	7.0E-01	1.4E+01									7.00E-01	1.40E+01
Naphthalene	4.0E+00	8.4E+01									4.00E+00	8.40E+01
Octachlorostyrene			--	--	9.68E+05	(8, 9)	9.41E-03	(8)	--	--	--	--
Phenanthrene			1.80E-01	--	3.80E+04	(5)	1.61E-03	(6)	9.60E+00	1.92E+02	9.60E+00	1.92E+02
Pyrene	2.1E+02	4.2E+03									2.10E+02	4.20E+03

Table 5-3
Selection of Comparison Levels for Soil for the Soil To Groundwater Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Detected in Soil (h)	USEPA Region 9 PRG-SSL (DAF = 1) (a)	USEPA Region 9 PRG-SSL (DAF = 20) (a)	Selected Groundwater Comparison Level (b)	Soil/Water Partitioning Coefficient (Kd) for Inorganics (c)	Soil/Organic Carbon Partitioning Coefficient (Koc) for Organics (c)	Source of Kd/Koc Data	Henry's Law Constant (K_H) (c)	Source of K_H Data	Site-Specific Soil Screening Level (ssSSL) (DAF = 1) (e)	Site-Specific Soil Screening Level (ssSSL) (DAF = 20) (e)	Comparison Level (DAF=1) (f)	Comparison Level (DAF=20) (f)
	(mg/kg)	(mg/kg)	(mg/L)	(L/kg)	(L/kg)		(Unitless)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PESTICIDES (OCPs and OPPs) and PCBs												
Beta BHC	1.0E-04	3.0E-03									1.00E-04	3.00E-03
4,4'-DDD	8.0E-01	1.6E+01									8.00E-01	1.60E+01
4,4'-DDE	3.0E+00	5.4E+01									3.00E+00	5.40E+01
4,4'-DDT	2.0E+00	3.2E+01									2.00E+00	3.20E+01
Demeton-O			1.46E-04	--	6.31E-02	(8, 9, 10)	1.39E-04	(8, 10)	1.60E-05	3.21E-04	1.60E-05	3.21E-04
Dimethoate			7.30E-04	--	1.68E+02	(6, 9)	4.30E-09	(8)	2.51E-04	5.03E-03	2.51E-04	5.03E-03
Endrin Aldehyde			1.09E-03	--	3.26E+04	(6, 9)	1.58E-05	(6)	4.98E-02	9.97E-01	4.98E-02	9.97E-01
Aroclor-1260			5.00E-04	--	2.91E+05	(8, 9)	1.38E-03	(8)	2.03E-01	4.07E+00	2.03E-01	4.07E+00
Methoxychlor	8.0E+00	1.6E+02									8.00E+00	1.60E+02
METALS												
Aluminum			5.00E-02	1.50E+03	--	(7)	--		7.50E+01	1.50E+03	7.50E+01	1.50E+03
Antimony	3.0E-01	5.0E+00									3.00E-01	5.00E+00
Arsenic	1.0E+00	2.9E+01									1.00E+00	2.90E+01
Barium	8.2E+01	1.6E+03									8.20E+01	1.60E+03
Beryllium	3.0E+00	6.3E+01									3.00E+00	6.30E+01
Boron			7.30E-01	3.00E+00	--	(7)	--		2.27E+00	4.54E+01	2.27E+00	4.54E+01
Cadmium	4.0E-01	8.0E+00									4.00E-01	8.00E+00
Chromium	(g)	(g)	1.00E-01	1.80E+06	--	(5)	--		1.80E+05	3.60E+06	1.80E+05	3.60E+06
Hexavalent, Chromium	2.0E+00	3.8E+01									2.00E+00	3.80E+01
Cobalt			7.30E-02	4.50E+01	--	(7)	--		3.29E+00	6.59E+01	3.29E+00	6.59E+01
Copper			1.30E+00	3.60E+02	--	(5)	--		4.68E+02	9.36E+03	4.68E+02	9.36E+03
Iron			3.00E-01	2.50E+01	--	(7)	--		7.53E+00	1.51E+02	7.53E+00	1.51E+02
Lead			1.50E-02	8.90E+02	--	(5)	--		1.34E+01	2.67E+02	1.34E+01	2.67E+02
Manganese			5.00E-02	6.50E+01	--	(7)	--		3.26E+00	6.51E+01	3.26E+00	6.51E+01
Molybdenum			1.82E-02	2.00E+01	--	(7)	--		3.66E-01	7.32E+00	3.66E-01	7.32E+00
Mercury			2.00E-03	8.20E+01	--	(4)	--		1.64E-01	3.28E+00	1.64E-01	3.28E+00
Nickel	7.0E+00	1.3E+02									7.00E+00	1.30E+02
Platinum			--	9.00E+01	--	(7)	--		--	--	--	--
Silver	2.0E+00	3.4E+01									2.00E+00	3.40E+01
Strontium			2.19E+00	3.50E+01	--	(7)	--		7.69E+01	1.54E+03	7.69E+01	1.54E+03
Thallium			2.00E-03	7.10E+01	--	(5)	--		1.42E-01	2.84E+00	1.42E-01	2.84E+00
Tin			2.19E+00	2.50E+02	--	(7)	--		5.48E+02	1.10E+04	5.48E+02	1.10E+04
Titanium			1.46E+01	1.00E+03	--	(7)	--		1.46E+04	2.92E+05	1.46E+04	2.92E+05
Tungsten			--	1.50E+02	--	(7)	--		--	--	--	--
Uranium			3.00E-02	4.00E-01	--	(3)	--		1.53E-02	3.06E-01	1.53E-02	3.06E-01
Vanadium	3.0E+02	6.0E+03									3.00E+02	6.00E+03
Zinc	6.2E+02	1.2E+04									6.20E+02	1.20E+04
RAD												
Radium-226		--	5.10E-09	4.50E+02		(7)	--		2.30E-06	4.59E-05	2.30E-06	4.59E-05
Radium-228		--	1.80E-11	4.50E+02		(7)	--		8.10E-09	1.62E-07	8.10E-09	1.62E-07
Thorium-228		--	1.80E-11	2.00E+01		(3)	--		3.62E-10	7.24E-09	3.62E-10	7.24E-09
Thorium-230		--	7.40E-07	2.00E+01		(3)	--		1.49E-05	2.98E-04	1.49E-05	2.98E-04
Thorium 232		--	1.40E-01	2.00E+01		(3)	--		2.82E+00	5.63E+01	2.82E+00	5.63E+01
Uranium 233/234		--	3.00E-02	4.00E-01		(3)	--		1.53E-02	3.06E-01	1.53E-02	3.06E-01
Uranium 235/236		--	3.00E-02	4.00E-01		(3)	--		1.53E-02	3.06E-01	1.53E-02	3.06E-01
Uranium 238		--	3.00E-02	4.00E-01		(3)	--		1.53E-02	3.06E-01	1.53E-02	3.06E-01

Table 5-3
Selection of Comparison Levels for Soil for the Soil To Groundwater Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Detected in Soil (h)	USEPA Region 9 PRG-SSL (DAF = 1) (a) (mg/kg)	USEPA Region 9 PRG-SSL (DAF = 20) (a) (mg/kg)	Selected Groundwater Comparison Level (b) (mg/L)	Soil/Water Partitioning Coefficient (Kd) for Inorganics (c) (L/kg)	Soil/Organic Carbon Partitioning Coefficient (Koc) for Organics (c) (L/kg)	Source of Kd/Koc Data	Henry's Law Constant (K_H) (c) (Unitless)	Source of K_H Data	Site-Specific Soil Screening Level (ssSSL) (DAF = 1) (e) (mg/kg)	Site-Specific Soil Screening Level (ssSSL) (DAF = 20) (e) (mg/kg)	Comparison Level (DAF=1) (f) (mg/kg)	Comparison Level (DAF=20) (f) (mg/kg)

DEFINITIONS
PRG-SSL: Preliminary Remediation Goal (USEPA, 2004a) Soil Screening Level for the migration to groundwater pathway
Kd: Soil-water Partitioning Coefficient
Koc: Soil-organic Carbon Partitioning Coefficient
DAF: Dilution Attenuation Factor
ssSSL: Calculated site-specific soil screening level
-- Value not available/not applicable.

NOTES
Due to their low solubility, dioxins and furans are not expected to migrate to groundwater.
The soil to groundwater pathway is assumed to be complete for infinitely soluble constituents (e.g., perchlorate, chloride, sodium, nitrate, sulfate, calcium).

FOOTNOTES
(a) Preliminary Remediation Goals are those provided by USEPA (2004a) for migration to groundwater; values for both DAF=1 and DAF=20 are provided.
(b) Comparison Levels are presented in Table 5-2. Concentrations for radionucliides converted from activities per USEPA (2000).
(c) Chemical properties were selected from the following sources, in order of priority:
(1) USEPA (2004a).
(2) USEPA (2004c).
(3) USEPA (2000)
(4) USEPA (1996a).
(5) PADEP (2007).
(6) USEPA (1992a).
(7) ORNL (1985c).
(8) Howard & Meylan (1997).
(9) Estimated from referenced Kow, per USEPA (1996a). Appendix K.
(10) Demeton used as surrogate. Kow estimated from Koc, based on LFER for misc. pesticides in Table 7.2 of Schwarzenbach et al. (1993).
(e) Values calculated per text. See Section 5.2.2.
(f) Comparison level is the PRG-SSL; where a PRG-SSL is unavailable, the ssSSL was used.
(g) Site-specific SSL calculated for total chromium assuming trivalent chromium (PRG-SSL used for hexavalent chromium).
(h) Calculations were not performed for petroleum hydrocarbons and other constituents for which there is no comparison value for groundwater.

Table 5-4
Selection of Comparison Levels for Groundwater for the
Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte (a)	Groundwater to Indoor Air Comparison Level (b) (ug/L)	Basis
Pesticides		
Alpha-BHC	0.31	C
Beta-BHC	(c)	
Delta-BHC	(d)	
Gamma-BHC (Lindane)	1.1	C
Gamma-Chlordane	1.2	C
Heptachlor	0.4	MCL
Methoxychlor	(e)	
Semi-volatile Organic Compounds		
1,4-Dioxane	(d)	
bis(2-Ethylhexyl)phthalate	(f)	
Di-N-Butyl phthalate	(f)	
Naphthalene	15	NC
Volatile Organic Compounds		
1,1,1-Trichloroethane	310	NC
1,1-Dichloroethane	220	NC
1,1-Dichloroethene	19	NC
1,2,3-Trichlorobenzene	340	NC
1,2,4-Trichlorobenzene	340	NC
1,2-Dichlorobenzene	260	NC
1,2-Dichloroethane	5	MCL
1,3-Dichlorobenzene	83	NC
1,4-Dichlorobenzene	820	NC
Benzene	5	MCL
Bromobenzene	39	NC
Bromodichloromethane	0.21	C
Bromoform	0.00083	C
Bromomethane	2	NC
Carbon tetrachloride	5	MCL
Chlorobenzene	39	NC
Chloroform	80	MCL
Chloromethane	0.67	C
Dibromochloromethane	0.32	C
Methyl tert butyl ether	12000	NC
Tetrachloroethene	5	MCL
Toluene	150	NC
Trichloroethene	5	MCL
Trichlorofluoromethane	18	NC

Notes:
C - Comparison Level based on potential cancer risk level of 10-6.
NC - Comparison Level based on noncancer hazard quotient of 0.1.
MCL - USEPA (2002) defaults to the USEPA Maximum Contaminant Level (MCL) for constituents with MCLs. August 2006. USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013.
(a) Only analytes detected in groundwater that are potentially volatile are listed.
(b) USEPA. 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 29, 2002. Table 2c. Values for potential carcinogens are based on a cancer risk level of 10^{-6}; values for noncarcinogens are based on a hazard quotient of 0.1.
(c) Not sufficiently volatile, as listed in Table 1 of USEPA, 2002 (b).
(d) Not volatile per the definition in USEPA, 2002 (b) - Henry's law constant is less than 10-5 atm/m3-mol.
(e) Per Table 2a of USEPA, 2002 (b) - pathway is incomplete; target soil gas exceeds maximum possible vapor concentration.
(f) Not sufficiently volatile and not sufficiently toxic, as listed in Table 1 of USEPA, 2002 (b).

Table 5-5
Data Usability Worksheet
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Activity	Comment
Field Sampling	
Discuss sampling problems and field conditions that affect data usuability.	Elevated turbidity encountered in groundwater samples during the 11-12/06 sampling event may have biased high the results for metals and radionuclides. Groundwtaer was resampled to address this issue in 5/07.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Soil samples were representative of receptor exposures and represented potential depths to which receptors could be exposed and depths to characterize potential sources and potential transport pathways. Both filtered and unfiltered water samples were collected to understand the relative contribution of dissolved and particulate fractions.
Were samples appropriately documented and can they be correlated to a specific geographic location?	All samples reported by the laboratory were documented on the chain-of-custodies and were correlated to a specific geographic location.
Assess the effect of field QC results on data usability.	Field equipment blank and soil duplicate samples were collected during all field sampling activities as specified in the QAPP. The qualifications resulting from QC sample results which exceeded the acceptable range specified in the QAPP are specified in Section 3.11 of the DVSR.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	All of the resulting laboratory data were reviewed and validated using standardized guidelines and procedures recommended by USEPA and NDEP. Based on this validation, 80% of the analytical results for this project were accepted as reported by the laboratory and were considered valid for all decision making purposes.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes the analytical techniques used for soils and groundwater analysis were appropriate for risk-based decision making in the Phase A investigation. Analytical techniques for soils followed USEPA and DOE-based guidelines
Were detection limits adequate?	Detection limits of both detected and non-detected SRCs were compared against risk-based comparison levels. The comparison is discussed in detail in Appendix K of the report, The comparison showed that a limited number of analytes in soil and groundwater had detection limits exceeding comparison levels. For most of the analytes, however, the detection limits are considered adequate for risk assessment purposes.

Table 5-5
Data Usability Worksheet
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Summarize the effect of analytical technique issues on the risk assessment, if applicable.	There were no issues raised which were particular to the analytical techniques. The asbestos analysis used in this investigation was designed for use in risk assessment. Analytical techniques for soils and groundwater followed USEPA and DOE-based guidelines.
Data Quality Indicators	
Precision - How were duplicates handled?	The field duplicate samples were compared for consistency (RPD was calculated) and the result from the average was used in the risk-based screening unless the primary or duplicate results were rejected.
Accuracy - How were duplicate samples handled?	Duplicates were averaged for risk-based screening purposes unless a result was rejected due to unacceptable QC problems. Duplicates were not averaged for the consistency with background evaluation.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Chain of custody forms were checked by QC staff and the laboratory was informed of any problems within 1 to 2 days of sample collection. Based on the procedures used, the soil and groundwater data were representative of site conditions. Associated blank contamination problems were assessed during validation and data was qualified appropriately.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	There were no problems identified.
Comparability - Indicate any problems associated with data comparability.	USEPA methods/DOE based methods were utilized consistently throughout the project.
Were the DQOs specified in the QAPP satisfied?	Yes, DQOs for soil and groundwater were developed with regard to risk assessment needs, and were satisified.
Summarize the effect of DQO issues on the Phase A investigation, if applicable.	PARCC criteria for soils and groundwater samples met DQOs, unless specifically rejected during validation, and resulted in usable data for the risk-based comparison.

Table 5-5
Data Usability Worksheet
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Data Validation and Interpretation	
What are the data validation requirements?	All laboratory reports for Phase A were provided as a CLP equivalent package, except for the asbestos data. The detailed data validation procedures are consistent with the USEPA National Functional Guidelines for Data Validation. The data were reviewed for a subset of the USEPA National Functional Guideline parameters including holding times, accuracy, precision and other performance parameters specified in the QAPP and NDEP guidance on data validation.
What method or guidance was used to validate the data?	The USEPA National Functional Guidelines (NFG) for Data Validation, NDEP guidance, EPA/MARLAP method requirements, QAPP requirements, and laboratory QA/QC requirements were used to derive data validation procedures.
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes, data validation methods were consistent with the guidance as described in the QAPP. Asbestos data were evaluated by analogy with the NFG requirements where possible.
Were all data qualifiers defined? Discuss those which were not.	Yes, all definitions of all data validation qualifiers are presented in the Phase A report DVSR.
Which qualifiers represent usable data?	All data collected and validated are usable as qualified unless they are rejected with an R symbol. Rejected data have not been used in the risk-based comparison.
Which qualifiers represent unusable data?	Data qualified as “R” (rejected) represent unusable data.
How are tentatively identified compounds handled?	TICs were not evaluated in Phase A.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	Valid data were sufficient for the Phase A investigation data evaluation. All data collected and validated by ENSR are usable for the risk-based comparison as qualified. Rejected data were unavailable in the database for use in the risk-based comparison.

Table 5-6
Data Usability Evaluation Summary
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Data Usability Criteria	Evaluation Result
Reports	The Data Validation Summary Report (DVSR) and Data Validation Memoranda are provided in Appendix G. The accompanying laboratory reports (see Appendix E), were considered complete for the Phase A investigation.
Documentation	The reports provided adequate information regarding sample results related to geographic location, chain-of-custody documentation and sampling procedures.
Data Sources	All analytical sample data results for soil and groundwater were provided in adequate format and analyses were performed for a broad spectrum of analytes. The data were sufficient to determine which SRCs were sufficiently characterized, and which ones need additional characterization for future risk assessments.
Analytical Method and Detection Limit	Detection limits of both detected and non-detected SRCs were compared against risk-based comparison levels. The comparison showed that a limited number of analytes in soil and groundwater had detection limits exceeding comparison levels. For most of the analytes, however, the detection limits are considered adequate for risk assessment purposes. For asbestos, there is no regulatory limit to compare the detection limits of chrysotile and amphibole fibers for this method. For asbestos, the appropriate measure of adequate characterization is not a detection limit, but the analytical sensitivity. The risk calculations for asbestos showed that the presence of even one long amphibole fiber resulted in potential risks greater than 10-6. The presence of one long chrysotile fiber resulted in risk levels less than 10-6 but greater than 10-7.
Data Review	The quality of the analytical results was reviewed by ENSR in the DVSR. The data review included evaluation of completeness, laboratory precision, laboratory accuracy, blanks, adherence to method specification and QC limits, and method performance in sample matrix.
Data Quality Indicators	Review of Data Quality Indicators is discussed in Section 4 of the DVSR.

Table 5-7
Frequency of Detection of Detected SRCs in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Chemistry			
EPA 310.1			
Alkalinity (as CaCO3)	Alk as CaCO3	74 : 116	64%
Bicarbonate	71-52-3	113 : 116	97%
Total Alkalinity	T-ALK	116 : 116	100%
EPA 350.1			
Ammonia (as N)	7664-41-7	10 : 102	10%
SM 5540C			
MBAS	MBAS	21 : 116	18%
SW 846 9056			
Bromide	24959-67-9	18 : 116	16%
Chlorate	14866-68-3	58 : 114	51%
Chloride	16887-00-6	113 : 116	97%
Nitrate (as N)	NO3	107 : 116	92%
Nitrite	14797-65-0	62 : 109	57%
ortho-Phosphate	o-PO4	25 : 116	22%
Sulfate	14808-79-8	116 : 116	100%
SW 846 9060			
Total Organic Carbon	TOC	116 : 116	100%
DIOXINS			
8290 SCREEN			
Total TEQ - ENSR Calculated (b)	TTEQ-b	27 : 27	100%
SW 846 8290			
Total TEQ - ENSR Calculated (b)	TTEQ-b	7 : 7	100%
Metals			
SW 846 6020			

Table 5-7
Frequency of Detection of Detected SRCs in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method **SRC (a)**	**CAS**	**FOD (b)**	**Percent Detected (c)**
Aluminum	7429-90-5	116 : 116	100%
Antimony	7440-36-0	115 : 116	99%
Arsenic	7440-38-2	116 : 116	100%
Barium	7440-39-3	116 : 116	100%
Beryllium	7440-41-7	116 : 116	100%
Boron	7440-42-8	44 : 116	38%
Cadmium	7440-43-9	115 : 116	99%
Calcium	7440-70-2	109 : 116	94%
Chromium	7440-47-3	116 : 116	100%
Cobalt	7440-48-4	116 : 116	100%
Copper	7440-50-8	115 : 116	99%
Iron	7439-89-6	116 : 116	100%
Lead	7439-92-1	116 : 116	100%
Magnesium	7439-95-4	112 : 116	97%
Manganese	7439-96-5	116 : 116	100%
Molybdenum	7439-98-7	107 : 116	92%
Nickel	7440-02-0	116 : 116	100%
Platinum	7440-06-4	72 : 116	62%
Potassium	7440-09-7	109 : 116	94%
Silver	7440-22-4	115 : 116	99%
Sodium	7440-23-5	104 : 116	90%
Strontium	7440-24-6	111 : 116	96%
Thallium	7440-28-0	49 : 116	42%
Tin	7440-31-5	112 : 116	97%
Titanium	7440-32-6	116 : 116	100%
Tungsten	7440-33-7	75 : 116	65%
Uranium	7440-61-1	114 : 116	98%
Vanadium	7440-62-2	116 : 116	100%
Zinc	7440-66-6	106 : 116	91%
SW 846 7199			
Chromium-hexavalent	18540-29-9	40 : 116	34%

Table 5-7
Frequency of Detection of Detected SRCs in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
SW 846 7471			
Mercury	7439-97-6	27 : 116	23%
O. Pesticides			
SW 846 8141A			
Demeton-O	298-03-3	1 : 28	4%
Dimethoate	60-51-5	2 : 28	7%
PCB			
SW 846 8082			
Aroclor-1260	11096-82-5	1 : 116	1%
Perchlorate			
EPA 314.0			
Perchlorate	14797-73-0	111 : 116	96%
Pesticide			
SW 846 8081			
4,4'-DDD	72-54-8	2 : 30	7%
4,4'-DDE	72-55-9	8 : 30	27%
4,4'-DDT	50-29-3	7 : 30	23%
Beta-BHC	319-85-7	14 : 30	47%
Endrin Aldehyde	7421-93-4	2 : 30	7%
Methoxychlor	72-43-5	4 : 30	13%
RAD			
HASL-300 gamma			
Ra-226	Ra-226	114 : 116	98%
Ra-228	Ra-228	109 : 116	94%
HASL-300 TH MOD			
Th-228	Th-228	12 : 12	100%

Table 5-7
Frequency of Detection of Detected SRCs in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Th-230	Th-230	12 : 12	100%
Th-232	Th-232	12 : 12	100%
HASL-300 U MOD			
URANIUM-233/234	U-234 SOL	12 : 12	100%
URANIUM-235/236	U-235 SOL	6 : 12	50%
URANIUM-238	U-238 SOL	12 : 12	100%
SVOC			
SW 846 8260			
Naphthalene	91-20-3	1 : 116	1%
SW 846 8270			
Benz(a)anthracene	56-55-3	2 : 116	2%
Benzo(a)pyrene	50-32-8	2 : 116	2%
Benzo(b)fluoranthene	205-99-2	2 : 116	2%
Benzo(g,h,i)perylene	191-24-2	2 : 116	2%
Benzo(k)fluoranthene	207-08-9	2 : 116	2%
bis(2-Ethylhexyl)phthalate	117-81-7	6 : 116	5%
Chrysene	218-01-9	2 : 116	2%
Diethyl phthalate	84-66-2	2 : 116	2%
Di-N-Butyl phthalate	84-74-2	1 : 116	1%
Fluoranthene	206-44-0	2 : 116	2%
Hexachlorobenzene	118-74-1	6 : 116	5%
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 116	1%
Octachlorostyrene	29082-74-4	2 : 116	2%
Phenanthrene	85-01-8	1 : 116	1%
Pyrene	129-00-0	2 : 116	2%
SW 846 8270 SIM			
Benz(a)anthracene	56-55-3	1 : 13	8%
Benzo(a)pyrene	50-32-8	1 : 13	8%
Benzo(b)fluoranthene	205-99-2	1 : 13	8%

Analyte Type/Analytical Method **SRC (a)**	**CAS**	**FOD (b)**	**Percent Detected (c)**
Benzo(g,h,i)perylene	191-24-2	1 : 13	8%
Benzo(k)fluoranthene	207-08-9	1 : 13	8%
Chrysene	218-01-9	2 : 13	15%
Fluoranthene	206-44-0	2 : 13	15%
Hexachlorobenzene	118-74-1	7 : 13	54%
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 13	8%
Phenanthrene	85-01-8	1 : 13	8%
Pyrene	129-00-0	3 : 13	23%
TPH			
SW 846 8015B DRO			
Oil Range Organics	TPH-MOTOR	6 : 87	7%
Total petroleum hydrocarbon-diesel	TPH-diesel	2 : 87	2%
SW 846 8015B GRO			
Total petroleum hydrocarbon-gasoline	TPH-gasoline	4 : 87	5%
VOC			
SW 846 8260			
1,1,1-Trichloroethane	71-55-6	4 : 116	3%
1,1-Dichloroethane	75-34-3	7 : 116	6%
1,2,3-Trichlorobenzene	87-61-6	8 : 116	7%
1,2,4-Trichlorobenzene	120-82-1	7 : 116	6%
1,2-Dichlorobenzene	95-50-1	10 : 116	9%
1,2-Dichloroethane	107-06-2	2 : 116	2%
1,3,5-Trimethylbenzene	108-67-8	1 : 116	1%
1,3-Dichlorobenzene	541-73-1	2 : 116	2%
1,4-Dichlorobenzene	106-46-7	29 : 116	25%
2-Butanone	78-93-3	8 : 116	7%
2-Chlorotoluene	95-49-8	1 : 116	1%
2-Hexanone	591-78-6	1 : 116	1%
Acetone	67-64-1	23 : 116	20%

Table 5-7
Frequency of Detection of Detected SRCs in Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Benzene	71-43-2	12 : 116	10%
Bromoform	75-25-2	1 : 116	1%
Carbon tetrachloride	56-23-5	4 : 116	3%
Chlorobenzene	108-90-7	12 : 116	10%
Chloroform	67-66-3	52 : 116	45%
Hexachlorobutadiene	87-68-3	5 : 116	4%
Methylene chloride	75-09-2	5 : 116	4%
Tetrachloroethene	127-18-4	7 : 116	6%
Toluene	108-88-3	15 : 116	13%
Trichloroethene	79-01-6	7 : 116	6%
Trichlorofluoromethane	75-69-4	3 : 116	3%

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
(a) Only chemicals with at least one positively detected result are listed.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Number of detected samples divided by the total number of samples.

Table 5-8
Frequency of Detection of Detected SRCs in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Chemistry			
EPA 160.1			
Total Dissolved Solids	TDS	27 : 27	100%
EPA 160.2			
Total Suspended Solids	TSS	27 : 27	100%
EPA 310.1			
Bicarbonate	71-52-3	27 : 27	100%
Total Alkalinity	T-ALK	27 : 27	100%
EPA 350.1			
Ammonia (as N)	7664-41-7	8 : 26	31%
EPA 425.1			
MBAS	MBAS	18 : 27	67%
SW 846 9056			
Bromide	24959-67-9	11 : 27	41%
Chlorate	14866-68-3	22 : 27	81%
Chloride	16887-00-6	27 : 27	100%
Nitrate (as N)	NO3	24 : 27	89%
Nitrite	14797-65-0	8 : 25	32%
ortho-Phosphate	o-PO4	3 : 28	11%
Sulfate	14808-79-8	27 : 27	100%
SW 846 9060			
Total Organic Carbon	TOC	6 : 27	22%
Fuel Alcohol			
SW 846 8015B FA			
Ethanol	64-17-5	1 : 6	17%
Metals			

Table 5-8
Frequency of Detection of Detected SRCs in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
SW 846 6020			
Aluminum, Total	7429-90-5	7 : 26	27%
Aluminum, Dissolved	7429-90-5	2 : 26	8%
Antimony, Dissolved	7440-36-0	9 : 26	35%
Antimony, Total	7440-36-0	5 : 23	22%
Arsenic, Total	7440-38-2	22 : 26	85%
Arsenic, Dissolved	7440-38-2	21 : 26	81%
Barium, Total	7440-39-3	20 : 26	77%
Barium, Dissolved	7440-39-3	23 : 26	88%
Beryllium, Total	7440-41-7	5 : 26	19%
Boron, Dissolved	7440-42-8	25 : 26	96%
Boron, Total	7440-42-8	25 : 26	96%
Cadmium, Total	7440-43-9	6 : 26	23%
Cadmium, Dissolved	7440-43-9	7 : 26	27%
Calcium, Dissolved	7440-70-2	26 : 26	100%
Calcium, Total	7440-70-2	26 : 26	100%
Chromium, Total	7440-47-3	20 : 22	91%
Chromium, Dissolved	7440-47-3	15 : 26	58%
Cobalt, Total	7440-48-4	10 : 26	38%
Cobalt, Dissolved	7440-48-4	7 : 26	27%
Copper, Total	7440-50-8	7 : 26	27%
Copper, Dissolved	7440-50-8	12 : 26	46%
Iron, Total	7439-89-6	7 : 22	32%
Lead, Total	7439-92-1	4 : 26	15%
Magnesium, Dissolved	7439-95-4	26 : 26	100%
Magnesium, Total	7439-95-4	26 : 26	100%
Manganese, Total	7439-96-5	9 : 26	35%
Manganese, Dissolved	7439-96-5	16 : 26	62%
Molybdenum, Dissolved	7439-98-7	20 : 26	77%
Molybdenum, Total	7439-98-7	18 : 26	69%
Nickel, Total	7440-02-0	8 : 26	31%

Table 5-8
Frequency of Detection of Detected SRCs in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Nickel, Dissolved	7440-02-0	10 : 26	38%
Platinum, Dissolved	7440-06-4	2 : 26	8%
Platinum, Total	7440-06-4	2 : 26	8%
Potassium, Dissolved	7440-09-7	26 : 26	100%
Potassium, Total	7440-09-7	26 : 26	100%
Selenium, Dissolved	7782-49-2	7 : 26	27%
Selenium, Total	7782-49-2	3 : 26	12%
Silver, Total	7440-22-4	5 : 26	19%
Sodium, Total	7440-23-5	26 : 26	100%
Sodium, Dissolved	7440-23-5	26 : 26	100%
Strontium, Total	7440-24-6	26 : 26	100%
Strontium, Dissolved	7440-24-6	26 : 26	100%
Thallium, Total	7440-28-0	2 : 26	8%
Thallium, Dissolved	7440-28-0	1 : 26	4%
Tin, Total	7440-31-5	7 : 26	27%
Titanium, Total	7440-32-6	8 : 26	31%
Titanium, Dissolved	7440-32-6	11 : 26	42%
Tungsten, Total	7440-33-7	6 : 26	23%
Tungsten, Dissolved	7440-33-7	9 : 26	35%
Uranium, Dissolved	7440-61-1	26 : 26	100%
Uranium, Total	7440-61-1	26 : 26	100%
Vanadium, Dissolved	7440-62-2	12 : 26	46%
Vanadium, Total	7440-62-2	12 : 26	46%
Zinc, Total	7440-66-6	9 : 26	35%
Zinc, Dissolved	7440-66-6	13 : 26	50%
SW 846 7199			
Chromium-hexavalent	18540-29-9	52 : 67	78%
SW 846 7470			
Mercury, Dissolved	7439-97-6	4 : 26	15%
Mercury, Total	7439-97-6	7 : 26	27%

Table 5-8
Frequency of Detection of Detected SRCs in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Perchlorate			
EPA 314.0			
Perchlorate	14797-73-0	26 : 27	96%
Pesticide			
SW 846 8081			
Alpha-BHC	319-84-6	8 : 27	30%
Beta-BHC	319-85-7	2 : 27	7%
Delta-BHC	319-86-8	5 : 27	19%
Gamma-BHC (Lindane)	58-89-9	3 : 27	11%
Gamma-Chlordane	5103-74-2	2 : 27	7%
Heptachlor	76-44-8	3 : 27	11%
Methoxychlor	72-43-5	1 : 27	4%
RAD			
EPA 903.1			
Ra-226 - soluble	Ra-226 sol	18 : 25	72%
Ra-226 - soluble	Ra-226 sol	16 : 22	73%
EPA 904.0			
Ra-228 - soluble	Ra-228 sol	17 : 25	68%
Ra-228 - soluble	Ra-228 sol	12 : 22	55%
HASL-300 TH MOD			
Th-228 - soluble	Th-228 sol	1 : 5	20%
Th-230 - soluble	Th-230 sol	3 : 4	75%
Th-230 - soluble	Th-230 sol	4 : 5	80%
Th-232 - soluble	Th-232 sol	2 : 5	40%
HASL-300 U MOD			
URANIUM-233/234	U-234 SOL	5 : 5	100%
URANIUM-233/234	U-234 SOL	4 : 4	100%
URANIUM-235/236	U-235 SOL	5 : 5	100%

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
URANIUM-235/236	U-235 SOL	4 : 4	100%
URANIUM-238	U-238 SOL	4 : 4	100%
URANIUM-238	U-238 SOL	5 : 5	100%
RAD			
TOTAL Ra-226 & Ra-228	Total Ra-226 &	21 : 25	84%
TOTAL Ra-226 & Ra-228	Total Ra-226 &	17 : 22	77%
SVOC			
SW 846 8270			
1,4-Dioxane	123-91-1	1 : 27	4%
bis(2-Ethylhexyl)phthalate	117-81-7	6 : 27	22%
Di-N-Butyl phthalate	84-74-2	1 : 27	4%
Naphthalene	91-20-3	1 : 27	4%
VOC			
SW 846 8260			
1,1,1-Trichloroethane	71-55-6	1 : 27	4%
1,1-Dichloroethane	75-34-3	3 : 27	11%
1,1-Dichloroethene	75-35-4	4 : 27	15%
1,2,3-Trichlorobenzene	87-61-6	2 : 27	7%
1,2,4-Trichlorobenzene	120-82-1	2 : 27	7%
1,2-Dichlorobenzene	95-50-1	10 : 27	37%
1,2-Dichloroethane	107-06-2	1 : 27	4%
1,3-Dichlorobenzene	541-73-1	4 : 27	15%
1,4-Dichlorobenzene	106-46-7	12 : 27	44%
Benzene	71-43-2	5 : 27	19%
Bromobenzene	108-86-1	1 : 27	4%
Bromodichloromethane	75-27-4	1 : 27	4%
Bromoform	75-25-2	5 : 27	19%
Bromomethane	74-83-9	1 : 27	4%
Carbon tetrachloride	56-23-5	8 : 27	30%

Table 5-8
Frequency of Detection of Detected SRCs in Groundwater
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	FOD (b)	Percent Detected (c)
Chlorobenzene	108-90-7	4 : 27	15%
Chloroform	67-66-3	25 : 27	93%
Chloromethane	74-87-3	2 : 27	7%
Dibromochloromethane	124-48-1	1 : 27	4%
Methyl tert butyl ether	1634-04-4	2 : 27	7%
Tetrachloroethene	127-18-4	8 : 27	30%
Toluene	108-88-3	1 : 27	4%
Trichloroethene	79-01-6	8 : 27	30%
Trichlorofluoromethane	75-69-4	1 : 27	4%

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
(a) Only chemicals with at least one positively detected result are listed.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Number of detected samples divided by the total number of samples.

Table 5-9
Summary Statistics for All Inorganics
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

		Phase A Results						Background Dataset (BRC/Timet and COH)						
Analyte	units	n	FOD	Min	Max	Median	Shapiro-Wilk p	n	FOD	Min	Max	Median	p95	Shapiro-Wilk p
Metals														
Al	mg/kg	130	100%	3680	18800	7055	0.000	120	100%	3740	15300	8420	13300	0.001
Sb	mg/kg	130	100%	0.076	6.5	0.16	0.000	120	41%	0	0.5	0.3298	0.4	0.000
As	mg/kg	130	100%	1.6	61.6	4.3	0.000	120	100%	2.1	7.2	3.9	6.29	0.002
Ba	mg/kg	130	100%	25.2	1200	150	0.000	120	100%	73	836	190	464	0.000
Be	mg/kg	130	100%	0.2	0.98	0.46	0.000	120	100%	0.16	0.89	0.54	0.84	0.036
B	mg/kg	130	38%	2.5	85.7	6.35	0.000	104	75%	3.2	11.6	4.25	8.75	0.000
Cd	mg/kg	130	99%	0.022	1.7	0.0855	0.000	120	13%	0.052	0.16	0.1291	NA	NA
Ca	mg/kg	130	94%	2170	187000	24100	0.000	104	100%	8160	82800	23650	61300	0.000
Cr	mg/kg	130	100%	4.7	81.9	10.6	0.000	120	100%	2.6	16.7	8.8	14.5	0.638
Cr+6	mg/kg	130	34%	0.11	11.8	0.22	0.000	120	0%	NA	NA	NA	NA	NA
Co	mg/kg	130	100%	2.4	12.2	6	0.000	120	100%	3.7	16.3	8.25	12.2	0.052
Cu	mg/kg	130	99%	5.8	223	12	0.000	120	100%	7.8	30.5	17.2	23.8	0.503
Fe	mg/kg	130	100%	4890	20300	11400	0.000	120	100%	5410	19700	13050	18300	0.430
Pb	mg/kg	130	100%	4	305	7.7	0.000	120	100%	3	35.1	7.75	21	0.000
Mg	mg/kg	130	96%	3970	63700	7985	0.000	120	100%	4580	17500	9425	14200	0.011
Mn	mg/kg	130	100%	58.8	6660	261.5	0.000	120	100%	151	1090	419	640	0.000
Mo	mg/kg	130	92%	0.2615	5.3	0.515	0.000	120	100%	0.17	2	0.475	1	0.000
Ni	mg/kg	130	100%	5.2	30.4	12.35	0.000	120	100%	7.8	30	15.35	22.1	0.003
Pt	mg/kg	130	65%	0.011	0.077	0.014	0.000	104	5%	0.0435	0.099	0.0435	NA	NA
K	mg/kg	130	94%	980	5210	1845	0.000	104	100%	625	3890	1535	3370	0.000
Se	mg/kg	130	0%	NA	NA	NA	NA	120	43%	0	0.6	0.1579	0.39	0.000
Ag	mg/kg	130	99%	0.061	0.48	0.125	0.000	120	13%	0.019	0.2609	0.2609	NA	NA
Na	mg/kg	130	90%	192	4910	759	0.000	104	100%	111	1320	452	1040	0.000
Sr	mg/kg	130	96%	46.1	2280	168	0.000	104	100%	69	808	186	494	0.000
Tl	mg/kg	130	41%	0.073	2.9	0.097	0.000	120	84%	0.1	1.8	0.5428	1.6	0.000
Sn	mg/kg	130	97%	0.25	1.2	0.49	0.000	123	99%	0.200	1.000	0.500	0.73	0.088
Ti	mg/kg	130	100%	252	830	486	0.002	120	100%	200	1010	503.5	857	0.055
W	mg/kg	130	64%	0.15	13.9	0.36	0.000	104	100%	0.49	2.5	1.05	2	0.000
U	mg/kg	130	98%	0.68	10.6	1.4	0.000	103	100%	0.43	2.7	0.94	1.64	0.000
V	mg/kg	130	100%	13.7	56.3	30.6	0.065	120	94%	14.6	59.1	35.55	54.1	0.161
Zn	mg/kg	130	92%	13.3	206	25	0.000	120	100%	15.4	121	37.2	52.4	0.000
Radionuclides														
Ra226	pCi/g	130	98%	0.759	7.49	1.215	0.000	119	100%	0.494	2.36	1.12	1.87	0.001
Ra228	pCi/g	130	94%	0.357	2.21	1.76	0.000	100	100%	0.946	2.94	1.86	2.57	0.167
Th228	pCi/g	15	100%	0.481	1.12	0.691	0.360	120	100%	1.07	2.28	1.715	2.11	0.053
Th230	pCi/g	15	100%	0.391	2.23	0.671	0.000	120	100%	0.66	3.01	1.19	2.14	0.000
Th232	pCi/g	15	100%	0.539	0.994	0.676	0.408	120	100%	1.05	2.23	1.575	2.06	0.051
U234	pCi/g	15	100%	0.26	1.58	0.518	0.011	120	100%	0.47	2.84	0.99	2.06	0.000
U235	pCi/g	15	40%	0.00397	0.0469	0.0123	0.026	120	45%	0	0.21	0.054	0.13	0.000
U238	pCi/g	15	100%	0.137	1.37	0.37	0.004	120	100%	0.45	2.37	1.02	1.95	0.000
General Chemistry														
alk	mg/kg	130	100%	74.4	8860	568	0.000	0	NA	NA	NA	NA	NA	NA
cl	mg/kg	130	98%	0.9	5600	72.65	0.000	107	69%	0.38	1110	16	761	0.000
no3	mg/kg	130	89%	0.17	515	1.65	0.000	107	86%	0.11	102	0.71	54.3	0.000
no2	mg/kg	123	54%	0.047	29.5	0.93	0.000	107	5%	0.061	4.1	0.061	NA	NA
so4	mg/kg	130	100%	5.4	15100	182	0.000	107	78%	0.86	4130	21.9	785	0.000
clo4	ug/kg	130	95%	28.9	2330000	2575	0.000	16	56%	9.35	402.5	28.8	NA	0.000

Notes:
For some parameters, 95th percentiles also calculated for Tronox upgradient deep samples (greater than 20 ft).
Shapiro-Wilk test: p values greater than the significance level (0.050) indicate normally distributed.
n - number of results.
FOD - frequency of detects; percentage of results reported as detected by the laboratory.
Min - minimum value; Max - maximum value; Median - calculated median of all results.
p95 - non-parametric 95th percentile of the background dataset (BRC and COH).
NA - Insufficient data, or insufficient data outside of detection limits, to calculate statistic.

Table 5-10
Statistical Comparisons Between Phase A and Background/Upgradient Datasets
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Comparison of All Phase A Soil Samples to Background Datasets (BRC and COH)							
Analyte	**Slippage**	**Quantile 0.5**	**Quantile 0.75**	**Quantile 0.90**	**WRS**	**WRS A>bkgd**	**WRS w/ Gehran's**	**t-test**
Metals								
Al	**0.019**	1.000	1.000	0.332	0.000	0.363		
As	**0.000**	0.064	**0.000**	**0.000**	0.065	0.568		
Ba	0.520	1.000	1.000	1.000	0.000	0.290		
Be	0.071	1.000	1.000	0.900	0.000	0.354		
B	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.736**	0.295	
Ca	0.051	0.448	0.840	0.787	0.415	0.469		
Cr	**0.000**	**0.000**	**0.001**	**0.000**	**0.000**	**0.679**		
Co	1.000	1.000	1.000	1.000	0.000	0.209		
Cu	0.269	1.000	1.000	1.000	0.000	0.177		
Fe	0.269	1.000	1.000	0.984	0.000	0.355		
Pb	0.139	0.644	0.954	0.990	0.340	0.465		
Mg	**0.000**	0.998	0.938	**0.000**	0.290	0.461		
Mn	0.071	1.000	1.000	0.972	0.000	0.198		
Mo	0.269	0.222	0.138	0.069	**0.020**	**0.585**		
Ni	0.520	1.000	1.000	0.997	0.000	0.337		
K	**0.028**	**0.013**	0.120	0.309	**0.001**	**0.624**		
Na	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.743**		
Sr	0.093	0.882	0.902	0.890	0.143	0.444		
Tl	0.520	1.000	1.000	1.000	0.000	0.048	1.000	
Sn	0.549	0.669	0.367	0.101	0.240	0.544		
Ti	1.000	0.812	0.829	0.984	0.290	0.461		
W	0.170	1.000	1.000	1.000	0.000	0.062	1.000	
U	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.758**		
V	1.000	1.000	1.000	0.999	0.001	0.375		1.000
Zn	0.269	1.000	1.000	0.990	0.000	0.224		
Radionuclides								
Ra226	**0.010**	**0.000**	**0.036**	0.072	**0.000**	**0.672**	**0.000**	
Ra228	1.000	0.965	1.000	1.000	0.004	0.390	0.999	
Th228	1.000	1.000	1.000	1.000	0.000	0.001		1.000
Th230	1.000	1.000	0.990	0.800	0.000	0.101		
Th232	1.000	1.000	1.000	1.000	0.000	0.000		1.000
U234	1.000	0.997	0.934	**0.000**	0.000	0.175		
U238	1.000	1.000	0.987	1.000	0.000	0.084		
General Chemistry								
Cl	**0.001**	**0.011**	**0.000**	**0.028**	**0.000**	**0.680**	**0.000**	
NO3	0.300	**0.005**	0.172	0.875	**0.012**	**0.595**	**0.014**	
SO4	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.774**	**0.000**	
ClO4	**0.000**	**0.000**	**0.007**	0.159	**0.000**	**0.956**	**0.000**	

	Comparison of Phase A (0-10 ft depths) to Background Datasets (BRC and COH)							
Analyte	**Slippage**	**Quantile 0.5**	**Quantile 0.75**	**Quantile 0.90**	**WRS**	**WRS A>bkgd**	**WRS w/ Gehran's**	**t-test**
As	**0.005**	0.999	0.980	0.554	0.000	0.316		
Cr	**0.005**	**0.011**	0.278	0.482	**0.004**	**0.628**		
Pb	**0.045**	0.342	0.794	0.741	0.112	0.570		
Mn	**0.016**	1.000	1.000	0.741	0.000	0.257		

Table 5-10
Statistical Comparisons Between Phase A and Background/Upgradient Datasets
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

	Comparison of Phase A (0-10 ft depths) to Background Datasets (BRC and COH)							
Analyte	**Slippage**	**Quantile 0.5**	**Quantile 0.75**	**Quantile 0.90**	**WRS**	**WRS A>bkgd**	**WRS w/ Gehran's**	**t-test**
Ra226	1.000	0.749	0.998	1.000	0.655	0.520		
Ra228	1.000	0.935	1.000	1.000	0.521	0.471		0.722
Th228	1.000	1.000	1.000	1.000	0.000	0.001		1.000
Th230	1.000	1.000	1.000	1.000	0.000	0.020		
U238	1.000	1.000	1.000	1.000	0.000	0.002		
ClO4	**0.000**	**0.000**	**0.005**	0.130	**0.000**	**0.942**	**0.000**	

	Comparison of Phase A, Alluvium Samples, to Background Datasets (BRC and COH)							
Analyte	**Slippage**	**Quantile 0.5**	**Quantile 0.75**	**Quantile 0.90**	**WRS**	**WRS A>bkgd**	**WRS w/ Gehran's**	**t-test**
Al	1.000	1.000	1.000	1.000	0.000	0.278		
As	**0.000**	0.792	0.109	**0.000**	0.334	0.463		
B	**0.000**	**0.000**	**0.008**	**0.000**	**0.000**	**0.684**	0.915	
Cr	**0.002**	**0.016**	0.220	0.211	**0.005**	**0.609**		
Mg	0.214	1.000	1.000	0.998	0.000	0.351		
U	**0.004**	**0.000**	**0.000**	**0.000**	**0.000**	**0.701**		

	Comparison of Phase A, Muddy Creek Samples, to Upgradient Tronox Deep Samples (>20ft)							
Analyte	**Slippage**	**Quantile 0.5**	**Quantile 0.75**	**Quantile 0.90**	**WRS**	**WRS A>bkgd**	**WRS w/ Gehran's**	**t-test**
Al	**0.047**	0.207	0.215	0.299	0.723	0.528		0.381
As	**0.021**	**0.001**	**0.009**	0.080	**0.001**	**0.775**		
B	**0.004**	**0.028**	**0.043**	**0.009**	**0.036**	**0.666**	0.225	
Cr	1.000	0.207	0.319	0.299	0.229	0.595		
Mg	**0.000**	**0.000**	**0.001**	**0.009**	**0.000**	**0.783**		
U	0.105	**0.000**	**0.003**	0.080	**0.000**	**0.817**		

Notes:
The following constituents detected at low frequency (<50%) in BRC dataset, so no comparisons performed:
Sb, Cd, Cr+6, Pt, Se, Ag, U235, NO2, alkalinity
Slippage test: Ho - that the two groups have similar right tails (that is, maximum values)
Ha - that the right tail of the Phase A data is greater than the right tail of the reference dataset
Quantile tests: Ho - that the two groups have similar right tails (that is, above the percentile value shown)
Ha - that the right tail of the Phase A data is greater than the right tail of the reference dataset
t-tests results provided only where the two datasets being compared are both normally distributed.
Ho - the means of the two groups are the same
Ha - the mean of Phase A data is greater than the mean of the reference dataset
Wilcoxon rank sum (WRS) test
Ho - the median/location of the two groups is similar
Ha - the median/location of the two groups is not the same
Results also provided showing the probability that the Phase A dataset is greater than the reference dataset (A>bkgd).
Wilcoxon rank sum test with Gehran's approximation, only provided where FODs are less than 90%
Ho - the location of the two groups is similar
Ha - the location of the Phase A dataset is greater than the location of the reference dataset
For all tests, if p<significance level, reject Ho and accept Ha. These results are **bold** on the table.

Table 5-11
Comparison of SRCs Detected in Soil to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Chemistry									
EPA 310.1									
Alkalinity (as CaCO3)	Alk as CaCO3	mg/kg	74 : 116	4.84E+01	1.44E+03	1.65E+02	SA14		--
Bicarbonate	71-52-3	mg/kg	113 : 116	7.29E+01	8.36E+03	6.85E+02	SA25		--
Total Alkalinity	T-ALK	mg/kg	116 : 116	7.44E+01	8.86E+03	8.46E+02	SA25		--
EPA 350.1									
Ammonia (as N)	7664-41-7	mg/kg	10 : 102	8.00E-01	9.28E+02	2.27E+01	SA15		--
SM 5540C									
MBAS	MBAS	mg/kg	21 : 116	1.63E+00	5.90E+00	2.13E+00	SA08		--
SW 846 9056									
Bromide	24959-67-9	mg/kg	18 : 116	9.50E-01	9.20E+01	4.10E+00	SA04		--
Chlorate	14866-68-3	mg/kg	58 : 114	1.40E+00	1.37E+03	6.70E+01	SA11		--
Chloride	16887-00-6	mg/kg	113 : 116	9.50E-01	5.60E+03	3.77E+02	SA05		--
Nitrate (as N)	NO3	mg/kg	107 : 116	1.70E-01	2.79E+02	8.97E+00	SA15		--
Nitrite	14797-65-0	mg/kg	62 : 109	4.70E-02	2.13E+01	2.15E+00	SA14		--
ortho-Phosphate	o-PO4	mg/kg	25 : 116	1.40E+00	7.76E+03	9.73E+01	SA11		--
Sulfate	14808-79-8	mg/kg	116 : 116	5.40E+00	1.51E+04	1.31E+03	SA08		--
SW 846 9060									
Total Organic Carbon	TOC	mg/kg	116 : 116	2.00E+02	3.86E+04	8.04E+03	SA15		--
DIOXINS									
8290 SCREEN									
Total TEQ - ENSR Calculated (b)	TTEQ-b	ng/kg	27 : 27	6.30E-02	1.15E+03	1.32E+02	SA16	1.00E+03	YES
SW 846 8290									
Total TEQ - ENSR Calculated (b)	TTEQ-b	ng/kg	7 : 7	8.20E-01	8.94E+02	3.83E+02	SA16	1.00E+03	NO
Metals									
SW 846 6020									

Table 5-11
Comparison of SRCs Detected in Soil to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Aluminum	7429-90-5	mg/kg	116 : 116	3.68E+03	1.88E+04	7.83E+03	SA09	9.23E+04	NO
Antimony	7440-36-0	mg/kg	115 : 116	8.00E-02	6.50E+00	2.23E-01	SA09	4.09E+01	NO
Arsenic	7440-38-2	mg/kg	116 : 116	1.60E+00	6.16E+01	9.64E+00	SA03	1.59E-01	YES
Barium	7440-39-3	mg/kg	116 : 116	2.52E+01	1.20E+03	1.55E+02	SA09	6.66E+03	NO
Beryllium	7440-41-7	mg/kg	116 : 116	2.00E-01	9.80E-01	4.83E-01	SA12	1.94E+02	NO
Boron	7440-42-8	mg/kg	44 : 116	2.50E+00	4.86E+01	7.91E+00	SA07	2.00E+04	NO
Cadmium	7440-43-9	mg/kg	115 : 116	2.20E-02	1.70E+00	1.09E-01	SA15	4.50E+01	NO
Calcium	7440-70-2	mg/kg	109 : 116	2.17E+03	1.87E+05	2.94E+04	SA14		--
Chromium	7440-47-3	mg/kg	116 : 116	4.70E+00	6.33E+01	1.37E+01	SA17	4.48E+01	YES
Cobalt	7440-48-4	mg/kg	116 : 116	2.40E+00	1.20E+01	5.67E+00	SA17	1.92E+02	NO
Copper	7440-50-8	mg/kg	115 : 116	5.80E+00	1.99E+02	1.36E+01	SA17	4.09E+03	NO
Iron	7439-89-6	mg/kg	116 : 116	4.89E+03	2.03E+04	1.12E+04	SA10	3.00E+04	NO
Lead	7439-92-1	mg/kg	116 : 116	4.00E+00	3.05E+02	1.17E+01	SA09	8.00E+01	YES
Magnesium	7439-95-4	mg/kg	112 : 116	3.97E+03	6.37E+04	1.34E+04	SA16		--
Manganese	7439-96-5	mg/kg	116 : 116	5.88E+01	6.66E+03	3.48E+02	SA09	1.95E+03	YES
Molybdenum	7439-98-7	mg/kg	107 : 116	2.80E-01	5.30E+00	6.09E-01	SA09	5.11E+02	NO
Nickel	7440-02-0	mg/kg	116 : 116	5.20E+00	3.04E+01	1.27E+01	SA09	2.04E+03	NO
Platinum	7440-06-4	mg/kg	72 : 116	9.00E-03	7.70E-02	1.35E-02	SA07		--
Potassium	7440-09-7	mg/kg	109 : 116	9.80E+02	5.21E+03	1.94E+03	SA25		--
Silver	7440-22-4	mg/kg	115 : 116	6.10E-02	4.80E-01	1.37E-01	SA17	5.11E+02	NO
Sodium	7440-23-5	mg/kg	104 : 116	2.14E+02	4.91E+03	1.02E+03	SA14		--
Strontium	7440-24-6	mg/kg	111 : 116	4.61E+01	2.28E+03	2.35E+02	SA07	6.12E+04	NO
Thallium	7440-28-0	mg/kg	49 : 116	6.80E-02	2.90E+00	1.20E-01	SA09	6.75E+00	NO
Tin	7440-31-5	mg/kg	112 : 116	2.70E-01	1.20E+00	5.13E-01	SA08	6.12E+04	NO
Titanium	7440-32-6	mg/kg	116 : 116	2.52E+02	8.18E+02	4.79E+02	SA13	3.80E+05	NO
Tungsten	7440-33-7	mg/kg	75 : 116	1.50E-01	1.15E+01	5.61E-01	SA17		--
Uranium	7440-61-1	mg/kg	114 : 116	6.80E-01	1.06E+01	1.99E+00	SA03	2.04E+01	NO
Vanadium	7440-62-2	mg/kg	116 : 116	1.37E+01	5.63E+01	3.12E+01	SA13	1.02E+02	NO
Zinc	7440-66-6	mg/kg	106 : 116	1.49E+01	1.79E+02	2.76E+01	SA17	3.10E+04	NO
SW 846 7199									
Chromium-hexavalent	18540-29-9	mg/kg	40 : 116	1.08E-01	1.18E+01	5.69E-01	SA11	6.41E+00	YES

Table 5-11
Comparison of SRCs Detected in Soil to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
SW 846 7471									
Mercury	7439-97-6	mg/kg	27 : 116	7.28E-03	2.60E-02	6.34E-03	SA11	3.10E+01	NO
O. Pesticides									
SW 846 8141A									
Demeton-O	298-03-3	mg/kg	1 : 28	5.75E-02	5.75E-02	2.30E-02	SA17	2.46E+00	NO
Dimethoate	60-51-5	mg/kg	2 : 28	1.15E-02	1.30E-02	1.21E-02	SA05	1.23E+01	NO
PCB									
SW 846 8082									
Aroclor-1260	11096-82-5	mg/kg	1 : 116	4.70E-01	4.70E-01	2.33E-02	SA09	1.00E+00	NO
Perchlorate									
EPA 314.0									
Perchlorate	14797-73-0	mg/kg	111 : 116	2.89E-02	2.33E+03	8.21E+01	SA15	1.00E+01	YES
Pesticide									
SW 846 8081									
4,4'-DDD	72-54-8	mg/kg	2 : 30	6.90E-03	2.70E-02	2.75E-03	SA09	9.95E-01	NO
4,4'-DDE	72-55-9	mg/kg	8 : 30	1.45E-03	6.20E-01	4.11E-02	SA09	7.03E-01	NO
4,4'-DDT	50-29-3	mg/kg	7 : 30	1.50E-03	6.60E-01	3.08E-02	SA14	7.03E-01	NO
Beta-BHC	319-85-7	mg/kg	14 : 30	1.80E-03	1.30E+00	5.13E-02	SA09	1.26E-01	YES
Endrin Aldehyde	7421-93-4	mg/kg	2 : 30	1.70E-02	3.80E-02	3.46E-03	SA14	1.85E+01	NO
Methoxychlor	72-43-5	mg/kg	4 : 30	4.75E-03	5.00E-02	5.45E-03	SA17	3.08E+02	NO
RAD									
HASL-300 gamma									
Ra-226	Ra-226	pci/g	114 : 116	8.69E-01	7.49E+00	1.47E+00	SA07	2.60E-03	YES
Ra-228	Ra-228	pci/g	109 : 116	6.76E-01	2.11E+00	1.60E+00	SA15	1.50E-02	YES
HASL-300 TH MOD									

Table 5-11
Comparison of SRCs Detected in Soil to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Th-228	Th-228	pci/g	12 : 12	4.81E-01	1.12E+00	7.00E-01	SA02	2.55E-02	YES
Th-230	Th-230	pci/g	12 : 12	4.16E-01	2.23E+00	8.18E-01	SA05	2.02E+00	YES
Th-232	Th-232	pci/g	12 : 12	5.39E-01	9.94E-01	6.98E-01	SA02	1.90E+00	NO
HASL-300 U MOD									
URANIUM-233/234	U-234 SOL	pci/g	12 : 12	2.60E-01	1.58E+00	6.87E-01	SA05	2.87E+00	NO
URANIUM-235/236	U-235 SOL	pci/g	6 : 12	7.27E-03	4.69E-02	1.50E-02	SA05	3.98E-02	YES
URANIUM-238	U-238 SOL	pci/g	12 : 12	1.42E-01	1.37E+00	4.92E-01	SA05	1.80E-01	YES
SVOC									
SW 846 8260									
Naphthalene	91-20-3	mg/kg	1 : 116	7.90E-04	7.90E-04	7.90E-04	SA08	1.88E+01	NO
SW 846 8270									
Benz(a)anthracene	56-55-3	mg/kg	2 : 116	4.00E-02	9.00E-02	6.50E-02	SA09	2.11E-01	NO
Benzo(a)pyrene	50-32-8	mg/kg	2 : 116	4.50E-02	7.90E-02	6.20E-02	SA09	2.11E-02	YES
Benzo(b)fluoranthene	205-99-2	mg/kg	2 : 116	7.70E-02	1.10E-01	9.35E-02	SA09	2.11E-01	NO
Benzo(g,h,i)perylene	191-24-2	mg/kg	2 : 116	4.80E-02	6.90E-02	5.85E-02	SA09	2.91E+03	NO
Benzo(k)fluoranthene	207-08-9	mg/kg	2 : 116	4.90E-02	1.10E-01	7.95E-02	SA09	2.11E+00	NO
bis(2-Ethylhexyl)phthalate	117-81-7	mg/kg	6 : 116	5.10E-02	3.00E-01	1.93E-01	SA11	1.23E+01	NO
Chrysene	218-01-9	mg/kg	2 : 116	7.10E-02	1.30E-01	1.01E-01	SA09	2.11E+01	NO
Diethyl phthalate	84-66-2	mg/kg	2 : 116	1.50E-01	2.60E-01	1.90E-01	SA14	4.92E+04	NO
Di-N-Butyl phthalate	84-74-2	mg/kg	1 : 116	4.22E-01	4.22E-01	1.97E-01	SA15	6.16E+03	NO
Fluoranthene	206-44-0	mg/kg	2 : 116	8.50E-02	1.80E-01	1.76E-01	SA09	2.20E+03	NO
Hexachlorobenzene	118-74-1	mg/kg	6 : 116	5.30E-02	5.75E-01	1.96E-01	SA11	1.08E-01	YES
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	1 : 116	6.20E-02	6.20E-02	6.20E-02	SA09	2.11E-01	NO
Octachlorostyrene	29082-74-4	mg/kg	2 : 116	1.30E-01	2.00E-01	1.84E-01	SA11		--
Phenanthrene	85-01-8	mg/kg	1 : 116	5.90E-02	5.90E-02	5.90E-02	SA09	2.40E+04	NO
Pyrene	129-00-0	mg/kg	2 : 116	7.80E-02	1.60E-01	1.19E-01	SA09	2.91E+03	NO
SW 846 8270 SIM									
Benz(a)anthracene	56-55-3	mg/kg	1 : 13	1.20E-02	1.20E-02	4.29E-03	SA09	2.11E-01	NO
Benzo(a)pyrene	50-32-8	mg/kg	1 : 13	1.30E-02	1.30E-02	4.37E-03	SA09	2.11E-02	NO

Table 5-11
Comparison of SRCs Detected in Soil to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Benzo(b)fluoranthene	205-99-2	mg/kg	1 : 13	2.20E-02	2.20E-02	5.06E-03	SA09	2.11E-01	NO
Benzo(g,h,i)perylene	191-24-2	mg/kg	1 : 13	2.30E-02	2.30E-02	5.13E-03	SA09	2.91E+03	NO
Benzo(k)fluoranthene	207-08-9	mg/kg	1 : 13	1.60E-02	1.60E-02	4.60E-03	SA09	2.11E+00	NO
Chrysene	218-01-9	mg/kg	2 : 13	7.00E-03	2.40E-02	5.48E-03	SA09	2.11E+01	NO
Fluoranthene	206-44-0	mg/kg	2 : 13	1.70E-02	2.70E-02	6.48E-03	SA08	2.20E+03	NO
Hexachlorobenzene	118-74-1	mg/kg	7 : 13	6.77E-03	7.70E-02	1.80E-02	SA14	1.08E-01	NO
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	1 : 13	1.90E-02	1.90E-02	4.83E-03	SA09	2.11E-01	NO
Phenanthrene	85-01-8	mg/kg	1 : 13	1.00E-02	1.00E-02	4.13E-03	SA09	2.40E+04	NO
Pyrene	129-00-0	mg/kg	3 : 13	5.25E-03	2.30E-02	5.93E-03	SA09	2.91E+03	NO
TPH									
SW 846 8015B DRO									
Oil Range Organics	TPH-MOTOR	mg/kg	6 : 87	4.00E+00	1.01E+02	1.65E+01	SA26	1.00E+01	YES
Total petroleum hydrocarbon-diesel	TPH-diesel	mg/kg	2 : 87	5.10E+00	3.60E+03	5.61E+01	SA08	1.00E+01	YES
SW 846 8015B GRO									
Total petroleum hydrocarbon-gasoline	TPH-gasoline	mg/kg	4 : 87	1.30E-01	3.20E+00	1.36E-01	SA09	1.00E+01	NO
VOC									
SW 846 8260									
1,1,1-Trichloroethane	71-55-6	mg/kg	4 : 116	3.70E-04	9.50E-04	5.97E-04	SA08	6.90E+02	NO
1,1-Dichloroethane	75-34-3	mg/kg	7 : 116	1.40E-03	1.10E-02	2.99E-03	SA25	1.74E+02	NO
1,2,3-Trichlorobenzene	87-61-6	mg/kg	8 : 116	1.20E-03	1.40E+00	1.51E-02	SA14	2.16E+01	NO
1,2,4-Trichlorobenzene	120-82-1	mg/kg	7 : 116	1.70E-03	1.50E+00	1.61E-02	SA14	2.16E+01	NO
1,2-Dichlorobenzene	95-50-1	mg/kg	10 : 116	2.90E-04	1.80E-01	5.66E-03	SA09	4.00E+02	NO
1,2-Dichloroethane	107-06-2	mg/kg	2 : 116	1.90E-03	3.20E-03	2.79E-03	SA19	6.04E-02	NO
1,3,5-Trimethylbenzene	108-67-8	mg/kg	1 : 116	3.00E-04	3.00E-04	3.00E-04	SA20	6.97E+00	NO
1,3-Dichlorobenzene	541-73-1	mg/kg	2 : 116	1.40E-02	1.50E-02	3.14E-03	SA14	2.10E+02	NO
1,4-Dichlorobenzene	106-46-7	mg/kg	29 : 116	1.20E-04	7.60E-01	1.19E-02	SA09	7.87E-01	NO
2-Butanone	78-93-3	mg/kg	8 : 116	1.70E-03	3.80E-02	6.28E-03	SA08	1.13E+04	NO
2-Chlorotoluene	95-49-8	mg/kg	1 : 116	8.30E-04	8.30E-04	8.30E-04	SA25	5.60E+01	NO
2-Hexanone	591-78-6	mg/kg	1 : 116	3.80E-03	3.80E-03	3.80E-03	SA08	4.70E+03	NO

Table 5-11
Comparison of SRCs Detected in Soil to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Acetone	67-64-1	mg/kg	23 : 116	4.30E-03	2.50E-01	1.23E-02	SA08	5.43E+03	NO
Benzene	71-43-2	mg/kg	12 : 116	1.90E-04	4.10E+00	6.07E-02	SA09	1.41E-01	YES
Bromoform	75-25-2	mg/kg	1 : 116	9.30E-04	9.30E-04	9.30E-04	SA11	2.18E+01	NO
Carbon tetrachloride	56-23-5	mg/kg	4 : 116	2.30E-03	1.60E-02	3.16E-03	SA09	5.49E-02	NO
Chlorobenzene	108-90-7	mg/kg	12 : 116	8.00E-04	1.20E+01	1.76E-01	SA09	5.31E+01	NO
Chloroform	67-66-3	mg/kg	52 : 116	1.80E-04	6.80E+00	1.53E-01	SA14	4.70E-02	YES
Hexachlorobutadiene	87-68-3	mg/kg	5 : 116	3.80E-04	1.10E-02	2.97E-03	SA14	2.21E+00	NO
Methylene chloride	75-09-2	mg/kg	5 : 116	3.80E-03	4.00E-02	3.50E-03	SA21	2.05E+00	NO
Tetrachloroethene	127-18-4	mg/kg	7 : 116	6.60E-04	8.10E-03	2.89E-03	SA09	1.31E-01	NO
Toluene	108-88-3	mg/kg	15 : 116	2.50E-04	8.20E-04	4.28E-04	SA08	2.20E+02	NO
Trichloroethene	79-01-6	mg/kg	7 : 116	1.10E-03	8.80E-03	3.01E-03	SA16	1.15E-02	NO
Trichlorofluoromethane	75-69-4	mg/kg	3 : 116	1.20E-03	1.40E-02	3.01E-03	SA09	1.28E+02	NO

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
TEQ - Toxic Equivalent. Total TEQs calculated by ENSR assuming a value of 1/2 the detection limit for non detected results and using the 2006 toxic equivalency factors (van den Berg, et al. 2006).
(a) Only chemicals with at least one positively detected result are reported.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Minimum detected concentration for each chemical, after duplicates have been averaged.
(d) Maximum detected concentration for each chemical, after duplicates have been averaged.
(e) Arithmetic mean concentration for each chemical, after duplicates have been averaged and any non detected results with a sample quantitation limit greater than the maximum detected concentration have been excluded.
(f) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.

Table 5-12
Summary of SRCs Detected in Soil That Exceed Direct Contact Comparison Levels (a)
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Metals									
SW 846 6020									
Arsenic	7440-38-2	mg/kg	116 : 116	1.60E+00	6.16E+01	9.64E+00	SA03	1.59E-01	YES
Chromium	7440-47-3	mg/kg	116 : 116	4.70E+00	6.33E+01	1.37E+01	SA17	4.48E+01	YES
Lead	7439-92-1	mg/kg	116 : 116	4.00E+00	3.05E+02	1.17E+01	SA09	8.00E+01	YES
Manganese	7439-96-5	mg/kg	116 : 116	5.88E+01	6.66E+03	3.48E+02	SA09	1.95E+03	YES
SW 846 7199									
Chromium-hexavalent	18540-29-9	mg/kg	40 : 116	1.08E-01	1.18E+01	5.69E-01	SA11	6.41E+00	YES
Perchlorate									
EPA 314.0									
Perchlorate	14797-73-0	mg/kg	111 : 116	2.89E-02	2.33E+03	8.21E+01	SA15	1.00E+01	YES
Pesticide									
SW 846 8081									
Beta-BHC	319-85-7	mg/kg	14 : 30	1.80E-03	1.30E+00	5.13E-02	SA09	1.26E-01	YES
RAD									
HASL-300 gamma									
Ra-226	Ra-226	pci/g	114 : 116	8.69E-01	7.49E+00	1.47E+00	SA07	2.60E-03	YES
Ra-228	Ra-228	pci/g	109 : 116	6.76E-01	2.11E+00	1.60E+00	SA15	1.50E-02	YES
HASL-300 TH MOD									
Th-228	Th-228	pci/g	12 : 12	4.81E-01	1.12E+00	7.00E-01	SA02	2.55E-02	YES
Th-230	Th-230	pci/g	12 : 12	4.16E-01	2.23E+00	8.18E-01	SA05	2.02E+00	YES
HASL-300 U MOD									
URANIUM-235/236	U-235 SOL	pci/g	6 : 12	7.27E-03	4.69E-02	1.50E-02	SA05	3.98E-02	YES
URANIUM-238	U-238 SOL	pci/g	12 : 12	1.42E-01	1.37E+00	4.92E-01	SA05	1.80E-01	YES
SVOC									

Table 5-12
Summary of SRCs Detected in Soil That Exceed Direct Contact Comparison Levels (a)
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
SW 846 8270									
Benzo(a)pyrene	50-32-8	mg/kg	2 : 116	4.50E-02	7.90E-02	6.20E-02	SA09	2.11E-02	YES
Hexachlorobenzene	118-74-1	mg/kg	6 : 116	5.30E-02	5.75E-01	1.96E-01	SA11	1.08E-01	YES
TPH									
SW 846 8015B DRO									
Oil Range Organics	TPH-MOTOR	mg/kg	6 : 87	4.00E+00	1.01E+02	1.65E+01	SA26	1.00E+01	YES
Total petroleum hydrocarbon-diesel	TPH-diesel	mg/kg	2 : 87	5.10E+00	3.60E+03	5.61E+01	SA08	1.00E+01	YES
VOC									
SW 846 8260									
Benzene	71-43-2	mg/kg	12 : 116	1.90E-04	4.10E+00	6.07E-02	SA09	1.41E-01	YES
Chloroform	67-66-3	mg/kg	52 : 116	1.80E-04	6.80E+00	1.53E-01	SA14	4.70E-02	YES

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
Total TEQs calculated by ENSR assuming a vaue of 1/2 the detection limit for non-detected results and using the 2006 toxic equivalency factors (van den Berg, et al. 2006).
(a) Only chemicals with at least one positively detected result that exceed their comparison value are reported.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Minimum detected concentration for each chemical, after duplicates have been averaged.
(d) Maximum detected concentration for each chemical, after duplicates have been averaged.
(e) Arithmetic mean concentration for each chemical, after duplicates have been averaged and any non detected results with a sample quantitation limit greater than the maximum detected concentration have been excluded.
(f) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.

Table 5-13
Toxic Equivalency Factors for Dioxins and Furans
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Chemical Type	Chemical Name	1998 TEFs	2006 TEFs
Dioxins	1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	0.01	0.01
	1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	0.1	0.1
	1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	0.1	0.1
	1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	0.1	0.1
	1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	1	1
	2,3,7,8-TCDD	1	1
	OCDD	0.0001	0.0003
Furans	1,2,3,4,6,7,8-HpCDF	0.01	0.01
	1,2,3,4,7,8,9-HpCDF	0.01	0.01
	1,2,3,4,7,8-HxCDF	0.1	0.1
	1,2,3,6,7,8-HxCDF	0.1	0.1
	1,2,3,7,8,9-HxCDF	0.1	0.1
	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.03
	2,3,4,6,7,8-HxCDF	0.1	0.1
	2,3,4,7,8-PeCDF	0.5	0.3
	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.1
	OCDF	0.0001	0.0003

Notes:
TEF - Toxic Equivalency Factor
1998 TEFs - van de Berg, et al. 1998.
2006 TEFs - van den Berg, et al. 2006.

Table 5-14
Dioxin Toxic Equivalent Concentration Results for Soil
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

		Dioxin TEQ Values (ng/kg)			
		Laboratory Calculated (1998 TEFs) (a)		Re-Calculated (2006 TEFs) (b)	
Location	**Sample**	**8290 Screening Data**	**SW 846 8290 Full Scan Data**	**8290 Screening Data**	**SW 846 8290 Full Scan Data**
SA01	SA1-0.5	1.3		1.21	
SA10	SA10-0.5	0.149		0.15	
SA11	SA11-0.5	11.535		10.30	
SA12	SA12-0.5	0.0871		0.11	
SA13	SA13-0.5	0.0055335		0.10	
SA14	SA14-0.5	4.64		4.27	
SA15	SA15-0.5	1100	903	983	803
SA16	SA16-0.5	1290	976	1,149	894
SA17	SA17-0.5	14.85		13.66	
SA18	SA18-0.5	456.165	0.808	3.39	0.82
SA19	SA19-0.5	319	291	288	268
SA02	SA2-0.5	2.94		2.58	
SA20	SA20-0.5	0.248		0.31	
SA21	SA21-0.5	2.61		2.42	
SA22	SA22-0.5	0.473		0.47	
SA23	SA23-0.5	457	376	409	330
SA24	SA24-0.5	0.134		0.18	
SA25	SA25-0.5	304	253	271	217
SA26	SA26-0.5	0.552		0.54	
SA27	SA27-0.5	6.06		5.37	
SA03	SA3-0.5	163.5		149.01	
SA04	SA4-0.5	48.9		42.50	
SA05	SA5-0.5	17.1		15.09	
SA06	SA6-0.5	0.6685		0.72	
SA07	SA7-0.5	214	185	192	169
SA08	SA8-0.5	0.0128		0.063	
SA09	SA9-0.5	8.01		7.18	

Notes:
TEF - Toxicity Equivalency Factor.
TEQ - Toxic Equivalent Concentration.
1998 TEFs - van den Berg, et al. 1998.
2006 TEFs - van den Berg, et al. 2006.
(a) - Calculated assuming 0 for for congeners not detected.
(b) - Calculated assuming 1/2 detection limit as proxy for congeners not detected.

Table 5-15

Comparison of SRC Concentrations Determined Not to be Consistent with Background to Direct Contact Comparison Levels

Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

Sample ID	Evaluation Area	Concentration (mg/kg)	Direct Contact Comparison Level (mg/kg) (a)	>CL?
Arsenic				
SA04-0.5	EA09	13.4	0.159	Y
SA04-10	EA09	11.3	0.159	Y
SA09-0.5	EA07	17	0.159	Y
SA17-0.5	EA08	29.55	0.159	Y
Chromium				
SA7-0.5	EA08	18.5	44.8	N
SA11-10	EA06	23.3	44.8	N
SA17-0.5	EA08	63.25	44.8	Y
SA17-10	EA08	23.2	44.8	N
Lead				
SA2-0.5	EA10	112	80	Y
SA5-0.5	EA09	24.2	80	N
SA7-0.5	EA08	32.5	80	N
SA9-0.5	EA07	305	80	Y
SA17-0.5	EA08	32.45	80	N
Manganese				
SA7-0.5	EA08	1290	1950	N
SA9-0.5	EA07	6660	1950	Y
SA13-0.5	EA08	2000	1950	Y

Notes:
Y - Yes
N - No
CL - Comparison Level
EA - Evaluation Area
(a) See Table 5-2.

Table 5-16
Asbestos Risk Calulations for Construction Worker
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte	Asbestos Concentration (b) (s/gPM_{10})	Inhalation Unit Risk Factor (a) (per s/m^3)	Excess Lifetime Cancer Risk - Inhalation (c)
Amphibole - Long Structures			
EA01	ND	6.32E-06	NA
EA02	ND	6.32E-06	NA
EA03	ND	6.32E-06	NA
EA04	ND	6.32E-06	NA
EA05	1.01E+07	6.32E-06	1.27E-04
EA06	5.99E+06	6.32E-06	7.56E-05
EA07	2.99E+06	6.32E-06	3.77E-05
EA08	3.00E+06	6.32E-06	3.78E-05
EA09	7.97E+06	6.32E-06	1.01E-04
EA10	ND	6.32E-06	NA
Chrysotile - Long Structures			
EA01	ND	5.69E-08	NA
EA02	ND	5.69E-08	NA
EA03	ND	5.69E-08	NA
EA04	ND	5.69E-08	NA
EA05	1.01E+07	5.69E-08	1.14E-06
EA06	1.48E+07	5.69E-08	1.68E-06
EA07	1.20E+07	5.69E-08	1.36E-06
EA08	5.99E+06	5.69E-08	6.81E-07
EA09	3.83E+07	5.69E-08	4.35E-06
EA10	ND	5.69E-08	NA

Notes:
NA - Not Applicable.
ND - Not Detected.
s/gPM_{10} - protocol structures per gram PM_{10}
s/m^3 - protocol structures per m^3 of air
USEPA - United States Environmental Protection Agency.
USEPA, 2003. Technical Support Document for a Protocol to Assess Asbestos-Related Risk. Final Draft. Office of Solid Waste and Emergency Response. EPA# 9345.4-06. October, 2003.
(a) USEPA, 2003. Chrysotile and Amphibole inhalation unit risk factors calculated using the following formula:
$URF_{2003} = (1/10)(R_{Avg})$
Where:
R Avg = 0.5(0.786(NSM+NSF)+0.214(SM+SF)).
NSM = Non-Smoker Male. Equal to the expected values (Table 8-2).
NSF = Non-Smoker Female. Equal to the expected values (Table 8-2).
SM = Smoker Male. Equal to the expected values (Table 8-2).
SF = Smoker Female. Equal to the expected values (Table 8-2).
(b) Maximum concentration for Long Chrysotile and Long Amphibole Protocol Structures (structures/gram PM_{10}) in each evaluation area.
(c) USEPA, 2003. Asbestos risk calculated using the following equation:

Table 5-17
Phase A Boring Locations by Evaluation Area (EA)
Phase A Source Area Investigation
Tronox Facility - Henderson, Nevada

EA	Boring Location
EA01	SA27
	SA25
EA02	SA24
	SA26
EA03	SA22
EA04	SA21
EA05	SA18
	SA19
	SA20
	SA23
EA06	SA15
	SA16
	SA11
	SA12
EA07	SA09
	SA10
	SA14
EA08	SA07
	SA08
	SA13
	SA17
EA09	SA03
	SA04
	SA05
	SA06
EA10	SA02
EA11	--

Notes:
EA - Evaluation Area.

Table 5-18
EA01 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is 0-10 ft bgs Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	Evaluate in Phase B	Note
SA25-20	Metals	Arsenic	2.07E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA27-10	Metals	Arsenic	4.60E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA27-0.5	Metals	Arsenic	2.30E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA27-20	Metals	Arsenic	7.00E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA25-0.5	Metals	Arsenic	2.90E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA25-10	Metals	Arsenic	4.90E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA25-15	Metals	Arsenic	8.80E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA27-20	Perchlorate	Perchlorate	1.60E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA25-0.5	RAD	Ra-226	1.21E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA25-15	RAD	Ra-226	1.69E+00	2.60E-03	pci/g	Yes	No		Yes		
SA25-20	RAD	Ra-226	1.63E+00	2.60E-03	pci/g	Yes	No		Yes		
SA27-10	RAD	Ra-226	1.23E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA27-0.5	RAD	Ra-226	9.85E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA27-20	RAD	Ra-226	1.11E+00	2.60E-03	pci/g	Yes	No		Yes		
SA25-10	RAD	Ra-226	1.19E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA25-20	RAD	Ra-228	1.35E+00	1.50E-02	pci/g	Yes	No		Yes		
SA27-20	RAD	Ra-228	1.42E+00	1.50E-02	pci/g	Yes	No		Yes		
SA25-0.5	RAD	Ra-228	2.03E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA27-0.5	RAD	Ra-228	1.87E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA27-10	RAD	Ra-228	1.84E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA25-15	RAD	Ra-228	1.60E+00	1.50E-02	pci/g	Yes	No		Yes		
SA25-10	RAD	Ra-228	1.61E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA25-0.5	TPH	Oil Range Organics	2.60E+01	1.00E+01	mg/kg	Yes	Yes	NA	Yes		(e)
SA25-20	VOC	Benzene	9.30E-01	1.41E-01	mg/kg	Yes	No		Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	Yes		(f)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
TPH - Total Petroleum Hydrocarbons.
VOC - Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Concentration less than NDEP 100 mg/kg action level. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-19
EA02 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	Evaluate in Phase B	Note
SA24-20	Metals	Arsenic	7.90E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA24-10	Metals	Arsenic	5.00E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA26-0.5	Metals	Arsenic	3.40E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA26-10	Metals	Arsenic	5.80E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA24-25	Metals	Arsenic	5.70E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA24-0.5	Metals	Arsenic	2.10E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA26-0.5	Perchlorate	Perchlorate	2.06E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA26-10	Perchlorate	Perchlorate	3.23E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA26-0.5	RAD	Ra-226	1.11E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA24-0.5	RAD	Ra-226	9.65E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA24-25	RAD	Ra-226	1.59E+00	2.60E-03	pci/g	Yes	No		Yes		
SA24-20	RAD	Ra-226	1.40E+00	2.60E-03	pci/g	Yes	No		Yes		
SA24-10	RAD	Ra-226	1.08E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA26-10	RAD	Ra-226	1.33E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA24-10	RAD	Ra-228	1.73E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA24-0.5	RAD	Ra-228	1.79E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA26-10	RAD	Ra-228	1.82E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA26-0.5	RAD	Ra-228	1.85E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA24-25	RAD	Ra-228	1.68E+00	1.50E-02	pci/g	Yes	No		Yes		
SA24-20	RAD	Ra-228	1.65E+00	1.50E-02	pci/g	Yes	No		Yes		
SA26-0.5	RAD	Th-228	7.90E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA26-0.5	TPH	Oil Range Organics	1.01E+02	1.00E+01	mg/kg	Yes	Yes	No	Yes		(e)
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	Yes		(f)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
TPH - Total Petroleum Hydrocarbons.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Concentration less than NDEP 100 mg/kg action level. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-20
EA03 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA22-10	Metals	Arsenic	5.80E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA22-20	Metals	Arsenic	2.68E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA22-0.5	Metals	Arsenic	3.10E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA22-20	Perchlorate	Perchlorate	6.04E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA22-20	RAD	Ra-226	2.28E+00	2.60E-03	pci/g	Yes	No		Yes		
SA22-0.5	RAD	Ra-226	1.01E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA22-10	RAD	Ra-226	1.37E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA22-0.5	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA22-10	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA22-20	RAD	Ra-228	1.99E+00	1.50E-02	pci/g	Yes	No		Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	Yes		(e)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Concentration less than NDEP 100 mg/kg action level. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-21
EA04 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA21-10	Metals	Arsenic	4.60E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA21-20	Metals	Arsenic	4.25E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA21-0.5	Metals	Arsenic	2.40E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA21-30	Metals	Arsenic	1.05E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA21-30	RAD	Ra-226	1.48E+00	2.60E-03	pci/g	Yes	No		Yes		
SA21-0.5	RAD	Ra-226	1.15E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA21-20	RAD	Ra-226	1.84E+00	2.60E-03	pci/g	Yes	No		Yes		
SA21-0.5	RAD	Ra-228	1.81E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA21-10	RAD	Ra-228	2.00E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA21-30	RAD	Ra-228	1.87E+00	1.50E-02	pci/g	Yes	No		Yes		
SA21-20	RAD	Ra-228	1.80E+00	1.50E-02	pci/g	Yes	No		Yes		
SA21-0.5	RAD	Th-228	9.54E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA21-0.5	RAD	URANIUM-238	2.37E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	Yes		(e)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Concentration less than NDEP 100 mg/kg action level. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-22
EA05 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA19-20	Metals	Arsenic	1.47E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA20-20	Metals	Arsenic	8.80E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA23-0.5	Metals	Arsenic	2.60E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA18-20	Metals	Arsenic	4.50E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA18-0.5	Metals	Arsenic	2.60E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA20-10	Metals	Arsenic	2.30E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA20-0.5	Metals	Arsenic	2.90E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA19-25	Metals	Arsenic	1.60E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA19-0.5	Metals	Arsenic	2.20E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA23-20	Metals	Arsenic	1.35E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA23-10	Metals	Arsenic	3.00E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA19-10	Metals	Arsenic	3.90E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA18-30	Metals	Arsenic	4.60E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA20-25	Metals	Arsenic	1.41E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA18-10	Metals	Arsenic	4.00E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA19-10	Metals	CR, Hexavalent	9.00E+00	6.41E+00	mg/kg	Yes	Yes	No	Yes	Cr, Hexavalent	
SA19-0.5	Perchlorate	Perchlorate	2.17E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA23-20	Perchlorate	Perchlorate	3.88E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA19-10	Perchlorate	Perchlorate	6.77E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA19-20	Perchlorate	Perchlorate	8.61E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA19-25	Perchlorate	Perchlorate	4.72E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA20-25	Perchlorate	Perchlorate	5.76E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA20-20	Perchlorate	Perchlorate	6.02E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA18-30	RAD	Ra-226	2.47E+00	2.60E-03	pci/g	Yes	No		Yes		
SA19-10	RAD	Ra-226	1.43E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA19-0.5	RAD	Ra-226	1.16E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA23-20	RAD	Ra-226	1.73E+00	2.60E-03	pci/g	Yes	No		Yes		
SA19-20	RAD	Ra-226	1.76E+00	2.60E-03	pci/g	Yes	No		Yes		
SA20-10	RAD	Ra-226	1.31E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA20-20	RAD	Ra-226	1.47E+00	2.60E-03	pci/g	Yes	No		Yes		
SA19-25	RAD	Ra-226	1.57E+00	2.60E-03	pci/g	Yes	No		Yes		
SA20-25	RAD	Ra-226	1.52E+00	2.60E-03	pci/g	Yes	No		Yes		
SA18-0.5	RAD	Ra-226	1.13E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA20-0.5	RAD	Ra-226	9.32E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA18-20	RAD	Ra-226	1.80E+00	2.60E-03	pci/g	Yes	No		Yes		
SA23-10	RAD	Ra-226	1.18E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA23-0.5	RAD	Ra-226	1.11E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA18-10	RAD	Ra-226	1.25E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		

Table 5-22
EA05 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA20-0.5	RAD	Ra-228	1.72E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA20-10	RAD	Ra-228	1.63E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA19-0.5	RAD	Ra-228	2.00E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA19-10	RAD	Ra-228	1.63E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA19-20	RAD	Ra-228	1.70E+00	1.50E-02	pci/g	Yes	No		Yes		
SA18-30	RAD	Ra-228	1.99E+00	1.50E-02	pci/g	Yes	No		Yes		
SA18-0.5	RAD	Ra-228	1.86E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA18-10	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA23-0.5	RAD	Ra-228	2.06E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA19-25	RAD	Ra-228	1.38E+00	1.50E-02	pci/g	Yes	No		Yes		
SA20-25	RAD	Ra-228	1.82E+00	1.50E-02	pci/g	Yes	No		Yes		
SA18-20	RAD	Ra-228	1.83E+00	1.50E-02	pci/g	Yes	No		Yes		
SA20-20	RAD	Ra-228	1.76E+00	1.50E-02	pci/g	Yes	No		Yes		
SA23-20	RAD	Ra-228	1.47E+00	1.50E-02	pci/g	Yes	No		Yes		
SA18-0.5	RAD	Th-228	6.22E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA18-0.5	RAD	URANIUM-238	2.88E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	(e)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
TPH - Total Petroleum Hydrocarbons.
VOC - Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) See Appendix J and Table 5-16.

Table 5-23
EA06 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA11-20	Metals	Arsenic	4.60E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA12-10	Metals	Arsenic	2.60E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA12-20	Metals	Arsenic	7.40E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA16-0.5	Metals	Arsenic	2.50E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA11-30	Metals	Arsenic	2.03E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA12-0.5	Metals	Arsenic	2.90E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA12-30	Metals	Arsenic	2.13E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA16-20	Metals	Arsenic	5.60E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA11-10	Metals	Arsenic	3.80E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA16-30	Metals	Arsenic	2.48E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA16-10	Metals	Arsenic	4.30E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA15-30	Metals	Arsenic	2.04E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA11-0.5	Metals	Arsenic	2.80E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA15-20	Metals	Arsenic	1.14E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA15-10	Metals	Arsenic	4.75E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA15-0.5	Metals	Arsenic	2.50E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA15-35	Metals	Arsenic	1.62E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA16-30	Metals	CR, Hexavalent	9.30E+00	6.41E+00	mg/kg	Yes	No		Yes		
SA11-10	Metals	CR, Hexavalent	1.18E+01	6.41E+00	mg/kg	Yes	Yes	No	No	Cr, Hexavalent	
SA15-10	Perchlorate	Perchlorate	1.19E+03	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA16-30	Perchlorate	Perchlorate	1.86E+03	1.00E+01	mg/kg	Yes	No		Yes		
SA15-35	Perchlorate	Perchlorate	2.04E+02	1.00E+01	mg/kg	Yes	No		Yes		
SA15-0.5	Perchlorate	Perchlorate	1.13E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA15-20	Perchlorate	Perchlorate	9.43E+02	1.00E+01	mg/kg	Yes	No		Yes		
SA11-20	Perchlorate	Perchlorate	2.10E+02	1.00E+01	mg/kg	Yes	No		Yes		
SA12-30	Perchlorate	Perchlorate	1.84E+02	1.00E+01	mg/kg	Yes	No		Yes		
SA11-0.5	Perchlorate	Perchlorate	6.75E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA11-10	Perchlorate	Perchlorate	2.04E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA15-30	Perchlorate	Perchlorate	2.33E+03	1.00E+01	mg/kg	Yes	No		Yes		
SA11-30	Perchlorate	Perchlorate	5.69E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA16-10	RAD	Ra-226	1.07E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA16-20	RAD	Ra-226	1.85E+00	2.60E-03	pci/g	Yes	No		Yes		
SA11-10	RAD	Ra-226	1.70E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA11-20	RAD	Ra-226	1.06E+00	2.60E-03	pci/g	Yes	No		Yes		
SA16-0.5	RAD	Ra-226	1.16E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA11-0.5	RAD	Ra-226	9.26E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA11-30	RAD	Ra-226	2.49E+00	2.60E-03	pci/g	Yes	No		Yes		
SA15-30	RAD	Ra-226	1.91E+00	2.60E-03	pci/g	Yes	No		Yes		
SA15-10	RAD	Ra-226	1.21E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA15-35	RAD	Ra-226	1.54E+00	2.60E-03	pci/g	Yes	No		Yes		
SA12-10	RAD	Ra-226	9.80E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA12-30	RAD	Ra-226	1.44E+00	2.60E-03	pci/g	Yes	No		Yes		
SA12-0.5	RAD	Ra-226	1.16E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA12-20	RAD	Ra-226	1.84E+00	2.60E-03	pci/g	Yes	No		Yes		
SA15-20	RAD	Ra-226	1.43E+00	2.60E-03	pci/g	Yes	No		Yes		
SA15-0.5	RAD	Ra-226	1.19E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA16-30	RAD	Ra-226	1.71E+00	2.60E-03	pci/g	Yes	No		Yes		
SA11-20	RAD	Ra-228	1.68E+00	1.50E-02	pci/g	Yes	No		Yes		
SA12-0.5	RAD	Ra-228	1.79E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA12-10	RAD	Ra-228	1.83E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA12-30	RAD	Ra-228	1.03E+00	1.50E-02	pci/g	Yes	No		Yes		
SA11-10	RAD	Ra-228	1.95E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA12-20	RAD	Ra-228	2.01E+00	1.50E-02	pci/g	Yes	No		Yes		

Table 5-23
EA06 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA11-30	RAD	Ra-228	1.17E+00	1.50E-02	pci/g	Yes	No		Yes		
SA15-10	RAD	Ra-228	1.90E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA15-20	RAD	Ra-228	1.84E+00	1.50E-02	pci/g	Yes	No		Yes		
SA15-0.5	RAD	Ra-228	2.11E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA11-0.5	RAD	Ra-228	1.84E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA16-20	RAD	Ra-228	2.07E+00	1.50E-02	pci/g	Yes	No		Yes		
SA16-10	RAD	Ra-228	1.50E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA15-30	RAD	Ra-228	7.77E-01	1.50E-02	pci/g	Yes	No		Yes		
SA16-0.5	RAD	Ra-228	1.92E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA15-35	RAD	Ra-228	8.52E-01	1.50E-02	pci/g	Yes	No		Yes		
SA16-30	RAD	Ra-228	1.17E+00	1.50E-02	pci/g	Yes	No		Yes		
SA15-10	RAD	Th-228	8.24E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA11-10	RAD	Th-228	6.63E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA11-10	RAD	URANIUM-238	3.70E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
SA15-10	RAD	URANIUM-238	3.84E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
SA15-0.5	SVOC	Hexachlorobenzene	3.10E-01	1.08E-01	mg/kg	Yes	Yes	No	No	Hexachlorobenzene	
SA15-10	SVOC	Hexachlorobenzene	1.78E-01	1.08E-01	mg/kg	Yes	Yes	No	No	Hexachlorobenzene	
SA11-0.5	SVOC	Hexachlorobenzene	5.75E-01	1.08E-01	mg/kg	Yes	Yes	No	No	Hexachlorobenzene	
SA11-0.5	TPH	Oil Range Organics	5.00E+01	1.00E+01	mg/kg	Yes	Yes	No	Yes		(e)
SA11-20	VOC	Chloroform	4.80E-02	4.70E-02	mg/kg	Yes	No		Yes		
SA16-30	VOC	Chloroform	2.40E-01	4.70E-02	mg/kg	Yes	No		Yes		
SA11-0.5	VOC	Chloroform	1.40E-01	4.70E-02	mg/kg	Yes	Yes	No	No	Chloroform	
SA12-30	VOC	Chloroform	5.60E-02	4.70E-02	mg/kg	Yes	No		Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	(f)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
TPH - Total Petroleum Hydrocarbons.
VOC - Volatile Organic Compound.
SVOC - Semi-Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Concentration less than NDEP 100 mg/kg action level. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-24
EA07 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA14-30	Metals	Arsenic	2.37E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA14-10	Metals	Arsenic	2.20E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA10-10	Metals	Arsenic	3.35E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA9-30	Metals	Arsenic	2.47E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA9-40	Metals	Arsenic	1.71E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA9-0.5	Metals	Arsenic	1.70E+01	1.59E-01	mg/kg	Yes	Yes	No	No	Arsenic	
SA9-10	Metals	Arsenic	3.65E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA9-20	Metals	Arsenic	1.80E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA10-30	Metals	Arsenic	2.53E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA10-0.5	Metals	Arsenic	2.50E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA10-40	Metals	Arsenic	2.14E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA14-0.5	Metals	Arsenic	2.00E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA10-20	Metals	Arsenic	1.29E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA14-20	Metals	Arsenic	3.70E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA14-40	Metals	Arsenic	1.46E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA9-0.5	Metals	Lead	3.05E+02	8.00E+01	mg/kg	Yes	Yes	No	No	Lead	
SA9-0.5	Metals	Manganese	6.66E+03	1.95E+03	mg/kg	Yes	Yes	No	No	Manganese	
SA9-0.5	Perchlorate	Perchlorate	3.55E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA9-0.5	Pesticide	Beta-BHC	1.30E+00	1.26E-01	mg/kg	Yes	Yes	No	No	Beta-BHC	
SA14-20	RAD	Ra-226	1.35E+00	2.60E-03	pci/g	Yes	No		Yes		
SA10-30	RAD	Ra-226	1.40E+00	2.60E-03	pci/g	Yes	No		Yes		
SA10-0.5	RAD	Ra-226	1.10E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA10-20	RAD	Ra-226	1.31E+00	2.60E-03	pci/g	Yes	No		Yes		
SA10-10	RAD	Ra-226	8.69E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA10-40	RAD	Ra-226	1.58E+00	2.60E-03	pci/g	Yes	No		Yes		
SA9-40	RAD	Ra-226	2.11E+00	2.60E-03	pci/g	Yes	No		Yes		
SA9-20	RAD	Ra-226	1.62E+00	2.60E-03	pci/g	Yes	No		Yes		
SA9-10	RAD	Ra-226	1.13E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA9-0.5	RAD	Ra-226	1.02E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA9-30	RAD	Ra-226	2.33E+00	2.60E-03	pci/g	Yes	No		Yes		
SA14-0.5	RAD	Ra-226	1.07E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA14-40	RAD	Ra-226	1.18E+00	2.60E-03	pci/g	Yes	No		Yes		
SA14-30	RAD	Ra-226	1.47E+00	2.60E-03	pci/g	Yes	No		Yes		
SA14-20	RAD	Ra-228	1.82E+00	1.50E-02	pci/g	Yes	No		Yes		
SA10-0.5	RAD	Ra-228	1.81E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA9-40	RAD	Ra-228	1.72E+00	1.50E-02	pci/g	Yes	No		Yes		
SA10-20	RAD	Ra-228	8.12E-01	1.50E-02	pci/g	Yes	No		Yes		
SA9-10	RAD	Ra-228	1.69E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA9-20	RAD	Ra-228	1.47E+00	1.50E-02	pci/g	Yes	No		Yes		
SA9-30	RAD	Ra-228	8.92E-01	1.50E-02	pci/g	Yes	No		Yes		

Table 5-24
EA07 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA9-0.5	RAD	Ra-228	1.64E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA10-10	RAD	Ra-228	1.65E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA14-0.5	RAD	Ra-228	1.85E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA14-10	RAD	Ra-228	1.93E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA10-30	RAD	Ra-228	1.14E+00	1.50E-02	pci/g	Yes	No		Yes		
SA14-30	RAD	Ra-228	1.38E+00	1.50E-02	pci/g	Yes	No		Yes		
SA14-40	RAD	Ra-228	6.76E-01	1.50E-02	pci/g	Yes	No		Yes		
SA10-40	RAD	Ra-228	1.42E+00	1.50E-02	pci/g	Yes	No		Yes		
SA9-10	SVOC	Benzo(a)pyrene	4.50E-02	2.11E-02	mg/kg	Yes	Yes	No	Yes		(e)
SA9-20	SVOC	Benzo(a)pyrene	7.90E-02	2.11E-02	mg/kg	Yes	No		Yes		
SA14-40	VOC	Benzene	1.70E+00	1.41E-01	mg/kg	Yes	No		Yes		
SA9-40	VOC	Benzene	4.10E+00	1.41E-01	mg/kg	Yes	No		Yes		
SA14-40	VOC	Chloroform	6.80E+00	4.70E-02	mg/kg	Yes	No		Yes		
SA10-40	VOC	Chloroform	9.30E-02	4.70E-02	mg/kg	Yes	No		Yes		
SA10-30	VOC	Chloroform	1.70E-01	4.70E-02	mg/kg	Yes	No		Yes		
SA9-30	VOC	Chloroform	1.90E+00	4.70E-02	mg/kg	Yes	No		Yes		
SA9-40	VOC	Chloroform	5.40E+00	4.70E-02	mg/kg	Yes	No		Yes		
SA14-30	VOC	Chloroform	2.30E+00	4.70E-02	mg/kg	Yes	No		Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	(f)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
VOC - Volatile Organic Compound.
SVOC - Semi-Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Sample results are less than 10-fold higher than the comparison level, which is 1/10 the industrial soil PRG. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-25
EA08 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA13-20	Metals	Arsenic	3.20E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA17-20	Metals	Arsenic	1.30E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA8-10	Metals	Arsenic	2.50E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA8-37	Metals	Arsenic	4.43E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA8-20	Metals	Arsenic	3.40E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA8-30	Metals	Arsenic	3.70E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA7-34	Metals	Arsenic	2.43E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA8-0.5	Metals	Arsenic	1.80E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA7-30	Metals	Arsenic	4.80E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA13-10	Metals	Arsenic	2.10E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA13-0.5	Metals	Arsenic	2.20E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA7-10	Metals	Arsenic	2.40E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA17-0.5	Metals	Arsenic	2.96E+01	1.59E-01	mg/kg	Yes	Yes	No	No	Arsenic	
SA7-20	Metals	Arsenic	3.30E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA13-40	Metals	Arsenic	3.64E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA7-0.5	Metals	Arsenic	5.50E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA13-30	Metals	Arsenic	3.10E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA17-10	Metals	Arsenic	4.20E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA17-25	Metals	Arsenic	1.37E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA17-0.5	Metals	Chromium	6.33E+01	4.48E+01	mg/kg	Yes	Yes	No	Yes		(e)
SA13-0.5	Metals	Manganese	2.00E+03	1.95E+03	mg/kg	Yes	Yes	No	No	Manganese	
SA7-10	Perchlorate	Perchlorate	1.11E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA17-25	Perchlorate	Perchlorate	1.35E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA7-0.5	Perchlorate	Perchlorate	3.43E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA7-20	Perchlorate	Perchlorate	1.28E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA8-0.5	Perchlorate	Perchlorate	1.75E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA7-34	Perchlorate	Perchlorate	3.17E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA8-37	Perchlorate	Perchlorate	1.21E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA7-20	RAD	Ra-226	1.28E+00	2.60E-03	pci/g	Yes	No		Yes		
SA13-10	RAD	Ra-226	1.14E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA13-40	RAD	Ra-226	1.79E+00	2.60E-03	pci/g	Yes	No		Yes		
SA7-0.5	RAD	Ra-226	1.12E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA8-20	RAD	Ra-226	1.00E+00	2.60E-03	pci/g	Yes	No		Yes		
SA7-30	RAD	Ra-226	1.79E+00	2.60E-03	pci/g	Yes	No		Yes		
SA8-10	RAD	Ra-226	1.08E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA8-0.5	RAD	Ra-226	1.07E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA7-34	RAD	Ra-226	7.49E+00	2.60E-03	pci/g	Yes	No		Yes		
SA7-10	RAD	Ra-226	9.80E-01	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA8-30	RAD	Ra-226	1.34E+00	2.60E-03	pci/g	Yes	No		Yes		
SA13-30	RAD	Ra-226	1.73E+00	2.60E-03	pci/g	Yes	No		Yes		
SA17-10	RAD	Ra-226	1.20E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA17-20	RAD	Ra-226	1.80E+00	2.60E-03	pci/g	Yes	No		Yes		
SA13-0.5	RAD	Ra-226	1.09E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA17-25	RAD	Ra-226	1.81E+00	2.60E-03	pci/g	Yes	No		Yes		

Table 5-25
EA08 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA8-37	RAD	Ra-226	3.16E+00	2.60E-03	pci/g	Yes	No		Yes		
SA13-20	RAD	Ra-226	1.27E+00	2.60E-03	pci/g	Yes	No		Yes		
SA17-0.5	RAD	Ra-226	1.12E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA7-0.5	RAD	Ra-228	1.83E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA13-0.5	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA7-20	RAD	Ra-228	1.57E+00	1.50E-02	pci/g	Yes	No		Yes		
SA13-10	RAD	Ra-228	2.05E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA13-40	RAD	Ra-228	1.61E+00	1.50E-02	pci/g	Yes	No		Yes		
SA8-0.5	RAD	Ra-228	1.76E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA7-30	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	No		Yes		
SA8-30	RAD	Ra-228	1.85E+00	1.50E-02	pci/g	Yes	No		Yes		
SA7-34	RAD	Ra-228	8.05E-01	1.50E-02	pci/g	Yes	No		Yes		
SA8-20	RAD	Ra-228	1.88E+00	1.50E-02	pci/g	Yes	No		Yes		
SA17-25	RAD	Ra-228	1.32E+00	1.50E-02	pci/g	Yes	No		Yes		
SA13-30	RAD	Ra-228	1.88E+00	1.50E-02	pci/g	Yes	No		Yes		
SA13-20	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	No		Yes		
SA17-10	RAD	Ra-228	1.55E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA17-0.5	RAD	Ra-228	1.78E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA17-20	RAD	Ra-228	1.99E+00	1.50E-02	pci/g	Yes	No		Yes		
SA7-10	RAD	Ra-228	1.84E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA7-20	RAD	Th-228	4.88E-01	2.55E-02	pci/g	Yes	No		Yes		
SA13-40	RAD	Th-228	6.59E-01	2.55E-02	pci/g	Yes	No		Yes		
SA13-40	RAD	URANIUM-238	8.13E-01	1.80E-01	pci/g	Yes	No		Yes		
SA7-20	RAD	URANIUM-238	4.93E-01	1.80E-01	pci/g	Yes	No		Yes		
SA8-0.5	TPH	Total petroleum hydrocarbon-diesel	3.60E+03	1.00E+01	mg/kg	Yes	Yes	No	Yes		(f)
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	(g)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
SVOC - Semi-Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Sample results are less than 10-fold higher than the comparison level, which is 1/10 the industrial soil PRG. See Table 5-2. Note hexavalent chromium will be analyzed in this area in Phase B to address potential source areas.
(f) Sample collected under asphalt; no other total petroleum hydrocarbon indicators (ex: benzene, toluene, ethylbenzene, xylene, polycyclic aromatic hydrocarbons) were detected, or were detected at concentrations well below their respective comparison levels.
(g) See Appendix J and Table 5-16.

Table 5-26
EA09 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is 0-10 ft bgs Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA4-10	Metals	Arsenic	1.13E+01	1.59E-01	mg/kg	Yes	Yes	No	No	Arsenic	
SA3-0.5	Metals	Arsenic	3.20E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA3-10	Metals	Arsenic	3.00E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA4-0.5	Metals	Arsenic	1.34E+01	1.59E-01	mg/kg	Yes	Yes	No	No	Arsenic	
SA5-0.5	Metals	Arsenic	3.20E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA5-10	Metals	Arsenic	2.70E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA6-0.5	Metals	Arsenic	2.75E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA3-20	Metals	Arsenic	3.50E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA3-30	Metals	Arsenic	6.16E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA3-40	Metals	Arsenic	2.77E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA4-20	Metals	Arsenic	5.30E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA4-30	Metals	Arsenic	6.10E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA4-40	Metals	Arsenic	8.60E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA5-20	Metals	Arsenic	2.50E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA5-30	Metals	Arsenic	1.09E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA5-37	Metals	Arsenic	2.76E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA6-10	Metals	Arsenic	3.10E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA6-20	Metals	Arsenic	4.00E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA6-30	Metals	Arsenic	4.20E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA6-35	Metals	Arsenic	2.44E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA5-37	VOC	Chloroform	1.20E-01	4.70E-02	mg/kg	Yes	No		Yes		
SA5-30	Metals	CR, Hexavalent	8.40E+00	6.41E+00	mg/kg	Yes	No		Yes		
SA4-0.5	TPH	Oil Range Organics	4.30E+01	1.00E+01	mg/kg	Yes	Yes	No	Yes		(e)
SA3-10	Perchlorate	Perchlorate	1.02E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA5-0.5	Perchlorate	Perchlorate	1.49E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA5-10	Perchlorate	Perchlorate	1.12E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
SA4-30	Perchlorate	Perchlorate	4.28E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA4-40	Perchlorate	Perchlorate	7.39E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA5-20	Perchlorate	Perchlorate	6.64E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA5-30	Perchlorate	Perchlorate	1.91E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA5-37	Perchlorate	Perchlorate	3.75E+02	1.00E+01	mg/kg	Yes	No		Yes		
SA6-35	Perchlorate	Perchlorate	5.41E+01	1.00E+01	mg/kg	Yes	No		Yes		
SA3-0.5	RAD	Ra-226	1.06E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA3-10	RAD	Ra-226	1.01E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA4-0.5	RAD	Ra-226	1.10E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA4-10	RAD	Ra-226	1.13E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA5-0.5	RAD	Ra-226	1.12E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA5-10	RAD	Ra-226	1.07E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA6-0.5	RAD	Ra-226	1.25E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA6-10	RAD	Ra-226	1.07E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA3-20	RAD	Ra-226	1.19E+00	2.60E-03	pci/g	Yes	No		Yes		
SA3-30	RAD	Ra-226	1.59E+00	2.60E-03	pci/g	Yes	No		Yes		
SA3-40	RAD	Ra-226	2.34E+00	2.60E-03	pci/g	Yes	No		Yes		
SA4-20	RAD	Ra-226	1.19E+00	2.60E-03	pci/g	Yes	No		Yes		
SA4-30	RAD	Ra-226	1.45E+00	2.60E-03	pci/g	Yes	No		Yes		
SA4-40	RAD	Ra-226	1.60E+00	2.60E-03	pci/g	Yes	No		Yes		
SA5-20	RAD	Ra-226	1.10E+00	2.60E-03	pci/g	Yes	No		Yes		
SA5-30	RAD	Ra-226	2.29E+00	2.60E-03	pci/g	Yes	No		Yes		
SA5-37	RAD	Ra-226	2.46E+00	2.60E-03	pci/g	Yes	No		Yes		
SA6-20	RAD	Ra-226	1.21E+00	2.60E-03	pci/g	Yes	No		Yes		
SA6-30	RAD	Ra-226	1.49E+00	2.60E-03	pci/g	Yes	No		Yes		
SA6-35	RAD	Ra-226	2.10E+00	2.60E-03	pci/g	Yes	No		Yes		

Table 5-26
EA09 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is 0-10 ft bgs Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA3-0.5	RAD	Ra-228	1.46E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA3-10	RAD	Ra-228	1.65E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA4-0.5	RAD	Ra-228	1.83E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA4-10	RAD	Ra-228	1.81E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA5-0.5	RAD	Ra-228	1.92E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA5-10	RAD	Ra-228	1.66E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA6-0.5	RAD	Ra-228	1.88E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA6-10	RAD	Ra-228	1.80E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA3-20	RAD	Ra-228	1.66E+00	1.50E-02	pci/g	Yes	No		Yes		
SA4-20	RAD	Ra-228	1.53E+00	1.50E-02	pci/g	Yes	No		Yes		
SA4-30	RAD	Ra-228	1.91E+00	1.50E-02	pci/g	Yes	No		Yes		
SA4-40	RAD	Ra-228	1.90E+00	1.50E-02	pci/g	Yes	No		Yes		
SA5-20	RAD	Ra-228	1.52E+00	1.50E-02	pci/g	Yes	No		Yes		
SA5-30	RAD	Ra-228	1.68E+00	1.50E-02	pci/g	Yes	No		Yes		
SA5-37	RAD	Ra-228	8.06E-01	1.50E-02	pci/g	Yes	No		Yes		
SA6-20	RAD	Ra-228	1.63E+00	1.50E-02	pci/g	Yes	No		Yes		
SA6-30	RAD	Ra-228	1.94E+00	1.50E-02	pci/g	Yes	No		Yes		
SA3-10	RAD	Th-228	6.91E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA6-10	RAD	Th-228	6.01E-01	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA4-20	RAD	Th-228	5.11E-01	2.55E-02	pci/g	Yes	No		Yes		
SA5-30	RAD	Th-228	4.81E-01	2.55E-02	pci/g	Yes	No		Yes		
SA5-30	RAD	Th-230	2.23E+00	2.02E+00	pci/g	Yes	No		Yes		
SA5-30	RAD	URANIUM-235/236	4.69E-02	3.98E-02	pci/g	Yes	No		Yes		
SA3-10	RAD	URANIUM-238	2.92E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
SA6-10	RAD	URANIUM-238	4.83E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
SA4-20	RAD	URANIUM-238	8.33E-01	1.80E-01	pci/g	Yes	No		Yes		
SA5-30	RAD	URANIUM-238	1.37E+00	1.80E-01	pci/g	Yes	No		Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	(f)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
TPH - Total Petroleum Hydrocarbons.
VOC - Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) Concentration less than NDEP 100 mg/kg action level. See Table 5-2.
(f) See Appendix J and Table 5-16.

Table 5-27
EA10 - Soil Sample Results Greater than Comparison Levels for Direct Contact Pathways
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
SA2-0.5	Metals	Arsenic	1.80E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA2-10	Metals	Arsenic	3.50E+00	1.59E-01	mg/kg	Yes	Yes	Yes	Yes		
SA2-60	Metals	Arsenic	1.06E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA2-20	Metals	Arsenic	4.00E+00	1.59E-01	mg/kg	Yes	No		Yes		
SA2-40	Metals	Arsenic	1.89E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA2-30	Metals	Arsenic	2.35E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA2-50	Metals	Arsenic	2.68E+01	1.59E-01	mg/kg	Yes	No		Yes		
SA2-0.5	Metals	Lead	1.12E+02	8.00E+01	mg/kg	Yes	Yes	No	No	Lead	
SA2-40	RAD	Ra-226	1.34E+00	2.60E-03	pci/g	Yes	No		Yes		
SA2-60	RAD	Ra-226	2.64E+00	2.60E-03	pci/g	Yes	No		Yes		
SA2-0.5	RAD	Ra-226	1.02E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA2-50	RAD	Ra-226	1.30E+00	2.60E-03	pci/g	Yes	No		Yes		
SA2-10	RAD	Ra-226	1.17E+00	2.60E-03	pci/g	Yes	Yes	Yes	Yes		
SA2-30	RAD	Ra-226	3.39E+00	2.60E-03	pci/g	Yes	No		Yes		
SA2-20	RAD	Ra-226	1.15E+00	2.60E-03	pci/g	Yes	No		Yes		
SA2-0.5	RAD	Ra-228	1.97E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA2-10	RAD	Ra-228	1.56E+00	1.50E-02	pci/g	Yes	Yes	Yes	Yes		
SA2-20	RAD	Ra-228	1.95E+00	1.50E-02	pci/g	Yes	No		Yes		
SA2-50	RAD	Ra-228	1.39E+00	1.50E-02	pci/g	Yes	No		Yes		
SA2-40	RAD	Ra-228	1.72E+00	1.50E-02	pci/g	Yes	No		Yes		
SA2-60	RAD	Ra-228	1.54E+00	1.50E-02	pci/g	Yes	No		Yes		
SA2-0.5	RAD	Th-228	1.12E+00	2.55E-02	pci/g	Yes	Yes	Yes	Yes		
SA2-0.5	RAD	URANIUM-238	1.96E-01	1.80E-01	pci/g	Yes	Yes	Yes	Yes		
NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	Yes		(e)

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.
(e) See Appendix J and Table 5-16.

Table 5-28
Summary of SRCs Not Adequately Characterized by Evaluation Area
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

EA	Sample ID	Analyte Type	SRC	Concentration	Comparison Level (a)	Units	Is Concentration >Comparison Level?	Is Sample within 0-10 ft bgs? (b)	Is 0-10 ft bgs Sample Concentration Consistent with Background? (c)	Is Characterization Adequate for Direct Contact Pathways? (d)	SRCs to Evaluate in Phase B	Note
EA01											NA	
EA02	SA26-0.5	Perchlorate	Perchlorate	2.06E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA26-10	Perchlorate	Perchlorate	3.23E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
EA03											NA	
EA04											NA	
EA05	SA19-10	Metals	CR, Hexavalent	9.00E+00	6.41E+00	mg/kg	Yes	Yes	No	No	CR, Hexavalent	
	SA19-0.5	Perchlorate	Perchlorate	2.17E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA19-10	Perchlorate	Perchlorate	6.77E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	
EA06	SA11-10	Metals	CR, Hexavalent	1.18E+01	6.41E+00	mg/kg	Yes	Yes	No	No	CR, Hexavalent	
	SA15-10	Perchlorate	Perchlorate	1.19E+03	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA15-0.5	Perchlorate	Perchlorate	1.13E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA11-0.5	Perchlorate	Perchlorate	6.75E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA11-10	Perchlorate	Perchlorate	2.04E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA15-0.5	SVOC	Hexachlorobenzene	3.10E-01	1.08E-01	mg/kg	Yes	Yes	No	No	Hexachlorobenzene	
	SA15-10	SVOC	Hexachlorobenzene	1.78E-01	1.08E-01	mg/kg	Yes	Yes	No	No	Hexachlorobenzene	
	SA11-0.5	SVOC	Hexachlorobenzene	5.75E-01	1.08E-01	mg/kg	Yes	Yes	No	No	Hexachlorobenzene	
	SA11-0.5	VOC	Chloroform	1.40E-01	4.70E-02	mg/kg	Yes	Yes	No	No	Chloroform	
	NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	
EA07	SA9-0.5	Metals	Arsenic	1.70E+01	1.59E-01	mg/kg	No	Yes	No	No	Arsenic	
	SA9-0.5	Metals	Lead	3.05E+02	8.00E+01	mg/kg	No	Yes	No	No	Lead	
	SA9-0.5	Metals	Manganese	6.66E+03	1.95E+03	mg/kg	No	Yes	No	No	Manganese	
	SA9-0.5	Perchlorate	Perchlorate	3.55E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA9-0.5	Pesticide	Beta-BHC	1.30E+00	1.26E-01	mg/kg	Yes	Yes	No	No	Beta-BHC	
	NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	
EA08	SA17-0.5	Metals	Arsenic	2.96E+01	1.59E-01	mg/kg	No	Yes	No	No	Arsenic	
	SA13-0.5	Metals	Manganese	2.00E+03	1.95E+03	mg/kg	No	Yes	No	No	Manganese	
	SA7-10	Perchlorate	Perchlorate	1.11E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA7-0.5	Perchlorate	Perchlorate	3.43E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA8-0.5	Perchlorate	Perchlorate	1.75E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	
EA09	SA4-10	Metals	Arsenic	1.13E+01	1.59E-01	mg/kg	No	Yes	No	No	Arsenic	
	SA4-0.5	Metals	Arsenic	1.34E+01	1.59E-01	mg/kg	No	Yes	No	No	Arsenic	
	SA3-10	Perchlorate	Perchlorate	1.02E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA5-0.5	Perchlorate	Perchlorate	1.49E+01	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	SA5-10	Perchlorate	Perchlorate	1.12E+02	1.00E+01	mg/kg	Yes	Yes	No	No	Perchlorate	
	NA	Asbestos	Asbestos	NA	NA	NA	NA	NA	NA	No	Asbestos	
EA10	SA2-0.5	Metals	Lead	1.12E+02	8.00E+01	mg/kg	Yes	Yes	No	No	Lead	

Notes:
bgs - below ground surface.
ft - feet.
ID - Identification.
NA - Not applicable.
RAD - Radionuclide.
SVOC - Semi-Volatile Organic Compound.
VOC - Volatile Organic Compound.
SRC - Site-Related Chemical.
(a) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(b) Direct contact with soils assumed only to occur within the 0-10 ft bgs depth interval.
(c) See Section 5.5.3.1.
(d) See Section 5.6.

Table 5-29
Comparison of SRCs Detected in Groundwater to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissolved	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Chemistry										
EPA 160.1										
Total Dissolved Solids	TDS	ug/L	27 : 27	N	1.65E+06	1.44E+07	7.25E+06		1.90E+06	Yes
EPA 160.2										
Total Suspended Solids	TSS	ug/L	27 : 27	N	3.00E+03	2.98E+07	2.92E+06		--	--
EPA 310.1										
Bicarbonate	71-52-3	ug/L	27 : 27	N	6.30E+04	3.81E+05	1.47E+05		--	--
Total Alkalinity	T-ALK	ug/L	27 : 27	N	6.30E+04	3.81E+05	1.47E+05		--	--
EPA 350.1										
Ammonia (as N)	7664-41-7	ug/l	8 : 26	N	7.99E+01	8.93E+05	5.43E+04		--	--
EPA 425.1										
MBAS	MBAS	ug/L	18 : 27	N	1.85E+02	4.00E+03	1.03E+03		--	--
SW 846 9056										
Bromide	24959-67-9	ug/L	11 : 27	N	2.10E+02	8.41E+04	1.21E+04		--	--
Chlorate	14866-68-3	ug/L	22 : 27	N	3.20E+03	6.46E+06	9.41E+05		--	--
Chloride	16887-00-6	ug/L	27 : 27	N	1.58E+05	6.39E+06	1.88E+06		2.50E+05	Yes
Nitrate (as N)	NO3	ug/L	24 : 27	N	1.10E+03	2.83E+05	2.55E+04		1.00E+04	Yes
Nitrite	14797-65-0	ug/L	8 : 25	N	2.05E+03	1.38E+05	1.27E+04		1.00E+03	Yes
ortho-Phosphate	o-PO4	ug/L	3 : 28	N	5.70E+02	1.50E+04	2.95E+03		--	--
Sulfate	14808-79-8	ug/L	27 : 27	N	7.70E+05	5.33E+06	1.75E+06		2.50E+05	Yes
SW 846 9060										
Total Organic Carbon	TOC	ug/L	6 : 27	N	1.20E+03	6.50E+03	3.95E+03		--	--
Fuel Alcohol										
SW 846 8015B FA										
Ethanol	64-17-5	ug/L	1 : 6	N	1.30E+04	1.30E+04	5.08E+03		--	--
Metals										

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissolved	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
SW 846 6020										
Aluminum, Total	7429-90-5	ug/l	7 : 26	T	3.26E+01	9.39E+05	6.59E+04		5.00E+01	Yes
Aluminum, Dissolved	7429-90-5	ug/l	2 : 26	D	1.36E+01	2.37E+01	8.15E+00		5.00E+01	No
Antimony, Total	7440-36-0	ug/l	5 : 23	T	9.10E-01	2.60E+00	1.25E+00		6.00E+00	No
Antimony, Dissolved	7440-36-0	ug/l	9 : 26	D	5.20E-01	1.90E+00	8.67E-01		6.00E+00	No
Arsenic, Total	7440-38-2	ug/l	22 : 26	T	5.16E+01	7.78E+02	2.18E+02		1.00E+01	Yes
Arsenic, Dissolved	7440-38-2	ug/l	21 : 26	D	4.06E+01	6.92E+02	1.42E+02		1.00E+01	Yes
Barium, Total	7440-39-3	ug/l	20 : 26	T	9.80E+00	4.10E+03	5.38E+02		2.00E+03	Yes
Barium, Dissolved	7440-39-3	ug/l	23 : 26	D	9.80E+00	8.39E+01	3.02E+01		2.00E+03	No
Beryllium, Total	7440-41-7	ug/l	5 : 26	T	5.30E-01	6.72E+01	5.62E+00		4.00E+00	Yes
Boron, Total	7440-42-8	ug/l	25 : 26	T	1.22E+03	1.09E+04	3.97E+03		7.30E+02	Yes
Boron, Dissolved	7440-42-8	ug/l	25 : 26	D	1.25E+03	1.05E+04	3.91E+03		7.30E+02	Yes
Cadmium, Total	7440-43-9	ug/l	6 : 26	T	1.00E-01	1.04E+01	1.54E+00		5.00E+00	Yes
Cadmium, Dissolved	7440-43-9	ug/l	7 : 26	D	7.20E-02	2.30E-01	9.58E-02		5.00E+00	No
Calcium, Total	7440-70-2	ug/l	26 : 26	T	5.01E+04	4.80E+06	6.02E+05		--	--
Calcium, Dissolved	7440-70-2	ug/l	26 : 26	D	4.56E+04	1.05E+06	4.03E+05		--	--
Chromium, Total	7440-47-3	ug/l	20 : 22	T	1.51E+01	2.25E+04	4.31E+03		1.00E+02	Yes
Chromium, Dissolved	7440-47-3	ug/l	15 : 26	D	1.20E+01	2.14E+04	3.44E+03		1.00E+02	Yes
Cobalt, Total	7440-48-4	ug/l	10 : 26	T	3.20E-01	3.52E+02	2.91E+01		7.30E+01	Yes
Cobalt, Dissolved	7440-48-4	ug/l	7 : 26	D	4.20E-01	6.40E+00	3.01E+00		7.30E+01	No
Copper, Total	7440-50-8	ug/l	7 : 26	T	2.70E+00	3.33E+02	3.84E+01		1.30E+03	No
Copper, Dissolved	7440-50-8	ug/l	12 : 26	D	2.10E+00	1.11E+01	5.12E+00		1.30E+03	No
Iron, Total	7439-89-6	ug/l	7 : 22	T	4.37E+03	3.00E+05	3.55E+04		3.00E+02	Yes
Lead, Total	7439-92-1	ug/l	4 : 26	T	9.49E+01	6.27E+02	4.99E+01		1.50E+01	Yes
Magnesium, Total	7439-95-4	ug/l	26 : 26	T	1.90E+04	5.22E+06	4.92E+05		1.50E+05	Yes
Magnesium, Dissolved	7439-95-4	ug/l	26 : 26	D	1.79E+04	8.61E+05	2.55E+05		1.50E+05	Yes
Manganese, Total	7439-96-5	ug/l	9 : 26	T	1.38E+02	1.27E+04	1.17E+03		5.00E+01	Yes
Manganese, Dissolved	7439-96-5	ug/l	16 : 26	D	1.43E+01	1.48E+03	1.63E+02		5.00E+01	Yes
Molybdenum, Total	7439-98-7	ug/l	18 : 26	T	4.20E+00	7.28E+01	2.49E+01		1.83E+01	Yes
Molybdenum, Dissolved	7439-98-7	ug/l	20 : 26	D	8.30E+00	9.79E+01	2.72E+01		1.83E+01	Yes
Nickel, Total	7440-02-0	ug/l	8 : 26	T	5.20E+00	1.01E+03	7.72E+01		7.30E+01	Yes

Table 5-29
Comparison of SRCs Detected in Groundwater to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissolved	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Nickel, Dissolved	7440-02-0	ug/l	10 : 26	D	3.70E+00	3.17E+01	1.27E+01		7.30E+01	No
Platinum, Total	7440-06-4	ug/l	2 : 26	T	1.10E+00	6.39E+01	4.08E+00		--	--
Platinum, Dissolved	7440-06-4	ug/l	2 : 26	D	1.00E+00	5.60E+01	3.71E+00		--	--
Potassium, Total	7440-09-7	ug/l	26 : 26	T	6.78E+03	1.51E+05	3.34E+04		--	--
Potassium, Dissolved	7440-09-7	ug/l	26 : 26	D	7.06E+03	4.71E+04	2.34E+04		--	--
Selenium, Total	7782-49-2	ug/l	3 : 26	T	1.90E+00	9.20E+00	2.54E+00		5.00E+01	No
Selenium, Dissolved	7782-49-2	ug/l	7 : 26	D	1.10E+00	5.40E+00	2.09E+00		5.00E+01	No
Silver, Total	7440-22-4	ug/l	5 : 26	T	3.00E-01	3.00E+00	1.22E+00		1.00E+02	No
Sodium, Total	7440-23-5	ug/l	26 : 26	T	2.20E+05	3.82E+06	1.46E+06		--	--
Sodium, Dissolved	7440-23-5	ug/l	26 : 26	D	7.88E+04	3.96E+06	1.31E+06		--	--
Strontium, Total	7440-24-6	ug/l	26 : 26	T	1.30E+03	4.45E+04	1.10E+04		2.19E+03	Yes
Strontium, Dissolved	7440-24-6	ug/l	26 : 26	D	1.20E+03	2.77E+04	1.05E+04		2.19E+03	Yes
Thallium, Total	7440-28-0	ug/l	2 : 26	T	7.30E+00	7.70E+00	2.77E+00		2.00E+00	Yes
Thallium, Dissolved	7440-28-0	ug/l	1 : 26	D	2.22E+01	2.22E+01	6.01E+00		2.00E+00	Yes
Tin, Total	7440-31-5	ug/l	7 : 26	T	2.30E-01	6.80E+00	3.11E+00		2.19E+03	No
Titanium, Total	7440-32-6	ug/l	8 : 26	T	4.70E+00	7.87E+03	8.24E+02		1.46E+04	No
Titanium, Dissolved	7440-32-6	ug/l	11 : 26	D	2.70E+00	7.50E+00	4.86E+00		1.46E+04	No
Tungsten, Total	7440-33-7	ug/l	6 : 26	T	7.20E-01	3.05E+01	9.69E+00		--	--
Tungsten, Dissolved	7440-33-7	ug/l	9 : 26	D	6.80E-01	2.92E+01	9.88E+00		--	--
Uranium, Total	7440-61-1	ug/l	26 : 26	T	8.30E+00	3.14E+02	5.27E+01		3.00E+01	Yes
Uranium, Dissolved	7440-61-1	ug/l	26 : 26	D	6.20E+00	2.41E+02	4.22E+01		3.00E+01	Yes
Vanadium, Total	7440-62-2	ug/l	12 : 26	T	9.60E+00	5.80E+02	1.28E+02		3.65E+00	Yes
Vanadium, Dissolved	7440-62-2	ug/l	12 : 26	D	8.80E+00	5.61E+02	7.28E+01		3.65E+00	Yes
Zinc, Total	7440-66-6	ug/l	9 : 26	T	2.70E+00	3.37E+03	2.60E+02		5.00E+03	No
Zinc, Dissolved	7440-66-6	ug/l	13 : 26	D	3.00E+00	1.42E+02	3.81E+01		5.00E+03	No
SW 846 7199										
Chromium-hexavalent	18540-29-9	ug/l	52 : 67	N	2.40E+00	2.89E+04	4.24E+03		1.09E+01	Yes
SW 846 7470										
Mercury, Total	7439-97-6	ug/l	7 : 26	T	1.10E-01	3.30E-01	7.74E-02		2.00E+00	No
Mercury, Dissolved	7439-97-6	ug/l	4 : 26	D	9.30E-02	2.30E-01	6.19E-02		2.00E+00	No

Table 5-29
Comparison of SRCs Detected in Groundwater to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissolved	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Perchlorate										
EPA 314.0										
Perchlorate	14797-73-0	ug/l	26 : 27	N	2.16E+02	6.29E+06	5.94E+05		1.80E+01	Yes
Pesticide										
SW 846 8081										
Alpha-BHC	319-84-6	ug/l	8 : 27	N	8.10E-02	3.10E+00	2.51E-01		1.10E-03	Yes
Beta-BHC	319-85-7	ug/l	2 : 27	N	1.40E-01	1.00E+01	3.99E-01		3.74E-03	Yes
Delta-BHC	319-86-8	ug/l	5 : 27	N	7.80E-02	2.00E+00	1.41E-01		1.10E-03	Yes
Gamma-BHC (Lindane)	58-89-9	ug/l	3 : 27	N	9.70E-02	5.70E-01	5.43E-02		2.00E-01	Yes
Gamma-Chlordane	5103-74-2	ug/l	2 : 27	N	1.00E-01	1.70E-01	3.31E-02		2.00E+00	No
Heptachlor	76-44-8	ug/l	3 : 27	N	6.10E-02	4.10E-01	4.89E-02		4.00E-01	Yes
Methoxychlor	72-43-5	ug/l	1 : 27	N	1.20E-01	1.20E-01	5.26E-02		4.00E+01	No
RAD										
EPA 903.1										
Ra-226 - soluble, Total	Ra-226 sol	pci/l	18 : 25	T	1.16E-01	1.09E+01	1.26E+00		5.00E+00	Yes
Ra-226 - soluble, Dissolved	Ra-226 sol	pci/l	16 : 22	D	1.35E-01	1.13E+00	3.52E-01		5.00E+00	No
EPA 904.0										
Ra-228 - soluble, Total	Ra-228 sol	pci/l	17 : 25	T	2.80E-01	5.82E+00	1.15E+00		5.00E+00	Yes
Ra-228 - soluble, Dissolved	Ra-228 sol	pci/l	12 : 22	D	4.78E-01	1.76E+00	7.46E-01		5.00E+00	No
HASL-300 TH MOD										
Th-228 - soluble, Total	Th-228 sol	pci/l	1 : 5	T	8.15E+00	8.15E+00	1.64E+00		1.59E-01	Yes
Th-230 - soluble, Total	Th-230 sol	pci/l	4 : 5	T	3.54E-02	1.30E+01	3.19E+00		5.23E-02	Yes
Th-230 - soluble, Dissolved	Th-230 sol	pci/l	3 : 4	D	7.68E-02	6.74E+00	2.85E+00		5.23E-02	Yes
Th-232 - soluble, Total	Th-232 sol	pci/l	2 : 5	T	1.12E-01	9.14E+00	1.86E+00		4.71E-01	Yes
HASL-300 U MOD										
URANIUM-233/234, Total	U-234 SOL	pci/l	5 : 5	T	3.01E+00	5.41E+01	2.30E+01		6.74E-02	Yes
URANIUM-233/234, Dissolved	U-234 SOL	pci/l	4 : 4	D	3.22E+00	5.34E+01	2.49E+01		6.74E-02	Yes
URANIUM-235/236, Total	U-235 SOL	pci/l	5 : 5	T	4.66E-02	1.31E+00	5.58E-01		6.63E-02	Yes

Table 5-29
Comparison of SRCs Detected in Groundwater to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissolved	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
URANIUM-235/236, Dissolved	U-235 SOL	pci/l	4 : 4	D	1.24E-01	1.53E+00	7.32E-01		6.63E-02	Yes
URANIUM-238, Total	U-238 SOL	pci/l	5 : 5	T	1.94E+00	3.41E+01	1.54E+01		5.47E-02	Yes
URANIUM-238, Dissolved	U-238 SOL	pci/l	4 : 4	D	2.25E+00	3.48E+01	1.67E+01		5.47E-02	Yes
RAD										
TOTAL Ra-226 & Ra-228, Total	Total Ra-226 &	pci/l	21 : 25	T	2.84E-01	1.67E+01	2.41E+00		5.00E+00	Yes
TOTAL Ra-226 & Ra-228, Dissol	Total Ra-226 &	pci/l	17 : 22	D	4.31E-01	2.57E+00	1.10E+00		5.00E+00	No
SVOC										
SW 846 8270										
1,4-Dioxane	123-91-1	ug/l	1 : 27	N	9.90E+00	9.90E+00	5.18E+00		6.11E-01	Yes
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	6 : 27	N	1.10E+00	1.70E+01	4.84E+00		6.00E+00	Yes
Di-N-Butyl phthalate	84-74-2	ug/l	1 : 27	N	1.00E+00	1.00E+00	1.00E+00		3.65E+02	No
Naphthalene	91-20-3	ug/l	1 : 27	N	5.20E+00	5.20E+00	5.01E+00		6.20E-01	Yes
VOC										
SW 846 8260										
1,1,1-Trichloroethane	71-55-6	ug/l	1 : 27	N	1.60E+00	1.60E+00	1.60E+00		2.00E+02	No
1,1-Dichloroethane	75-34-3	ug/l	3 : 27	N	2.10E+00	2.00E+01	3.19E+00		8.11E+01	No
1,1-Dichloroethene	75-35-4	ug/l	4 : 27	N	8.30E-01	1.40E+01	3.02E+00		7.00E+00	Yes
1,2,3-Trichlorobenzene	87-61-6	ug/l	2 : 27	N	1.40E+00	1.60E+00	1.50E+00		7.00E+01	No
1,2,4-Trichlorobenzene	120-82-1	ug/l	2 : 27	N	5.70E+00	7.10E+00	2.81E+00		7.00E+01	No
1,2-Dichlorobenzene	95-50-1	ug/l	10 : 27	N	2.80E-01	7.20E+02	3.81E+01		6.00E+02	Yes
1,2-Dichloroethane	107-06-2	ug/l	1 : 27	N	1.30E+00	1.30E+00	1.30E+00		5.00E+00	No
1,3-Dichlorobenzene	541-73-1	ug/l	4 : 27	N	6.65E-01	2.80E+00	2.39E+00		1.83E+01	No
1,4-Dichlorobenzene	106-46-7	ug/l	12 : 27	N	5.00E-01	1.60E+03	7.06E+01		7.50E+01	Yes
Benzene	71-43-2	ug/l	5 : 27	N	2.20E-01	1.90E+04	8.84E+02		5.00E+00	Yes
Bromobenzene	108-86-1	ug/l	1 : 27	N	3.80E-01	3.80E-01	3.80E-01		2.03E+00	No
Bromodichloromethane	75-27-4	ug/l	1 : 27	N	4.30E-01	4.30E-01	4.30E-01		8.00E+01	No
Bromoform	75-25-2	ug/l	5 : 27	N	1.90E+00	8.20E+00	2.88E+00		8.00E+01	No
Bromomethane	74-83-9	ug/l	1 : 27	N	9.20E-01	9.20E-01	9.20E-01		8.66E-01	Yes
Carbon tetrachloride	56-23-5	ug/l	8 : 27	N	1.00E+00	5.60E+02	3.26E+01		5.00E+00	Yes

Table 5-29
Comparison of SRCs Detected in Groundwater to Direct Contact Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissolved	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Chlorobenzene	108-90-7	ug/l	4 : 27	N	2.50E+00	4.40E+04	2.12E+03		1.00E+02	Yes
Chloroform	67-66-3	ug/l	25 : 27	N	1.10E+00	2.00E+04	1.79E+03		8.00E+01	Yes
Chloromethane	74-87-3	ug/l	2 : 27	N	7.70E-01	2.70E+00	2.44E+00		1.58E+01	No
Dibromochloromethane	124-48-1	ug/l	1 : 27	N	5.00E-01	5.00E-01	5.00E-01		8.00E+01	No
Methyl tert butyl ether	1634-04-4	ug/l	2 : 27	N	6.70E-01	9.40E-01	8.05E-01		2.00E+01	No
Tetrachloroethene	127-18-4	ug/l	8 : 27	N	4.40E-01	4.40E+01	3.83E+00		5.00E+00	Yes
Toluene	108-88-3	ug/l	1 : 27	N	1.90E+01	1.90E+01	3.16E+00		1.00E+03	No
Trichloroethene	79-01-6	ug/l	8 : 27	N	2.10E+00	3.30E+01	5.70E+00		5.00E+00	Yes
Trichlorofluoromethane	75-69-4	ug/l	1 : 27	N	2.20E+02	2.20E+02	1.09E+01		1.29E+02	Yes

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
(a) Only chemicals with at least one positively detected result are reported.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Minimum detected concentration for each chemical, after duplicates have been averaged.
(d) Maximum detected concentration for each chemical, after duplicates have been averaged.
(e) Arithmetic mean concentration for each chemical, after duplicates have been averaged and any non detected results with a sample quantitation limit greater than the maximum detected concentration have been excluded.
(f) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(g) N = Not Applicable. T = Total. D = Dissolved.

Table 5-30
Summary of SRCs Detected in Groundwater That Exceed Direct Contact Comparison Levels
Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissovled (g)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Chemistry										
EPA 160.1										
Total Dissolved Solids	TDS	ug/L	27 : 27	N	1.65E+06	1.44E+07	7.25E+06		1.90E+06	Yes
SW 846 9056										
Chloride	16887-00-6	ug/L	27 : 27	N	1.58E+05	6.39E+06	1.88E+06		2.50E+05	Yes
Nitrate (as N)	NO3	ug/L	24 : 27	N	1.10E+03	2.83E+05	2.55E+04		1.00E+04	Yes
Nitrite	14797-65-0	ug/L	8 : 25	N	2.05E+03	1.38E+05	1.27E+04		1.00E+03	Yes
Sulfate	14808-79-8	ug/L	27 : 27	N	7.70E+05	5.33E+06	1.75E+06		2.50E+05	Yes
Metals										
SW 846 6020										
Aluminum, Total	7429-90-5	ug/l	7 : 26	T	3.26E+01	9.39E+05	6.59E+04		5.00E+01	Yes
Arsenic, Total	7440-38-2	ug/l	22 : 26	T	5.16E+01	7.78E+02	2.18E+02		1.00E+01	Yes
Arsenic, Dissolved	7440-38-2	ug/l	21 : 26	D	4.06E+01	6.92E+02	1.42E+02		1.00E+01	Yes
Barium, Total	7440-39-3	ug/l	20 : 26	T	9.80E+00	4.10E+03	5.38E+02		2.00E+03	Yes
Beryllium, Total	7440-41-7	ug/l	5 : 26	T	5.30E-01	6.72E+01	5.62E+00		4.00E+00	Yes
Boron, Total	7440-42-8	ug/l	25 : 26	T	1.22E+03	1.09E+04	3.97E+03		7.30E+02	Yes
Boron, Dissolved	7440-42-8	ug/l	25 : 26	D	1.25E+03	1.05E+04	3.91E+03		7.30E+02	Yes
Cadmium, Total	7440-43-9	ug/l	6 : 26	T	1.00E-01	1.04E+01	1.54E+00		5.00E+00	Yes
Chromium, Total	7440-47-3	ug/l	20 : 22	T	1.51E+01	2.25E+04	4.31E+03		1.00E+02	Yes
Chromium, Dissolved	7440-47-3	ug/l	15 : 26	D	1.20E+01	2.14E+04	3.44E+03		1.00E+02	Yes
Cobalt, Total	7440-48-4	ug/l	10 : 26	T	3.20E-01	3.52E+02	2.91E+01		7.30E+01	Yes
Iron, Total	7439-89-6	ug/l	7 : 22	T	4.37E+03	3.00E+05	3.55E+04		3.00E+02	Yes
Lead, Total	7439-92-1	ug/l	4 : 26	T	9.49E+01	6.27E+02	4.99E+01		1.50E+01	Yes
Magnesium, Total	7439-95-4	ug/l	26 : 26	T	1.90E+04	5.22E+06	4.92E+05		1.50E+05	Yes
Magnesium, Dissolved	7439-95-4	ug/l	26 : 26	D	1.79E+04	8.61E+05	2.55E+05		1.50E+05	Yes
Manganese, Total	7439-96-5	ug/l	9 : 26	T	1.38E+02	1.27E+04	1.17E+03		5.00E+01	Yes
Manganese, Dissolved	7439-96-5	ug/l	16 : 26	D	1.43E+01	1.48E+03	1.63E+02		5.00E+01	Yes
Molybdenum, Total	7439-98-7	ug/l	18 : 26	T	4.20E+00	7.28E+01	2.49E+01		1.83E+01	Yes

Table 5-30
Summary of SRCs Detected in Groundwater That Exceed Direct Contact Comparison Levels
Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissovled (g)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Molybdenum, Dissolved	7439-98-7	ug/l	20 : 26	D	8.30E+00	9.79E+01	2.72E+01		1.83E+01	Yes
Nickel, Total	7440-02-0	ug/l	8 : 26	T	5.20E+00	1.01E+03	7.72E+01		7.30E+01	Yes
Strontium, Total	7440-24-6	ug/l	26 : 26	T	1.30E+03	4.45E+04	1.10E+04		2.19E+03	Yes
Strontium, Dissolved	7440-24-6	ug/l	26 : 26	D	1.20E+03	2.77E+04	1.05E+04		2.19E+03	Yes
Thallium, Total	7440-28-0	ug/l	2 : 26	T	7.30E+00	7.70E+00	2.77E+00		2.00E+00	Yes
Thallium, Dissolved	7440-28-0	ug/l	1 : 26	D	2.22E+01	2.22E+01	6.01E+00		2.00E+00	Yes
Uranium, Total	7440-61-1	ug/l	26 : 26	T	8.30E+00	3.14E+02	5.27E+01		3.00E+01	Yes
Uranium, Dissolved	7440-61-1	ug/l	26 : 26	D	6.20E+00	2.41E+02	4.22E+01		3.00E+01	Yes
Vanadium, Total	7440-62-2	ug/l	12 : 26	T	9.60E+00	5.80E+02	1.28E+02		3.65E+00	Yes
Vanadium, Dissolved	7440-62-2	ug/l	12 : 26	D	8.80E+00	5.61E+02	7.28E+01		3.65E+00	Yes
SW 846 7199										
Chromium-hexavalent	18540-29-9	ug/l	52 : 67	N	2.40E+00	2.89E+04	4.24E+03		1.09E+01	Yes
Perchlorate										
EPA 314.0										
Perchlorate	14797-73-0	ug/l	26 : 27	N	2.16E+02	6.29E+06	5.94E+05		1.80E+01	Yes
Pesticide										
SW 846 8081										
Alpha-BHC	319-84-6	ug/l	8 : 27	N	8.10E-02	3.10E+00	2.51E-01		1.1E-03	Yes
Beta-BHC	319-85-7	ug/l	2 : 27	N	1.40E-01	1.00E+01	3.99E-01		3.74E-03	Yes
Delta-BHC	319-86-8	ug/l	5 : 27	N	7.80E-02	2.00E+00	1.41E-01		1.10E-03	Yes
Gamma-BHC (Lindane)	58-89-9	ug/l	3 : 27	N	9.70E-02	5.70E-01	5.43E-02		2.00E-01	Yes
Heptachlor	76-44-8	ug/l	3 : 27	N	6.10E-02	4.10E-01	4.89E-02		4.00E-01	Yes
RAD										
EPA 903.1										
Ra-226 - soluble	Ra-226 sol	pci/l	18 : 25	T	1.16E-01	1.09E+01	1.26E+00		5.00E+00	Yes
EPA 904.0										
Ra-228 - soluble	Ra-228 sol	pci/l	17 : 25	T	2.80E-01	5.82E+00	1.15E+00		5.00E+00	Yes
HASL-300 TH MOD										

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissovled (g)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Th-228 - soluble	Th-228 sol	pci/l	1 : 5	T	8.15E+00	8.15E+00	1.64E+00		1.59E-01	Yes
Th-230 - soluble	Th-230 sol	pci/l	4 : 5	T	3.54E-02	1.30E+01	3.19E+00		5.23E-02	Yes
Th-230 - soluble	Th-230 sol	pci/l	3 : 4	D	7.68E-02	6.74E+00	2.85E+00		5.23E-02	Yes
Th-232 - soluble	Th-232 sol	pci/l	2 : 5	T	1.12E-01	9.14E+00	1.86E+00		4.71E-01	Yes
HASL-300 U MOD										
URANIUM-233/234	U-234 SOL	pci/l	5 : 5	T	3.01E+00	5.41E+01	2.30E+01		6.74E-02	Yes
URANIUM-233/234	U-234 SOL	pci/l	4 : 4	D	3.22E+00	5.34E+01	2.49E+01		6.74E-02	Yes
URANIUM-235/236	U-235 SOL	pci/l	5 : 5	T	4.66E-02	1.31E+00	5.58E-01		6.63E-02	Yes
URANIUM-235/236	U-235 SOL	pci/l	4 : 4	D	1.24E-01	1.53E+00	7.32E-01		6.63E-02	Yes
URANIUM-238	U-238 SOL	pci/l	5 : 5	T	1.94E+00	3.41E+01	1.54E+01		5.47E-02	Yes
URANIUM-238	U-238 SOL	pci/l	4 : 4	D	2.25E+00	3.48E+01	1.67E+01		5.47E-02	Yes
RAD										
TOTAL Ra-226 & Ra-228	Total Ra-226 &	pci/l	21 : 25	T	2.84E-01	1.67E+01	2.41E+00		5.00E+00	Yes
SVOC										
SW 846 8270										
1,4-Dioxane	123-91-1	ug/l	1 : 27	N	9.90E+00	9.90E+00	5.18E+00		6.11E-01	Yes
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	6 : 27	N	1.10E+00	1.70E+01	4.84E+00		6.00E+00	Yes
Naphthalene	91-20-3	ug/l	1 : 27	N	5.20E+00	5.20E+00	5.01E+00		6.20E-01	Yes
VOC										
SW 846 8260										
1,1-Dichloroethene	75-35-4	ug/l	4 : 27	N	8.30E-01	1.40E+01	3.02E+00		7.00E+00	Yes
1,2-Dichlorobenzene	95-50-1	ug/l	10 : 27	N	2.80E-01	7.20E+02	3.81E+01		6.00E+02	Yes
1,4-Dichlorobenzene	106-46-7	ug/l	12 : 27	N	5.00E-01	1.60E+03	7.06E+01		7.50E+01	Yes
Benzene	71-43-2	ug/l	5 : 27	N	2.20E-01	1.90E+04	8.84E+02		5.00E+00	Yes
Bromomethane	74-83-9	ug/l	1 : 27	N	9.20E-01	9.20E-01	9.20E-01		8.66E-01	Yes
Carbon tetrachloride	56-23-5	ug/l	8 : 27	N	1.00E+00	5.60E+02	3.26E+01		5.00E+00	Yes
Chlorobenzene	108-90-7	ug/l	4 : 27	N	2.50E+00	4.40E+04	2.12E+03		1.00E+02	Yes
Chloroform	67-66-3	ug/l	25 : 27	N	1.10E+00	2.00E+04	1.79E+03		8.00E+01	Yes
Tetrachloroethene	127-18-4	ug/l	8 : 27	N	4.40E-01	4.40E+01	3.83E+00		5.00E+00	Yes

Table 5-30
Summary of SRCs Detected in Groundwater That Exceed Direct Contact Comparison Levels
Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Total or Dissovled (g)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Trichloroethene	79-01-6	ug/l	8 : 27	N	2.10E+00	3.30E+01	5.70E+00		5.00E+00	Yes
Trichlorofluoromethane	75-69-4	ug/l	1 : 27	N	2.20E+02	2.20E+02	1.09E+01		1.29E+02	Yes

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
(a) Only chemicals with at least one positively detected result that exceed their comparison value are reported.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Minimum detected concentration for each chemical, after duplicates have been averaged.
(d) Maximum detected concentration for each chemical, after duplicates have been averaged.
(e) Arithmetic mean concentration for each chemical, after duplicates have been averaged and any non detected results with a sample quantitation limit greater than the maximum detected concentration have been excluded.
(f) See Table 5-2 for comparison levels, as well as references, footnotes and synonyms.
(g) N = Not Applicable. T = Total. D = Dissolved.

Table 5-31
Comparison of SRCs Detected in Soil to Comparison Levels for the Soil to Groundwater Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (DAF = 1) (f)	Include in Further Investigation (g) ?
Chemistry									
EPA 310.1									
Alkalinity (as CaCO3)	Alk as CaCO3	mg/kg	74 : 116	4.84E+01	1.44E+03	1.65E+02	SA14		Include
Bicarbonate	71-52-3	mg/kg	113 : 116	7.29E+01	8.36E+03	6.85E+02	SA25		Include
Total Alkalinity	T-ALK	mg/kg	116 : 116	7.44E+01	8.86E+03	8.46E+02	SA25		Include
EPA 350.1									
Ammonia (as N)	7664-41-7	mg/kg	10 : 102	8.00E-01	9.28E+02	2.27E+01	SA15		Include
SM 5540C									
MBAS	MBAS	mg/kg	21 : 116	1.63E+00	5.90E+00	2.13E+00	SA08		Exclude
SW 846 9056									
Bromide	24959-67-9	mg/kg	18 : 116	9.50E-01	9.20E+01	4.10E+00	SA04		Exclude
Chlorate	14866-68-3	mg/kg	58 : 114	1.40E+00	1.37E+03	6.70E+01	SA11		Include
Chloride	16887-00-6	mg/kg	113 : 116	9.50E-01	5.60E+03	3.77E+02	SA05		Include
Nitrate (as N)	NO3	mg/kg	107 : 116	1.70E-01	2.79E+02	8.97E+00	SA15		Include
Nitrite	14797-65-0	mg/kg	62 : 109	4.70E-02	2.13E+01	2.15E+00	SA14		Include
ortho-Phosphate	o-PO4	mg/kg	25 : 116	1.40E+00	7.76E+03	9.73E+01	SA11		Include
Sulfate	14808-79-8	mg/kg	116 : 116	5.40E+00	1.51E+04	1.31E+03	SA08		Include
SW 846 9060									
Total Organic Carbon	TOC	mg/kg	116 : 116	2.00E+02	3.86E+04	8.04E+03	SA15		Exclude
DIOXINS									
8290 SCREEN									
Total TEQ - ENSR Calculated (b)	TTEQ-b	ng/kg	27 : 27	6.30E-02	1.15E+03	1.32E+02	SA16		Exclude
SW 846 8290									
Total TEQ - ENSR Calculated (b)	TTEQ-b	ng/kg	7 : 7	8.20E-01	8.94E+02	3.83E+02	SA16		Exclude
Metals									
SW 846 6020									

Table 5-31
Comparison of SRCs Detected in Soil to Comparison Levels for the Soil to Groundwater Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (DAF = 1) (f)	Include in Further Investigation (g) ?
Aluminum	7429-90-5	mg/kg	116 : 116	3.68E+03	1.88E+04	7.83E+03	SA09	7.50E+01	YES
Antimony	7440-36-0	mg/kg	115 : 116	8.00E-02	6.50E+00	2.23E-01	SA09	3.00E-01	YES
Arsenic	7440-38-2	mg/kg	116 : 116	1.60E+00	6.16E+01	9.64E+00	SA03	1.00E+00	YES
Barium	7440-39-3	mg/kg	116 : 116	2.52E+01	1.20E+03	1.55E+02	SA09	8.20E+01	YES
Beryllium	7440-41-7	mg/kg	116 : 116	2.00E-01	9.80E-01	4.83E-01	SA12	3.00E+00	NO
Boron	7440-42-8	mg/kg	44 : 116	2.50E+00	4.86E+01	7.91E+00	SA07	2.27E+00	YES
Cadmium	7440-43-9	mg/kg	115 : 116	2.20E-02	1.70E+00	1.09E-01	SA15	4.00E-01	YES
Calcium	7440-70-2	mg/kg	109 : 116	2.17E+03	1.87E+05	2.94E+04	SA14		Include
Chromium	7440-47-3	mg/kg	116 : 116	4.70E+00	6.33E+01	1.37E+01	SA17	1.80E+05	NO
Cobalt	7440-48-4	mg/kg	116 : 116	2.40E+00	1.20E+01	5.67E+00	SA17	3.29E+00	YES
Copper	7440-50-8	mg/kg	115 : 116	5.80E+00	1.99E+02	1.36E+01	SA17	4.68E+02	NO
Iron	7439-89-6	mg/kg	116 : 116	4.89E+03	2.03E+04	1.12E+04	SA10	7.53E+00	YES
Lead	7439-92-1	mg/kg	116 : 116	4.00E+00	3.05E+02	1.17E+01	SA09	1.34E+01	YES
Magnesium	7439-95-4	mg/kg	112 : 116	3.97E+03	6.37E+04	1.34E+04	SA16		Include
Manganese	7439-96-5	mg/kg	116 : 116	5.88E+01	6.66E+03	3.48E+02	SA09	3.26E+00	YES
Molybdenum	7439-98-7	mg/kg	107 : 116	2.80E-01	5.30E+00	6.09E-01	SA09	3.66E-01	YES
Nickel	7440-02-0	mg/kg	116 : 116	5.20E+00	3.04E+01	1.27E+01	SA09	7.00E+00	YES
Platinum	7440-06-4	mg/kg	72 : 116	9.00E-03	7.70E-02	1.35E-02	SA07		Exclude
Potassium	7440-09-7	mg/kg	109 : 116	9.80E+02	5.21E+03	1.94E+03	SA25		Include
Silver	7440-22-4	mg/kg	115 : 116	6.10E-02	4.80E-01	1.37E-01	SA17	2.00E+00	NO
Sodium	7440-23-5	mg/kg	104 : 116	2.14E+02	4.91E+03	1.02E+03	SA14		Include
Strontium	7440-24-6	mg/kg	111 : 116	4.61E+01	2.28E+03	2.35E+02	SA07	7.69E+01	YES
Thallium	7440-28-0	mg/kg	49 : 116	6.80E-02	2.90E+00	1.20E-01	SA09	1.42E-01	YES
Tin	7440-31-5	mg/kg	112 : 116	2.70E-01	1.20E+00	5.13E-01	SA08	5.48E+02	NO
Titanium	7440-32-6	mg/kg	116 : 116	2.52E+02	8.18E+02	4.79E+02	SA13	1.46E+04	NO
Tungsten	7440-33-7	mg/kg	75 : 116	1.50E-01	1.15E+01	5.61E-01	SA17		Exclude
Uranium	7440-61-1	mg/kg	114 : 116	6.80E-01	1.06E+01	1.99E+00	SA03	1.53E-02	YES
Vanadium	7440-62-2	mg/kg	116 : 116	1.37E+01	5.63E+01	3.12E+01	SA13	3.00E+02	NO
Zinc	7440-66-6	mg/kg	106 : 116	1.49E+01	1.79E+02	2.76E+01	SA17	6.20E+02	NO
SW 846 7199									
Chromium-hexavalent	18540-29-9	mg/kg	40 : 116	1.08E-01	1.18E+01	5.69E-01	SA11	2.00E+00	YES

Table 5-31
Comparison of SRCs Detected in Soil to Comparison Levels for the Soil to Groundwater Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (DAF = 1) (f)	Include in Further Investigation (g) ?
SW 846 7471									
Mercury	7439-97-6	mg/kg	27 : 116	7.28E-03	2.60E-02	6.34E-03	SA11	1.64E-01	NO
O. Pesticides									
SW 846 8141A									
Demeton-O	298-03-3	mg/kg	1 : 28	5.75E-02	5.75E-02	2.30E-02	SA17	1.60E-05	YES
Dimethoate	60-51-5	mg/kg	2 : 28	1.15E-02	1.30E-02	1.21E-02	SA05	2.51E-04	YES
PCB									
SW 846 8082									
Aroclor-1260	11096-82-5	mg/kg	1 : 116	4.70E-01	4.70E-01	2.33E-02	SA09	2.03E-01	YES
Perchlorate									
EPA 314.0									
Perchlorate	14797-73-0	mg/kg	111 : 116	2.89E-02	2.33E+03	8.21E+01	SA15		Include
Pesticide									
SW 846 8081									
4,4'-DDD	72-54-8	mg/kg	2 : 30	6.90E-03	2.70E-02	2.75E-03	SA09	8.00E-01	NO
4,4'-DDE	72-55-9	mg/kg	8 : 30	1.45E-03	6.20E-01	4.11E-02	SA09	3.00E+00	NO
4,4'-DDT	50-29-3	mg/kg	7 : 30	1.50E-03	6.60E-01	3.08E-02	SA14	2.00E+00	NO
Beta-BHC	319-85-7	mg/kg	14 : 30	1.80E-03	1.30E+00	5.13E-02	SA09	1.00E-04	YES
Endrin Aldehyde	7421-93-4	mg/kg	2 : 30	1.70E-02	3.80E-02	3.46E-03	SA14	4.98E-02	NO
Methoxychlor	72-43-5	mg/kg	4 : 30	4.75E-03	5.00E-02	5.45E-03	SA17	8.00E+00	NO
RAD									
HASL-300 gamma									
Ra-226	Ra-226	pci/g	114 : 116	8.69E-01	7.49E+00	1.47E+00	SA07	2.30E-06	YES
Ra-228	Ra-228	pci/g	109 : 116	6.76E-01	2.11E+00	1.60E+00	SA15	8.10E-09	YES
HASL-300 TH MOD									

Table 5-31
Comparison of SRCs Detected in Soil to Comparison Levels for the Soil to Groundwater Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (DAF = 1) (f)	Include in Further Investigation (g) ?
Th-228	Th-228	pci/g	12 : 12	4.81E-01	1.12E+00	7.00E-01	SA02	3.62E-10	YES
Th-230	Th-230	pci/g	12 : 12	4.16E-01	2.23E+00	8.18E-01	SA05	1.49E-05	YES
Th-232	Th-232	pci/g	12 : 12	5.39E-01	9.94E-01	6.98E-01	SA02	2.82E+00	NO
HASL-300 U MOD									
URANIUM-233/234	U-234 SOL	pci/g	12 : 12	2.60E-01	1.58E+00	6.87E-01	SA05	1.53E-02	YES
URANIUM-235/236	U-235 SOL	pci/g	6 : 12	7.27E-03	4.69E-02	1.50E-02	SA05	1.53E-02	YES
URANIUM-238	U-238 SOL	pci/g	12 : 12	1.42E-01	1.37E+00	4.92E-01	SA05	1.53E-02	YES
SVOC									
SW 846 8260									
Naphthalene	91-20-3	mg/kg	1 : 116	7.90E-04	7.90E-04	7.90E-04	SA08	4.00E+00	NO
SW 846 8270									
Benz(a)anthracene	56-55-3	mg/kg	2 : 116	4.00E-02	9.00E-02	6.50E-02	SA09	8.00E-02	YES
Benzo(a)pyrene	50-32-8	mg/kg	2 : 116	4.50E-02	7.90E-02	6.20E-02	SA09	4.00E-01	NO
Benzo(b)fluoranthene	205-99-2	mg/kg	2 : 116	7.70E-02	1.10E-01	9.35E-02	SA09	2.00E-01	NO
Benzo(g,h,i)perylene	191-24-2	mg/kg	2 : 116	4.80E-02	6.90E-02	5.85E-02	SA09	7.17E+01	NO
Benzo(k)fluoranthene	207-08-9	mg/kg	2 : 116	4.90E-02	1.10E-01	7.95E-02	SA09	2.00E+00	NO
bis(2-Ethylhexyl)phthalate	117-81-7	mg/kg	6 : 116	5.10E-02	3.00E-01	1.93E-01	SA11	1.27E+02	NO
Chrysene	218-01-9	mg/kg	2 : 116	7.10E-02	1.30E-01	1.01E-01	SA09	8.00E+00	NO
Diethyl phthalate	84-66-2	mg/kg	2 : 116	1.50E-01	2.60E-01	1.90E-01	SA14	1.50E+00	NO
Di-N-Butyl phthalate	84-74-2	mg/kg	1 : 116	4.22E-01	4.22E-01	1.97E-01	SA15	2.70E+02	NO
Fluoranthene	206-44-0	mg/kg	2 : 116	8.50E-02	1.80E-01	1.76E-01	SA09	2.10E+02	NO
Hexachlorobenzene	118-74-1	mg/kg	6 : 116	5.30E-02	5.75E-01	1.96E-01	SA11	1.00E-01	YES
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	1 : 116	6.20E-02	6.20E-02	6.20E-02	SA09	7.00E-01	NO
Octachlorostyrene	29082-74-4	mg/kg	2 : 116	1.30E-01	2.00E-01	1.84E-01	SA11		Exclude
Phenanthrene	85-01-8	mg/kg	1 : 116	5.90E-02	5.90E-02	5.90E-02	SA09	9.60E+00	NO
Pyrene	129-00-0	mg/kg	2 : 116	7.80E-02	1.60E-01	1.19E-01	SA09	2.10E+02	NO
SW 846 8270 SIM									
Benz(a)anthracene	56-55-3	mg/kg	1 : 13	1.20E-02	1.20E-02	4.29E-03	SA09	8.00E-02	NO
Benzo(a)pyrene	50-32-8	mg/kg	1 : 13	1.30E-02	1.30E-02	4.37E-03	SA09	4.00E-01	NO

Comparison of SRCs Detected in Soil to Comparison Levels for the Soil to Groundwater Pathway

Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (DAF = 1) (f)	Include in Further Investigation (g) ?
Benzo(b)fluoranthene	205-99-2	mg/kg	1 : 13	2.20E-02	2.20E-02	5.06E-03	SA09	2.00E-01	NO
Benzo(g,h,i)perylene	191-24-2	mg/kg	1 : 13	2.30E-02	2.30E-02	5.13E-03	SA09	7.17E+01	NO
Benzo(k)fluoranthene	207-08-9	mg/kg	1 : 13	1.60E-02	1.60E-02	4.60E-03	SA09	2.00E+00	NO
Chrysene	218-01-9	mg/kg	2 : 13	7.00E-03	2.40E-02	5.48E-03	SA09	8.00E+00	NO
Fluoranthene	206-44-0	mg/kg	2 : 13	1.70E-02	2.70E-02	6.48E-03	SA08	2.10E+02	NO
Hexachlorobenzene	118-74-1	mg/kg	7 : 13	6.77E-03	7.70E-02	1.80E-02	SA14	1.00E-01	NO
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	1 : 13	1.90E-02	1.90E-02	4.83E-03	SA09	7.00E-01	NO
Phenanthrene	85-01-8	mg/kg	1 : 13	1.00E-02	1.00E-02	4.13E-03	SA09	9.60E+00	NO
Pyrene	129-00-0	mg/kg	3 : 13	5.25E-03	2.30E-02	5.93E-03	SA09	2.10E+02	NO
TPH									
SW 846 8015B DRO									
Oil Range Organics	TPH-MOTOR	mg/kg	6 : 87	4.00E+00	1.01E+02	1.65E+01	SA26		Exclude
Total petroleum hydrocarbon-diesel	TPH-diesel	mg/kg	2 : 87	5.10E+00	3.60E+03	5.61E+01	SA08		Exclude
SW 846 8015B GRO									
Total petroleum hydrocarbon-gasoline	TPH-gasoline	mg/kg	4 : 87	1.30E-01	3.20E+00	1.36E-01	SA09		Exclude
VOC									
SW 846 8260									
1,1,1-Trichloroethane	71-55-6	mg/kg	4 : 116	3.70E-04	9.50E-04	5.97E-04	SA08	1.00E-01	NO
1,1-Dichloroethane	75-34-3	mg/kg	7 : 116	1.40E-03	1.10E-02	2.99E-03	SA25	1.00E+00	NO
1,2,3-Trichlorobenzene	87-61-6	mg/kg	8 : 116	1.20E-03	1.40E+00	1.51E-02	SA14	2.34E-01	YES
1,2,4-Trichlorobenzene	120-82-1	mg/kg	7 : 116	1.70E-03	1.50E+00	1.61E-02	SA14	3.00E-01	YES
1,2-Dichlorobenzene	95-50-1	mg/kg	10 : 116	2.90E-04	1.80E-01	5.66E-03	SA09	9.00E-01	NO
1,2-Dichloroethane	107-06-2	mg/kg	2 : 116	1.90E-03	3.20E-03	2.79E-03	SA19	1.00E-03	YES
1,3,5-Trimethylbenzene	108-67-8	mg/kg	1 : 116	3.00E-04	3.00E-04	3.00E-04	SA20	1.60E-03	NO
1,3-Dichlorobenzene	541-73-1	mg/kg	2 : 116	1.40E-02	1.50E-02	3.14E-03	SA14	1.80E-02	NO
1,4-Dichlorobenzene	106-46-7	mg/kg	29 : 116	1.20E-04	7.60E-01	1.19E-02	SA09	1.00E-01	YES
2-Butanone	78-93-3	mg/kg	8 : 116	1.70E-03	3.80E-02	6.28E-03	SA08	7.82E-02	NO
2-Chlorotoluene	95-49-8	mg/kg	1 : 116	8.30E-04	8.30E-04	8.30E-04	SA25	4.30E-03	NO
2-Hexanone	591-78-6	mg/kg	1 : 116	3.80E-03	3.80E-03	3.80E-03	SA08	2.79E-02	NO

Table 5-31
Comparison of SRCs Detected in Soil to Comparison Levels for the Soil to Groundwater Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (DAF = 1) (f)	Include in Further Investigation (g) ?
Acetone	67-64-1	mg/kg	23 : 116	4.30E-03	2.50E-01	1.23E-02	SA08	8.00E-01	NO
Benzene	71-43-2	mg/kg	12 : 116	1.90E-04	4.10E+00	6.07E-02	SA09	2.00E-03	YES
Bromoform	75-25-2	mg/kg	1 : 116	9.30E-04	9.30E-04	9.30E-04	SA11	4.00E-02	NO
Carbon tetrachloride	56-23-5	mg/kg	4 : 116	2.30E-03	1.60E-02	3.16E-03	SA09	3.00E-03	YES
Chlorobenzene	108-90-7	mg/kg	12 : 116	8.00E-04	1.20E+01	1.76E-01	SA09	7.00E-02	YES
Chloroform	67-66-3	mg/kg	52 : 116	1.80E-04	6.80E+00	1.53E-01	SA14	3.00E-02	YES
Hexachlorobutadiene	87-68-3	mg/kg	5 : 116	3.80E-04	1.10E-02	2.97E-03	SA14	1.00E-01	NO
Methylene chloride	75-09-2	mg/kg	5 : 116	3.80E-03	4.00E-02	3.50E-03	SA21	1.00E-03	YES
Tetrachloroethene	127-18-4	mg/kg	7 : 116	6.60E-04	8.10E-03	2.89E-03	SA09	3.00E-03	YES
Toluene	108-88-3	mg/kg	15 : 116	2.50E-04	8.20E-04	4.28E-04	SA08	6.00E-01	NO
Trichloroethene	79-01-6	mg/kg	7 : 116	1.10E-03	8.80E-03	3.01E-03	SA16	3.00E-03	YES
Trichlorofluoromethane	75-69-4	mg/kg	3 : 116	1.20E-03	1.40E-02	3.01E-03	SA09	1.09E-01	NO

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
TEQ - Toxic Equivalent. Total TEQs calculated by ENSR assuming a value of 1/2 the detection limit for non detected results and using the 2006 toxic equivalency factors (van den Berg, et al. 2006).
(a) Only chemicals with at least one positively detected result are reported.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Minimum detected concentration for each chemical, after duplicates have been averaged.
(d) Maximum detected concentration for each chemical, after duplicates have been averaged.
(e) Arithmetic mean concentration for each chemical, after duplicates have been averaged and any non detected results with a sample quantitation limit greater than the maximum detected concentration have been excluded.
(f) See Table 5-3 for comparison levels, as well as references, footnotes and synonyms.
(g) "YES" indicates that the maximum detected concentration is greater than the comparison level; "NO" indicates that the maximum detected concentration is less than or equal to the comparison level; "Include" indicates that there is no comparison level but the analyte will be included in further evaluation; "Exclude" indicates that there is no comparison level and no further evaluation is warranted.

Table 5-32
Evaluation of Metals with Maximum Detected Concentrations
Greater Than the Soil to Groundwater Pathway Comparison Levels
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

SRC (a)	Consistent with Background? (b)	Present in GW > CL? (c)	Proposed for Further Characterization?
Aluminum	Yes (Alluvium) Yes (Muddy Creek)	Not significantly	No
Antimony	NA (d)	No	No
Arsenic	Some Outliers (Alluvium) Some Outliers (Muddy Creek)	Yes	Yes
Barium	Yes	No	No
Boron	Some Outliers (Alluvium) Some Outliers (Muddy Creek)	Yes	Yes
Cadmium	NA (d)	No	No
Calcium	Yes	NA (e)	No
Cobalt	Yes	No	No
Iron	Yes	Yes	Yes
Lead	Yes	No	No
Manganese	Yes	Yes	Yes
Molybdenum	Some samples	Yes	Yes
Nickle	Yes	No	No
Potassium	No	NA (e)	No
Sodium	No	NA (e)	No
Strontium	Yes	Yes	Yes
Thallium	Yes	Not significantly	No
Uranium	No (Alluvium) Yes (Muddy Creek)	Yes	Yes
Hexavalent Chromium	No	Yes	Yes

Notes:
NA - Not applicable.
SRC - Site-Related Chemical.
GW - Groundwater.
CL - Comparison Level.
(a) Metals SRCs listed in Table 5-31 with maximum detected concentration greater than soil to groundwater pathway comparison level at a dilution attentuation factor = 1.
(b) See Section 5.5.3.
(c) See Table 5-29.
(d) Formal statistical coparisons not performed due to high numbers of not detect results in one or more dataset(s).
(e) No direct contact groundwater comparison level; assumed fully soluble.

Table 5-33
Comparison of Volatile SRCs Detected in Groundwater to Comparison Levels for the Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Chemistry									
EPA 160.1									
Total Dissolved Solids	TDS	ug/L	27 : 27	1.65E+06	1.44E+07	7.25E+06			--
EPA 160.2									
Total Suspended Solids	TSS	ug/L	27 : 27	3.00E+03	2.98E+07	2.92E+06			--
EPA 310.1									
Bicarbonate	71-52-3	ug/L	27 : 27	6.30E+04	3.81E+05	1.47E+05			--
Total Alkalinity	T-ALK	ug/L	27 : 27	6.30E+04	3.81E+05	1.47E+05			--
EPA 350.1									
Ammonia (as N)	7664-41-7	ug/l	8 : 26	7.99E+01	8.93E+05	5.43E+04			--
EPA 425.1									
MBAS	MBAS	ug/L	18 : 27	1.85E+02	4.00E+03	1.03E+03			--
SW 846 9056									
Bromide	24959-67-9	ug/L	11 : 27	2.10E+02	8.41E+04	1.21E+04			--
Chlorate	14866-68-3	ug/L	22 : 27	3.20E+03	6.46E+06	9.41E+05			--
Chloride	16887-00-6	ug/L	27 : 27	1.58E+05	6.39E+06	1.88E+06			--
Nitrate (as N)	NO3	ug/L	24 : 27	1.10E+03	2.83E+05	2.55E+04			--
Nitrite	14797-65-0	ug/L	8 : 25	2.05E+03	1.38E+05	1.27E+04			--
ortho-Phosphate	o-PO4	ug/L	3 : 28	5.70E+02	1.50E+04	2.95E+03			--
Sulfate	14808-79-8	ug/L	27 : 27	7.70E+05	5.33E+06	1.75E+06			--
SW 846 9060									
Total Organic Carbon	TOC	ug/L	6 : 27	1.20E+03	6.50E+03	3.95E+03			--
Fuel Alcohol									
SW 846 8015B FA									
Ethanol	64-17-5	ug/L	1 : 6	1.30E+04	1.30E+04	5.08E+03			--
Metals									

Table 5-33
Comparison of Volatile SRCs Detected in Groundwater to Comparison Levels for the Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
SW 846 6020									
Aluminum, Total	7429-90-5	ug/l	7 : 26	3.26E+01	9.39E+05	6.59E+04			--
Aluminum, Dissolved	7429-90-5	ug/l	2 : 26	1.36E+01	2.37E+01	8.15E+00			--
Antimony, Dissolved	7440-36-0	ug/l	9 : 26	5.20E-01	1.90E+00	8.67E-01			--
Antimony, Total	7440-36-0	ug/l	5 : 23	9.10E-01	2.60E+00	1.25E+00			--
Arsenic, Total	7440-38-2	ug/l	22 : 26	5.16E+01	7.78E+02	2.18E+02			--
Arsenic, Dissolved	7440-38-2	ug/l	21 : 26	4.06E+01	6.92E+02	1.42E+02			--
Barium, Total	7440-39-3	ug/l	20 : 26	9.80E+00	4.10E+03	5.38E+02			--
Barium, Dissolved	7440-39-3	ug/l	23 : 26	9.80E+00	8.39E+01	3.02E+01			--
Beryllium, Total	7440-41-7	ug/l	5 : 26	5.30E-01	6.72E+01	5.62E+00			--
Boron, Dissolved	7440-42-8	ug/l	25 : 26	1.25E+03	1.05E+04	3.91E+03			--
Boron, Total	7440-42-8	ug/l	25 : 26	1.22E+03	1.09E+04	3.97E+03			--
Cadmium, Total	7440-43-9	ug/l	6 : 26	1.00E-01	1.04E+01	1.54E+00			--
Cadmium, Dissolved	7440-43-9	ug/l	7 : 26	7.20E-02	2.30E-01	9.58E-02			--
Calcium, Dissolved	7440-70-2	ug/l	26 : 26	4.56E+04	1.05E+06	4.03E+05			--
Calcium, Total	7440-70-2	ug/l	26 : 26	5.01E+04	4.80E+06	6.02E+05			--
Chromium, Total	7440-47-3	ug/l	20 : 22	1.51E+01	2.25E+04	4.31E+03			--
Chromium, Dissolved	7440-47-3	ug/l	15 : 26	1.20E+01	2.14E+04	3.44E+03			--
Cobalt, Total	7440-48-4	ug/l	10 : 26	3.20E-01	3.52E+02	2.91E+01			--
Cobalt, Dissolved	7440-48-4	ug/l	7 : 26	4.20E-01	6.40E+00	3.01E+00			--
Copper, Total	7440-50-8	ug/l	7 : 26	2.70E+00	3.33E+02	3.84E+01			--
Copper, Dissolved	7440-50-8	ug/l	12 : 26	2.10E+00	1.11E+01	5.12E+00			--
Iron, Total	7439-89-6	ug/l	7 : 22	4.37E+03	3.00E+05	3.55E+04			--
Lead, Total	7439-92-1	ug/l	4 : 26	9.49E+01	6.27E+02	4.99E+01			--
Magnesium, Dissolved	7439-95-4	ug/l	26 : 26	1.79E+04	8.61E+05	2.55E+05			--
Magnesium, Total	7439-95-4	ug/l	26 : 26	1.90E+04	5.22E+06	4.92E+05			--
Manganese, Total	7439-96-5	ug/l	9 : 26	1.38E+02	1.27E+04	1.17E+03			--
Manganese, Dissolved	7439-96-5	ug/l	16 : 26	1.43E+01	1.48E+03	1.63E+02			--
Molybdenum, Dissolved	7439-98-7	ug/l	20 : 26	8.30E+00	9.79E+01	2.72E+01			--
Molybdenum, Total	7439-98-7	ug/l	18 : 26	4.20E+00	7.28E+01	2.49E+01			--
Nickel, Total	7440-02-0	ug/l	8 : 26	5.20E+00	1.01E+03	7.72E+01			--

Table 5-33
Comparison of Volatile SRCs Detected in Groundwater to Comparison Levels for the Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Nickel, Dissolved	7440-02-0	ug/l	10 : 26	3.70E+00	3.17E+01	1.27E+01			--
Platinum, Dissolved	7440-06-4	ug/l	2 : 26	1.00E+00	5.60E+01	3.71E+00			--
Platinum, Total	7440-06-4	ug/l	2 : 26	1.10E+00	6.39E+01	4.08E+00			--
Potassium, Dissolved	7440-09-7	ug/l	26 : 26	7.06E+03	4.71E+04	2.34E+04			--
Potassium, Total	7440-09-7	ug/l	26 : 26	6.78E+03	1.51E+05	3.34E+04			--
Selenium, Dissolved	7782-49-2	ug/l	7 : 26	1.10E+00	5.40E+00	2.09E+00			--
Selenium, Total	7782-49-2	ug/l	3 : 26	1.90E+00	9.20E+00	2.54E+00			--
Silver, Total	7440-22-4	ug/l	5 : 26	3.00E-01	3.00E+00	1.22E+00			--
Sodium, Total	7440-23-5	ug/l	26 : 26	2.20E+05	3.82E+06	1.46E+06			--
Sodium, Dissolved	7440-23-5	ug/l	26 : 26	7.88E+04	3.96E+06	1.31E+06			--
Strontium, Total	7440-24-6	ug/l	26 : 26	1.30E+03	4.45E+04	1.10E+04			--
Strontium, Dissolved	7440-24-6	ug/l	26 : 26	1.20E+03	2.77E+04	1.05E+04			--
Thallium, Total	7440-28-0	ug/l	2 : 26	7.30E+00	7.70E+00	2.77E+00			--
Thallium, Dissolved	7440-28-0	ug/l	1 : 26	2.22E+01	2.22E+01	6.01E+00			--
Tin, Total	7440-31-5	ug/l	7 : 26	2.30E-01	6.80E+00	3.11E+00			--
Titanium, Total	7440-32-6	ug/l	8 : 26	4.70E+00	7.87E+03	8.24E+02			--
Titanium, Dissolved	7440-32-6	ug/l	11 : 26	2.70E+00	7.50E+00	4.86E+00			--
Tungsten, Total	7440-33-7	ug/l	6 : 26	7.20E-01	3.05E+01	9.69E+00			--
Tungsten, Dissolved	7440-33-7	ug/l	9 : 26	6.80E-01	2.92E+01	9.88E+00			--
Uranium, Dissolved	7440-61-1	ug/l	26 : 26	6.20E+00	2.41E+02	4.22E+01			--
Uranium, Total	7440-61-1	ug/l	26 : 26	8.30E+00	3.14E+02	5.27E+01			--
Vanadium, Dissolved	7440-62-2	ug/l	12 : 26	8.80E+00	5.61E+02	7.28E+01			--
Vanadium, Total	7440-62-2	ug/l	12 : 26	9.60E+00	5.80E+02	1.28E+02			--
Zinc, Total	7440-66-6	ug/l	9 : 26	2.70E+00	3.37E+03	2.60E+02			--
Zinc, Dissolved	7440-66-6	ug/l	13 : 26	3.00E+00	1.42E+02	3.81E+01			--
SW 846 7199									
Chromium-hexavalent	18540-29-9	ug/l	52 : 67	2.40E+00	2.89E+04	4.24E+03			--
SW 846 7470									
Mercury, Dissolved	7439-97-6	ug/l	4 : 26	9.30E-02	2.30E-01	6.19E-02			--
Mercury, Total	7439-97-6	ug/l	7 : 26	1.10E-01	3.30E-01	7.74E-02			--

Table 5-33
Comparison of Volatile SRCs Detected in Groundwater to Comparison Levels for the Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Perchlorate									
EPA 314.0									
Perchlorate	14797-73-0	ug/l	26 : 27	2.16E+02	6.29E+06	5.94E+05			--
Pesticide									
SW 846 8081									
Alpha-BHC	319-84-6	ug/l	8 : 27	8.10E-02	3.10E+00	2.51E-01		3.10E-01	Yes
Beta-BHC	319-85-7	ug/l	2 : 27	1.40E-01	1.00E+01	3.99E-01			--
Delta-BHC	319-86-8	ug/l	5 : 27	7.80E-02	2.00E+00	1.41E-01			--
Gamma-BHC (Lindane)	58-89-9	ug/l	3 : 27	9.70E-02	5.70E-01	5.43E-02		1.10E+00	No
Gamma-Chlordane	5103-74-2	ug/l	2 : 27	1.00E-01	1.70E-01	3.31E-02		1.20E+00	No
Heptachlor	76-44-8	ug/l	3 : 27	6.10E-02	4.10E-01	4.89E-02		4.00E-01	Yes
Methoxychlor	72-43-5	ug/l	1 : 27	1.20E-01	1.20E-01	5.26E-02			--
RAD									
EPA 903.1									
Ra-226 - soluble, Total	Ra-226 sol	pci/l	18 : 25	1.16E-01	1.09E+01	1.26E+00			--
Ra-226 - soluble, Dissolved	Ra-226 sol	pci/l	16 : 22	1.35E-01	1.13E+00	3.52E-01			--
EPA 904.0									
Ra-228 - soluble, Total	Ra-228 sol	pci/l	17 : 25	2.80E-01	5.82E+00	1.15E+00			--
Ra-228 - soluble, Dissolved	Ra-228 sol	pci/l	12 : 22	4.78E-01	1.76E+00	7.46E-01			--
HASL-300 TH MOD									
Th-228 - soluble, Total	Th-228 sol	pci/l	1 : 5	8.15E+00	8.15E+00	1.64E+00			--
Th-230 - soluble, Dissolved	Th-230 sol	pci/l	3 : 4	7.68E-02	6.74E+00	2.85E+00			--
Th-230 - soluble, Total	Th-230 sol	pci/l	4 : 5	3.54E-02	1.30E+01	3.19E+00			--
Th-232 - soluble, Total	Th-232 sol	pci/l	2 : 5	1.12E-01	9.14E+00	1.86E+00			--
HASL-300 U MOD									
URANIUM-233/234, Total	U-234 SOL	pci/l	5 : 5	3.01E+00	5.41E+01	2.30E+01			--
URANIUM-233/234, Dissolved	U-234 SOL	pci/l	4 : 4	3.22E+00	5.34E+01	2.49E+01			--
URANIUM-235/236, Total	U-235 SOL	pci/l	5 : 5	4.66E-02	1.31E+00	5.58E-01			--

Table 5-33
Comparison of Volatile SRCs Detected in Groundwater to Comparison Levels for the Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
URANIUM-235/236, Dissolved	U-235 SOL	pci/l	4 : 4	1.24E-01	1.53E+00	7.32E-01			--
URANIUM-238, Dissolved	U-238 SOL	pci/l	4 : 4	2.25E+00	3.48E+01	1.67E+01			--
URANIUM-238, Total	U-238 SOL	pci/l	5 : 5	1.94E+00	3.41E+01	1.54E+01			--
RAD									
TOTAL Ra-226 & Ra-228, Total	Total Ra-226 &	pci/l	21 : 25	2.84E-01	1.67E+01	2.41E+00			--
TOTAL Ra-226 & Ra-228, Dissol	Total Ra-226 &	pci/l	17 : 22	4.31E-01	2.57E+00	1.10E+00			--
SVOC									
SW 846 8270									
1,4-Dioxane	123-91-1	ug/l	1 : 27	9.90E+00	9.90E+00	5.18E+00			--
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	6 : 27	1.10E+00	1.70E+01	4.84E+00			--
Di-N-Butyl phthalate	84-74-2	ug/l	1 : 27	1.00E+00	1.00E+00	1.00E+00			--
Naphthalene	91-20-3	ug/l	1 : 27	5.20E+00	5.20E+00	5.01E+00		1.50E+01	No
VOC									
SW 846 8260									
1,1,1-Trichloroethane	71-55-6	ug/l	1 : 27	1.60E+00	1.60E+00	1.60E+00		3.10E+02	No
1,1-Dichloroethane	75-34-3	ug/l	3 : 27	2.10E+00	2.00E+01	3.19E+00		2.20E+02	No
1,1-Dichloroethene	75-35-4	ug/l	4 : 27	8.30E-01	1.40E+01	3.02E+00		1.90E+01	No
1,2,3-Trichlorobenzene	87-61-6	ug/l	2 : 27	1.40E+00	1.60E+00	1.50E+00		3.40E+02	No
1,2,4-Trichlorobenzene	120-82-1	ug/l	2 : 27	5.70E+00	7.10E+00	2.81E+00		3.40E+02	No
1,2-Dichlorobenzene	95-50-1	ug/l	10 : 27	2.80E-01	7.20E+02	3.81E+01		2.60E+02	Yes
1,2-Dichloroethane	107-06-2	ug/l	1 : 27	1.30E+00	1.30E+00	1.30E+00		5.00E+00	No
1,3-Dichlorobenzene	541-73-1	ug/l	4 : 27	6.65E-01	2.80E+00	2.39E+00		8.30E+01	No
1,4-Dichlorobenzene	106-46-7	ug/l	12 : 27	5.00E-01	1.60E+03	7.06E+01		8.20E+02	Yes
Benzene	71-43-2	ug/l	5 : 27	2.20E-01	1.90E+04	8.84E+02		5.00E+00	Yes
Bromobenzene	108-86-1	ug/l	1 : 27	3.80E-01	3.80E-01	3.80E-01		3.90E+01	No
Bromodichloromethane	75-27-4	ug/l	1 : 27	4.30E-01	4.30E-01	4.30E-01		2.10E-01	Yes
Bromoform	75-25-2	ug/l	5 : 27	1.90E+00	8.20E+00	2.88E+00		8.30E-04	Yes
Bromomethane	74-83-9	ug/l	1 : 27	9.20E-01	9.20E-01	9.20E-01		2.00E+00	No
Carbon tetrachloride	56-23-5	ug/l	8 : 27	1.00E+00	5.60E+02	3.26E+01		5.00E+00	Yes

Table 5-33
Comparison of Volatile SRCs Detected in Groundwater to Comparison Levels for the Groundwater to Indoor Air Migration Pathway
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

Analyte Type/Analytical Method SRC (a)	CAS	Units	FOD (b)	Minimum Detected Concentration (c)	Maximum Detected Concentration (d)	Mean Concentration (e)	Location of Maximum Detected Concentration	Comparison Level (f)	Max Exceeds Comparison Level?
Chlorobenzene	108-90-7	ug/l	4 : 27	2.50E+00	4.40E+04	2.12E+03		3.90E+01	Yes
Chloroform	67-66-3	ug/l	25 : 27	1.10E+00	2.00E+04	1.79E+03		8.00E+01	Yes
Chloromethane	74-87-3	ug/l	2 : 27	7.70E-01	2.70E+00	2.44E+00		6.70E-01	Yes
Dibromochloromethane	124-48-1	ug/l	1 : 27	5.00E-01	5.00E-01	5.00E-01		3.20E-01	Yes
Methyl tert butyl ether	1634-04-4	ug/l	2 : 27	6.70E-01	9.40E-01	8.05E-01		1.20E+04	No
Tetrachloroethene	127-18-4	ug/l	8 : 27	4.40E-01	4.40E+01	3.83E+00		5.00E+00	Yes
Toluene	108-88-3	ug/l	1 : 27	1.90E+01	1.90E+01	3.16E+00		1.50E+02	No
Trichloroethene	79-01-6	ug/l	8 : 27	2.10E+00	3.30E+01	5.70E+00		5.00E+00	Yes
Trichlorofluoromethane	75-69-4	ug/l	1 : 27	2.20E+02	2.20E+02	1.09E+01		1.80E+01	Yes

Notes:
CAS - Chemical Abstracts Service number or other identifier.
SRC - Site-Related Chemical.
(a) Only chemicals with at least one positively detected result are reported.
(b) Frequency of detection - Number of detected samples: Total number of samples.
(c) Minimum detected concentration for each chemical, after duplicates have been averaged.
(d) Maximum detected concentration for each chemical, after duplicates have been averaged.
(e) Arithmetic mean concentration for each chemical, after duplicates have been averaged and any non detected results with a sample quantitation limit greater than the maximum detected concentration have been excluded.
(f) See Table 5-4 for comparison levels, as well as references, footnotes and synonyms.

Table 5-34

Comparison of Alpha-BHC and Heptachlor Concentrations in Groundwater to Vapor Intrusion Screening Levels

Phase A Source Area Investigation Results

Tronox Facility - Henderson, Nevada

SRC	Maximum Detected Groundwater Concentration (ug/L)	Location of Maximum Detected Groundwater Concentration	Comparison Level (c)	Comparison Level Basis	USEPA Target Groundwater Concentration (ug/L) (a)	USEPA Basis	Does Maximum Concentration Exceed Target Concentration?
Alpha-BHC	3.1	M5A	0.31	C	3.1	C	No
Heptachlor	0.41	PC40	0.41	MCL	0.4	MCL	No (b)

Notes:

C - Comparison Level based on potential cancer risk level of 10-7; USEPA target groundwater concentration based on potential cancer risk level of 10-6.

MCL - USEPA (2002) defaults to the USEPA Maximum Contaminant Level (MCL) for constituents with MCLs. August 2006. USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013.

SRC - Site-related chemical.

(a) USEPA. 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 29, 2002. Table 2c.

(b) Maximum detected groundwater concentration is approximately equal to the MCL.

(c) See Table 5-4.

Table 5-35
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Wet Chemistry															
Alkalinity (total, CO3--, HCO3-)	Alk as CaCO3	Yes					X	X							X
Ammonia	7664-41-7	Yes					X		X					X	X
Bromide	24959-67-9	Yes						X					X		
Chlorate	14866-68-3	Yes					X	X							X
Chloride	16887-00-6	Yes			X		X	X			X				X
Conductivity	COND	Yes						X							X
Cyanide (total)	57-12-5	Yes	X					X		X			X		
Nitrate	NO3	Yes			X		X	X			X				X
Nitrite	14797-55-8	Yes			X		X	X			X				X
Percent Moisture	Per Moisture	No						X					X		
Perchlorate	14797-73-0	Yes		X	X	X	X		X		X			X	
pH	PH	Yes						X					X		
Phosphate (ortho)	14265-44-2	Yes					X	X					X		
Sulfate	14808-79-8	Yes			X		X	X			X		X		
Surfactants (MBAS)	MBAS	Yes						X					X		
Total Dissolved Solids (TDS)	TDS	Yes						X	(h)		X			(h)	X
Total Organic Carbon (TOC)	TOC	Yes						X					X		
Total Suspended Solids (TSS)	TSS	Yes						X					X		
Dioxins and Furans															
PCDD/PCDFs total TEQ as 2,3,7,8-TCDD	TCDF2378	Yes						X		NA			X		
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	Yes						X		NA			X		
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	Yes						X		NA			X		
1,2,3,4,6,7,8-Heptatchlorodibenzofuran	67562-39-4	Yes						X		NA			X		
1,2,3,4,6,7,8-Heptatchlorodibenzo-p-dioxin	35822-46-9	Yes						X		NA			X		
1,2,3,4,7,8,9-Heptatchlorodibenzofuran	55673-89-7	Yes						X		NA			X		
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	Yes						X		NA			X		
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	Yes						X		NA			X		
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	Yes						X		NA			X		
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	Yes						X		NA			X		
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	Yes						X		NA			X		
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	Yes						X		NA			X		
1,2,3,7,8-Pentachlorodibenzof-p-dioxin	40321-76-4	Yes						X		NA			X		
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	Yes						X		NA			X		
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	Yes						X		NA			X		
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	Yes						X		NA			X		
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	Yes						X		NA			X		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Yes						X		NA			X		

Table 5-35
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Metals															
Aluminum	7429-90-5	Yes					X	X			X		X		
Antimony	7440-36-0	Yes					X	X					X		
Arsenic	7440-38-2	Yes		X	X	X	X		X		X			X	X
Barium	7440-39-3	Yes					X	X			X		X		
Beryllium	7440-41-7	Yes						X			X		X		
Boron	7440-42-8	Yes			X		X		X		X			X	X
Cadmium	7440-43-9	Yes					X	X			X		X		
Calcium	7440-70-2	Yes					X	X					X		X
Chromium (hexavalent)	18540-29-9	Yes		X	X	X	X		X		X			X	X
Chromium (total)	7440-47-3	Yes		X	X	X		X			X			X	
Cobalt	7440-48-4	Yes					X	X			X		X		
Copper	7440-50-8	Yes						X					X		
Iron	7439-89-6	Yes					X		X		X			X	
Lead	7439-92-1	Yes		X	X	X	X		X		X		X		X
Magnesium	7439-95-4	Yes			X		X	X			X		X		
Manganese	7439-96-5	Yes		X		X	X		X		X			X	X
Mercury	7439-97-6	Yes						X					X		
Molybdenum	7439-98-7	Yes					X		X		X			X	X
Nickel	7440-02-0	Yes					X	X			X		X		
Platinum	7440-06-4	Yes						X					X		
Potassium	7440-09-7	Yes			X		X	X							X
Selenium	7782-49-2	Yes	X					X					X		
Silver	7440-22-4	Yes						X					X		
Sodium	7440-23-5	Yes			X		X	X							X
Strontium	7440-24-6	Yes					X		X		X			X	X
Thallium	7440-28-0	Yes					X	X			X		X		
Tin	7440-31-5	Yes						X					X		
Titanium	7440-32-6	Yes						X					X		
Tungsten	7440-33-7	Yes						X					X		
Uranium	7440-61-1	Yes			X		X		X		X			X	X
Vanadium	7440-62-2	Yes							X		X			X	X
Zinc	7440-66-6	Yes						X					X		
Organochlorine Pesticides (OCPs)															
4,4'-DDD	72-54-8	Yes							(e)	X				(e)	
4,4'-DDE	72-55-9	Yes							(e)	X				(e)	
4,4'-DDT	50-29-3	Yes							(e)	X				(e)	
Aldrin	309-00-2	Yes	X						(e)	X				(e)	
alpha-BHC	319-84-6	Yes	X						(e)		X	X		X	
alpha-Chlordane	5103-71-9	Yes	X						(e)	X				(e)	
beta-BHC	319-85-7	Yes				X	X		X		X			X	
Chlordane, technical	57-74-9	Yes	X						(e)	X				(e)	
delta-BHC	319-86-8	Yes	X						(e)		X			(e)	
Dieldrin	60-57-1	Yes	X						(e)	X				(e)	

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Endosulfan I	959-98-8	Yes	X						(e)	X				(e)	
Endosulfan II	33213-65-9	Yes	X						(e)	X				(e)	
Endosulfan sulfate	1031-07-8	Yes	X						(e)	X				(e)	
Endrin	72-20-8	Yes	X						(e)	X				(e)	
Endrin aldehyde	7421-93-4	Yes							(e)	X				(e)	
Endrin Ketone	53494-70-5	Yes	X						(e)	X				(e)	
gamma-BHC (Lindane)	58-89-9	Yes	X						(e)		X			X	
gamma-Chlordane	5103-74-2	Yes	X						(e)					(e)	
Heptachlor	76-44-8	Yes	X						(e)		X	X		X	
Heptachlor epoxide	1024-57-3	Yes	X						(e)	X				(e)	
Methoxychlor	72-43-5	Yes							(e)					(e)	
Toxaphene	8001-35-2	Yes	X						(e)	X				(e)	
Organophosphorus Pesticides (OPPs)															
Azinphos-methyl	86-50-0	Yes	X					X		X			X		
Bolstar	35400-43-2	Yes	X					X		X			X		
Chlorpyrifos	2921-88-2	Yes	X					X		X			X		
Coumaphos	56-72-4	Yes	X					X		X			X		
Demeton-O	298-03-3	Yes					X	X		X			X		
Demeton-S	126-75-0	Yes	X					X		X			X		
Diazinon	333-41-5	Yes	X					X		X			X		
Dichlorvos	62-73-7	Yes	X					X		X			X		
Dimethoate	60-51-5	Yes					X	X		X			X		
Disulfoton	298-04-4	Yes	X					X		X			X		
EPN (Ethyl p-nitrophenyl phenylphosphorothioate)	2104-64-5	Yes	X					X		X			X		
Ethoprop	13194-48-4	Yes	X					X		X			X		
Famphur	52-85-7	Yes	X					X		X			X		
Fensulfothion	115-90-2	Yes	X					X		X			X		
Fenthion	55-38-9	Yes	X					X		X			X		
Malathion	121-75-5	Yes	X					X		X			X		
Merphos	150-50-5	Yes	X					X		X			X		
Mevinphos	7786-34-7	Yes	X					X		X			X		
Naled	300-76-5	Yes	X					X		X			X		
Parathion-ethyl (Ethyl Parathion)	56-38-2	Yes	X					X		X			X		
Parathion-methyl (Methyl Parathion)	298-00-0	Yes	X					X		X			X		
Phorate	298-02-2	Yes	X					X		X			X		
Ronnel	299-84-3	Yes	X					X		X			X		
Stirphos	22248-79-9	Yes	X					X		X			X		
Sulfotepp (Tetraethyldithiopyrophosphate)	3689-24-5	Yes	X					X		X			X		
Thionazin	297-97-2	Yes	X					X		X			X		
Tokuthion	34643-46-4	Yes	X					X		X			X		
Trichloronate	327-98-0	Yes	X					X		X			X		

Table 5-35
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	Chemical Abstracts Service Number	Site-Related Chemical? (Yes or No)	Never Detected In Soil	Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)	Not Consistent with Background Any Soil Depths (a,b)	Max> Comparison Level Direct Contact Pathways?	Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Never Detected In Groundwater	Max> Comparison Level Direct Contact Pathways?	Max> Comparison Level Vapor Intrusion Pathway?	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Proposed for Further Sampling to Evaluate Background Groundwater
Organochlorine Herbicides															
Silvex (2-(2,4,5-trichlorophenoxy) propionic acid)	93-72-1	Yes	X					X		X			X		
Polychlorinated Biphenyl (PCB) Compounds															
Aroclor 1016	12674-11-2	Yes	X					X		X			X		
Aroclor 1221	11104-28-2	Yes	X					X		X			X		
Aroclor 1232	11141-16-5	Yes	X					X		X			X		
Aroclor 1242	53469-21-9	Yes	X					X		X			X		
Aroclor 1248	12672-29-6	Yes	X					X		X			X		
Aroclor 1254	11097-69-1	Yes	X					X		X			X		
Aroclor 1260	11096-82-5	Yes					X	X		X			X		
Radionuclides															
Radium 226	13982-63-3	Yes			X	X	X	X			X		X		
Radium 228	15262-20-1	Yes				X	X	X			X		X		
Thorium 228	14274-82-9					X	X	X		X	X		X		
Thorium 230	14269-63-7	Yes				X	X	X			X		X		
Thorium 232	7440-29-1	Yes						X		X	X		X		
Uranium 234	13966-29-5	Yes					X	X			X			X	X
Uranium 235	15117-96-1	Yes				X	X	X			X		X		
Uranium 238	7440-61-1	Yes				X	X	X			X			X	X
Semi-Volatile Organic Compounds (SVOCs)															
1,4-Dioxane	123-91-1	Yes	X					X			X		X		
2-Methylnaphthalene	91-57-6	Yes	X					X		X			X		
Acenaphthene	83-32-9	Yes	X						(i)	X			X		
Acenaphthylene	208-96-8	Yes	X						(i)	X			X		
Anthracene	120-12-7	Yes	X						(i)	X			X		
Benzo(a)anthracene	56-55-3	Yes					X		(i)	X			X		
Benzo(a)pyrene	50-32-8	Yes				X			(i)	X			X		
Benzo(b)fluoranthene	205-99-2	Yes							(i)	X			X		
Benzo(g,h,i)perylene	191-24-2	Yes							(i)	X			X		
Benzo(k)fluoranthene	207-08-9	Yes							(i)	X			X		
Bis(2-ethylhexyl)phthalate	117-81-7	Yes						X			X		X		
Butylbenzylphthalate	85-68-7	Yes	X					X		X			X		
Chrysene	218-01-9	Yes							(i)	X			X		
Dibenzo(a,h)anthracene	53-70-3	Yes	X						(i)	X			X		
Diethylphthalate	84-66-2	Yes						X		X			X		
Dimethylphthalate	131-11-3	Yes	X					X		X			X		
Di-n-butylphthalate	84-74-2	Yes						X					X		
Di-n-octylphthalate	117-84-0	Yes	X					X		X			X		
Fluoranthene	206-44-0	Yes							(i)	X			X		
Fluorene	86-73-7	Yes	X						(i)	X			X		

Table 5-35
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	**Chemical Abstracts Service Number**	**Site-Related Chemical? (Yes or No)**	**Never Detected In Soil**	**Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)**	**Not Consistent with Background Any Soil Depths (a,b)**	**Max> Comparison Level Direct Contact Pathways?**	**Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Never Detected In Groundwater**	**Max> Comparison Level Direct Contact Pathways?**	**Max> Comparison Level Vapor Intrusion Pathway?**	**Not Proposed for Further Evaluation in Phase B**	**Proposed for Further Evaluation in Phase B**	**Proposed for Further Sampling to Evaluate Background Groundwater**
Hexachlorobenzene	118-74-1	Yes				X	X		(g)	X			X		
Indeno(1,2,3-cd)pyrene	193-39-5	Yes							(i)	X			X		
Naphthalene	91-20-3	Yes	X						(i)		X		X		
Nitrobenzene	98-95-3	Yes	X					X		X			X		
Octachlorostyrene	29082-74-4	Yes						X		X			X		
Phenanthrene	85-01-8	Yes							(i)	X			X		
Pyrene	129-00-0	Yes							(i)	X			X		
Pyridine	110-86-1	Yes	X					X		X			X		
Total Petroleum Hydrocarbons (TPH) and															
fuel alcohols															
GRO(C6 -C10)	TPH-gasoline	Yes						X		X			X		
DRO(C10 -C28)	TPH-diesel	Yes				X			(i)	X			X		
ORO (C28 -C38)	TPH-MOTOR	Yes				X			(i)	X			X		
Methanol	67-56-1	Yes	X					X		X			X		
Ethanol	64-17-5	Yes	X					X					X		
Ethylene glycol	107-21-1	Yes	X					X		X			X		
Volatile Organic Compounds (VOCs)															
1,1,1,2-Tetrachloroethane	630-20-6	No	X						(f)	X				(f)	
1,1,1-Trichloroethane	71-55-6	Yes							(f)					(f)	
1,1,2,2-Tetrachloroethane	79-34-5	No	X						(f)	X				(f)	
1,1,2-Trichloroethane	79-00-5	No	X						(f)	X				(f)	
1,1-Dichloroethane	75-34-3	No							(f)					(f)	
1,1-Dichloroethene	75-35-4	No	X						(f)		X			X	
1,1-Dichloropropene	563-58-6	No	X						(f)	X				(f)	
1,2,3-Trichlorobenzene	87-61-6	No					X		X					(f)	
1,2,3-Trichloropropane	96-18-4	No	X						(f)	X				(f)	
1,2,4-Trichlorobenzene	120-82-1	No					X		X					(f)	
1,2,4-Trimethylbenzene	95-63-6	Yes	X						(f)	X				(f)	
1,2-Dibromo-3-chloropropane	96-12-8	No	X						(f)	X				(f)	
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	No	X						(f)	X				(f)	
1,2-Dichlorobenzene	95-50-1	Yes							(f)		X	X		X	
1,2-Dichloroethane	107-06-2	No					X		X					(f)	
1,2-Dichloropropane	78-87-5	No	X						(f)	X				(f)	
1,3,5-Trimethylbenzene	108-67-8	Yes							(f)	X				(f)	
1,3-Dichlorobenzene	541-73-1	Yes							(f)					(f)	
1,3-Dichloropropane	142-28-9	No	X						(f)	X				(f)	
1,4-Dichlorobenzene	106-46-7	Yes					X		X		X	X		X	
2,2-Dichloropropane	594-20-7	No	X						(f)	X				(f)	
2-Butanone	78-93-3	Yes							(f)	X				(f)	
2-Chlorotoluene	95-49-8	No							(f)	X				(f)	
2-Hexanone	591-78-6	Yes							(f)	X				(f)	

Table 5-35
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	Chemical Abstracts Service Number	Site-Related Chemical? (Yes or No)	Never Detected In Soil	Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)	Not Consistent with Background Any Soil Depths (a,b)	Max> Comparison Level Direct Contact Pathways?	Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Never Detected In Groundwater	Max> Comparison Level Direct Contact Pathways?	Max> Comparison Level Vapor Intrusion Pathway?	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Proposed for Further Sampling to Evaluate Background Groundwater
4-Chlorotoluene	106-43-4	No	X						(f)	X				(f)	
4-Methyl-2-pentanone	108-10-1	Yes	X						(f)	X				(f)	
Acetone	67-64-1	Yes							(f)	X				(f)	
Benzene	71-43-2	Yes				X	X		X		X	X		X	
Bromobenzene	108-86-1	No	X						(f)					(f)	
Bromochloromethane	74-97-5	No	X						(f)	X				(f)	
Bromodichloromethane	75-27-4	No	X						(f)			X		X	
Bromoform	75-25-2	No							(f)			X		X	
Bromomethane	74-83-9	No	X						(f)		X			X	
Carbon Tetrachloride	56-23-5	No					X		X		X	X		X	
Chlorobenzene	108-90-7	Yes					X		X		X	X		X	
Chloroethane	75-00-3	No	X						(f)	X				(f)	
Chloroform	67-66-3	Yes				X	X		X		X	X		X	
Chloromethane	74-87-3	No	X						(f)			X		X	
cis-1,2-Dichloroethene	156-59-2	No	X						(f)	X				(f)	
cis-1,3-Dichloropropene	10061-01-5	No	X						(f)	X				(f)	
Dibromochloromethane	124-48-1	No	X						(f)			X		X	
Dibromomethane	74-95-3	No	X						(f)	X				(f)	
Dichlorodifluoromethane	75-71-8	No	X						(f)	X				(f)	
Diisopropyl ether (DIPE)	108-20-3	Yes	X						(f)	X				(f)	
Ethylbenzene	100-41-4	Yes	X						(i)	X				(f)	
Ethyl-tert-butyl ether (ETBE)	637-92-3	Yes	X						(f)	X				(f)	
Hexachlorobutadiene	87-68-3	No							(f)	X				(f)	
Isopropyl Benzene (Cumene)	98-82-8	Yes	X						(f)	X				(f)	
Methylene Chloride	75-09-2	No					X		X	X				(f)	
Methyl-tert-butyl ether (MTBE)	1634-04-4	Yes	X						(f)					(f)	
Naphthalene	91-20-3	Yes							(f)	X				(f)	
n-Butylbenzene	104-51-8	Yes	X						(f)	X				(f)	
n-Propylbenzene	103-65-1	Yes	X						(f)	X				(f)	
p-Isopropyltoluene	99-87-6	Yes	X						(f)	X				(f)	
sec-Butylbenzene	135-98-8	Yes	X						(f)	X				(f)	
Styrene	100-42-5	No	X						(f)	X				(f)	
tert-Amyl-methyl ether (TAME)	994-05-8	Yes	X						(f)	X				(f)	
tert-Butyl alcohol (TBA)	75-65-0	Yes	X						(f)	X				(f)	
tert-Butylbenzene	98-06-6	Yes	X						(f)	X				(f)	
Tetrachloroethene	127-18-4	Yes					X		X		X	X		X	
Toluene	108-88-3	Yes							(i)					(f)	
trans-1,2-Dichloroethene	156-60-5	No	X						(f)	X				(f)	
trans-1,3-Dichloropropene	10061-02-6	No	X						(f)	X				(f)	
Trichloroethene	79-01-6	Yes					X		X		X	X		X	
Trichlorofluoromethane	75-69-4	No							(f)		X	X		X	
Vinyl Chloride	75-01-4	No	X						(f)	X				(f)	
Xylenes (total)	1330-20-7	Yes	X						(i)	X				(f)	
Asbestos															
Asbestos	132207-33-1	Yes				Yes (d)			X	NA					

Table 5-35
Summary of Evaluation of Phase A Adequacy of Characterization
Phase A Source Area Investigation Results
Tronox Facility - Henderson, Nevada

			Soil							Groundwater					
			Phase A					Phase B		Phase A			Phase B		
Analyte	Chemical Abstracts Service Number	Site-Related Chemical? (Yes or No)	Never Detected In Soil	Not Consistent with Background Shallow Soil (0-15 ft bgs) (a,b,c)	Not Consistent with Background Any Soil Depths (a,b)	Max> Comparison Level Direct Contact Pathways?	Include for Further Evaluation of the Soil to Groundwater Pathway? (See Table 5-31)	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Never Detected In Groundwater	Max> Comparison Level Direct Contact Pathways?	Max> Comparison Level Vapor Intrusion Pathway?	Not Proposed for Further Evaluation in Phase B	Proposed for Further Evaluation in Phase B	Proposed for Further Sampling to Evaluate Background Groundwater

Notes:
SIM - Selected Ion Monitoring
(a) Detemined not to be consistent with background to direct contact comparison levels. See Table 5-15.
(b) Background comparisons only performed for inorganic parameters; organic parameters are generally non detect in background soils. The inorganic parameters calculated include metals, radionuclides and chloride, nitrate, sulfate and perchlorate.
(c) The background comparison for shallow soils (0-15 ft bgs) was only performed for those parameters listed in (b) that also exceeded the risk-based comparison for direct contact.
(d) Further characterization of asbestos identified for specific areas on-site. See Table 5-16.
(e) Analyte does not need to be further evaluated in Phase B, but will be analyzed nonetheless as part of the entire suite of OCPs since Beta-BHC must be further evaluated in Phase B.
(f) Analyte does not need to be further evaluated in Phase B, but will be analyzed nonetheless as part of the entire suite of VOCs since individual VOCs must be further evaluated in Phase B.
(g) Will be evaluated using EPA method 8081A for organochlorine pesticides.
(h) TDS is evaluated through characterization of major contributors to TDS: chlorate, chloride, sulfate, calcium, magnesium, and sodium.
(i) Polycyclic Aromatic hydrocarbons, benzene, toluene, ethybenzene, & xylenes, and TPH are included in Ph B in select locations to address potential historical source areas not evaluated in Phase A.

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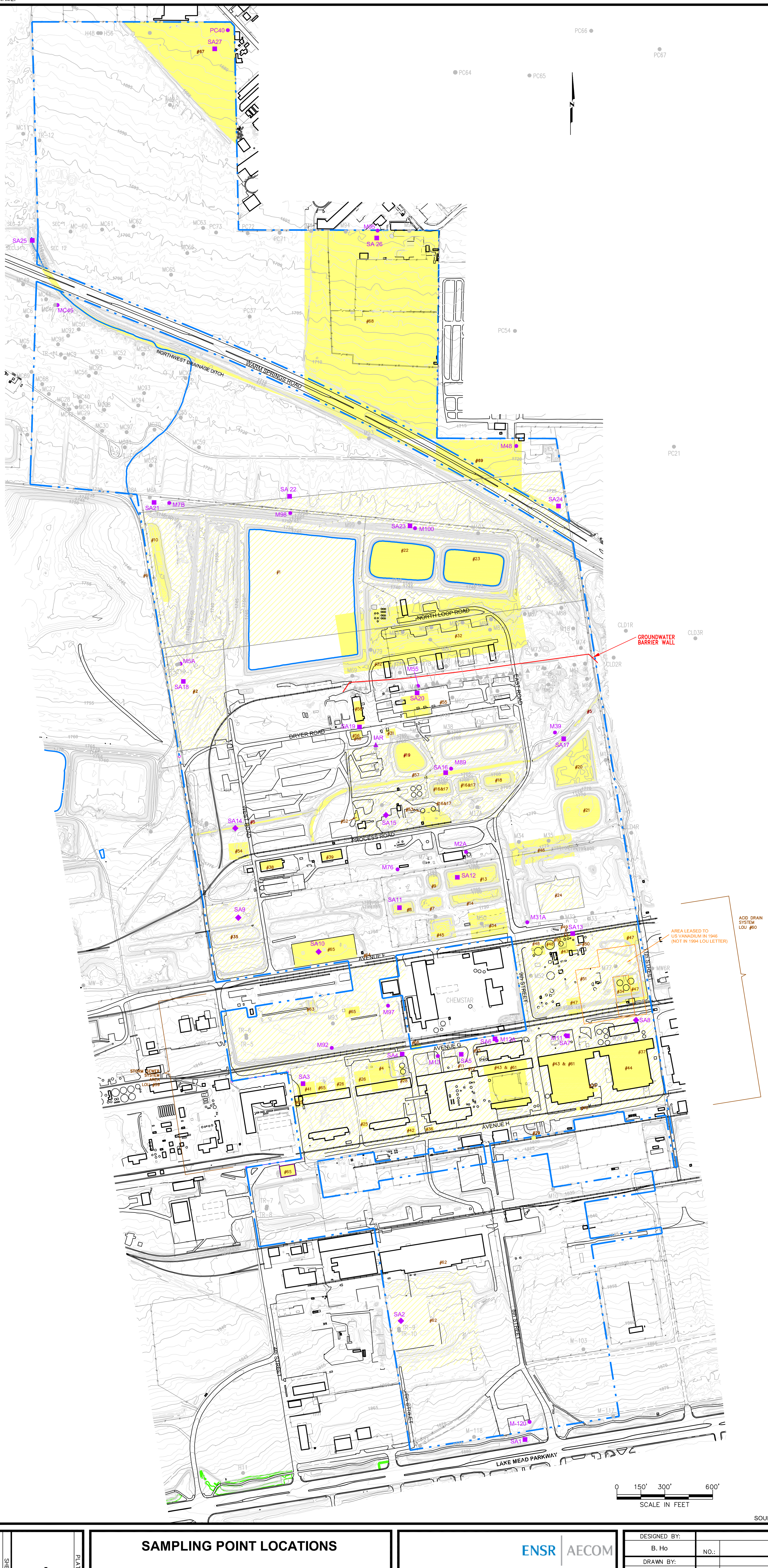
Plates

FILENAME:



LEGEND

- PROPERTY BOUNDARY
- ELEVATION CONTOUR 5' INTERVAL
- ELEVATION CONTOUR 1' INTERVAL
- GROUNDWATER MONITORING WELL LOCATION
- RECOVERY WELL
- POTENTIAL SOURCE AREA
- POTENTIAL SOURCE AREA THAT IS LESS DEFINED
- SAI BORING LOCATION
- SAI MONITORING WELL
- SAI COMBINED BORING LOCATION AND GROUNDWATER GRAB SAMPLE LOCATION
- RECOVERY WELL - GROUNDWATER SAMPLED FOR SAI

LOU Number	Name of LOU
1	Trade Effluent Settling Ponds
2	Open Area Due South of "Trade Effluent Disposal Ponds"
3	Air Pollution Emissions Associated with Industrial Processes
4	Hardesty Chemical Company Site (prior to J. B. Kelley Operations)
5	On-Site Portion of Beta Ditch, Including "Small Diversion Ditch" Northwest of Pond C-1
6	Unnamed Drainage Ditch Segment (BMI Landfill)
7	Old P-2 Pond and Associated Conveyance Facilities
8	Old P-3 Pond and Associated Conveyance Facilities
9	New P-2 Pond and Associated Piping
10	On-Site Hazardous Waste Landfill (Closed)
11	Sodium Chlorate Filter Cake Holding Area
12	Hazardous Waste Storage Area
13	Pond S-1
14	Pond P-1, and Associated Conveyance Piping
15	Platinum Drying Unit
16 17	Ponds AP-1, AP-2, and AP-3 and Associated Transfer Lines
18	Pond AP-4
19	Pond AP-5
20	Pond C-1 and Associated Piping
21	Mn-1 and Associated Piping
22	Pond WC-1 and Associated Piping
23	Pond WC-2 and Associate Piping
24	Leach Beds, Associated Conveyance Facilities, and Mn Tailings Area
25	Process Hardware Storage Area
26	Trash Storage Area
27	PCB Storage Area
28	Hazardous Waste Storage Area
29	Solid Waste Dumpster
30	AP Area-Pad 35
31	Drum Recycling Area
32	Ground Water Remediation Unit
33	Sodium Perchlorate Platinum By-Product Filter, Unit 5
34	Former Manganese Tailings Area
35	Truck Emptying/Dumping Site
36	Former Satellite Accumulation Point, Unit 3, Maintenance Shop
37	Former Satellite Accumulation Point, Unit 6, Maintenance Shop
38	Former Satellite Accumulation Point, AP-Laboratory
39	Satellite Accumulation Point-AP Maintenance Shop
40	PCB Transformer Spill
41	Unit 1 Tenant Stains
42	Unit 2 Salt Redler
43	Unit 4 and 5 Basements
44	Unit 6 Basement
45	Diesel Storage Tank
46	Former Old Main Cooling Tower and Recirculation Lines
47	Leach Plant Area Manganese Ore Piles
48	Leach Plant Analyte Tanks
49	Leach Plant Area Sulfuric Acid Storage Tanks
50	Leach Plant Area Leach Tanks
51	Leach Plant Area Transfer Lines
52	AP Plant Area Screening Building, Dryer Building and Associated Sump
53	AP Plant Area Tank Farm
54	AP Plant Area Change House/ Laboratory Septic Tank
55	Area Affected by July 1990 Fire
56	AP Plant Area Old Building D-1- Washdown
57 58	AP Plant Area New Building D-1- Washdown and AP Plant Transfer Lines to Sodium Chlorate Process, AP Plant SI's and Transfer Lines
59	Storm Sewer System
60	Acid Drain System
61	Old Sodium Chlorate Plant Decommissioning
62	State Industries, Inc. Site, Including Impoundments and Catch Basin
63	J. B. Kelley, Inc. Trucking Site
64	Koch Materials Company Site
65	Nevada Precast Concrete Products, Green Ventures International, Buckles Construction Company and Ebony Construction Sites
66	Above-Ground Diesel Storage Tank Leased by Flintkote Co.
67	Delbert Madsen and Estate of Delbert Madsen Site
68	Southern Nevada Auto Parts Site (Pick-a-Part)
69	Dillon Potter Site

LOU = Site identified in letter of understanding dated August 15, 1994

SOURCE/SURVEYOR: PBS&J, HENDERSON, N.V. NOVEMBER 2006

SHEET NUMBER: X

PLATE NUMBER: 1-1

SAMPLING POINT LOCATIONS

Phase A Source Area Investigation
Tronox Facility
Henderson, Nevada

SCALE:	DATE:	PROJECT NUMBER:
1" = 300'	9/25/2007	04020-023-402

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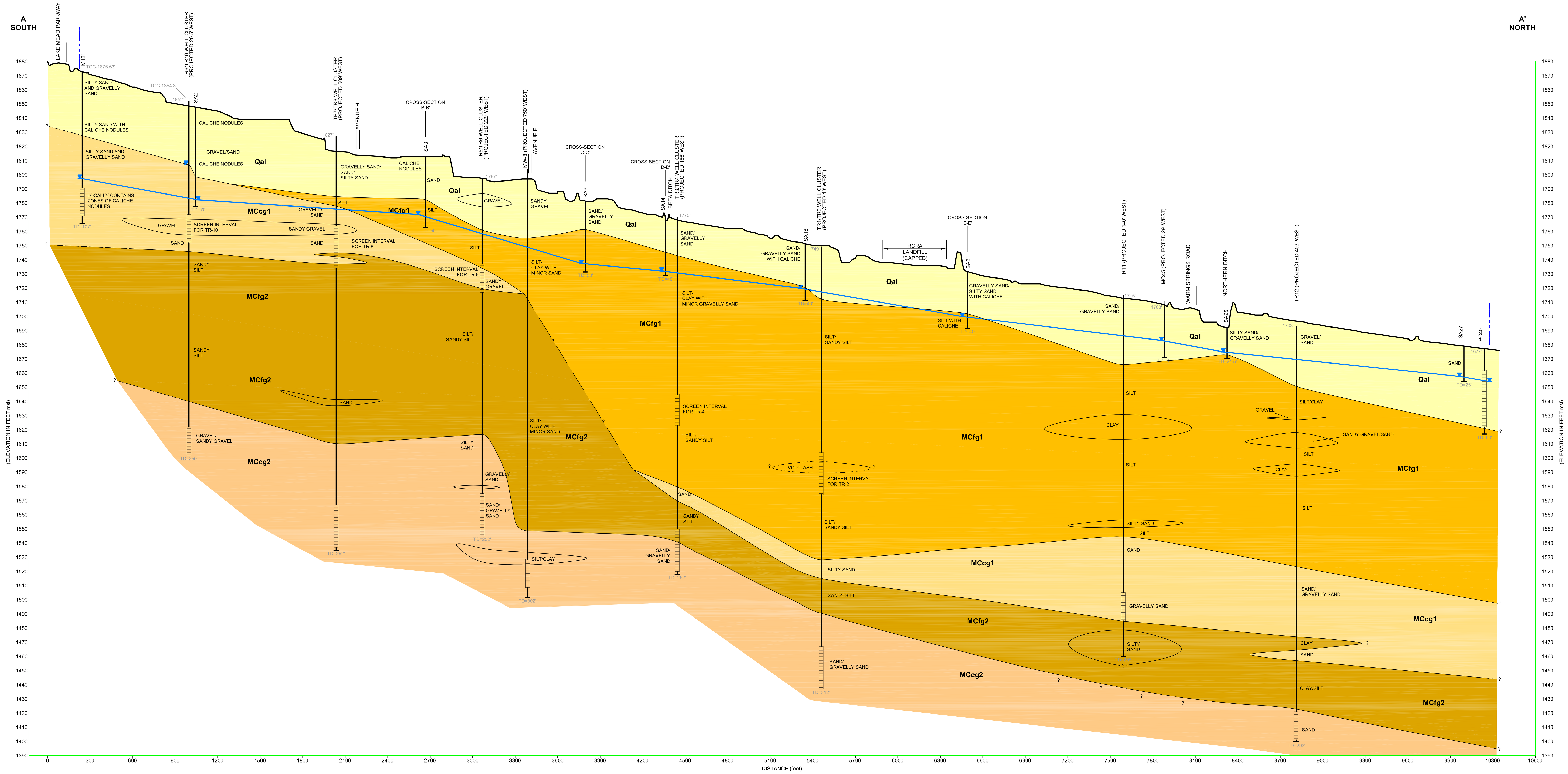
DRAWN BY:	M. Scop
CHECKED BY:	S. Bilodeau
APPROVED BY:	D. Gerry

REVISIONS

NO.:	DESCRIPTION:	DATE:	BY:

TRONOX



LEGEND

BORING/WELL IDENTIFICATION

GROUND SURFACE ELEVATION (ft. msl)

SCREEN INTERVAL

TOTAL DEPTH OF BORING/WELL

QUATERNARY ALLUVIUM

MUDDY CREEK FORMATION FINE-GRAINED FACIES #1

MUDDY CREEK FORMATION COARSE-GRAINED FACIES #1

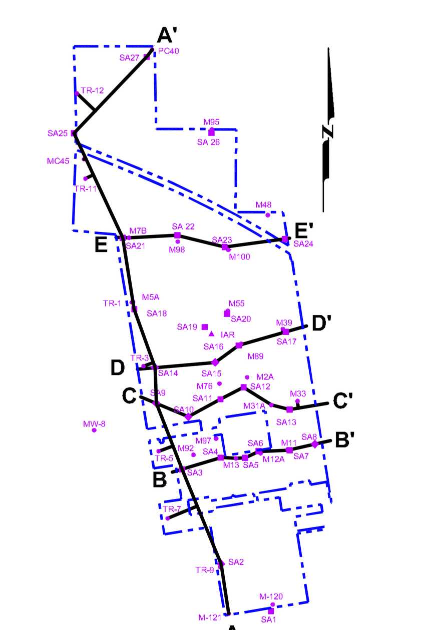
MUDDY CREEK FORMATION FINE-GRAINED FACIES #2

MUDDY CREEK FORMATION COARSE-GRAINED FACIES #2

GROUNDWATER LEVEL (NOVEMBER 2006)

TRONOX FACILITY BOUNDARY

SCALE



INDEX MAP

0 1000' 2000' 4000'

SCALE IN FEET

TRONOX

REVISIONS

NO.	DESCRIPTION	DATE	BY

DESIGNED BY: B. Ho

DRAWN BY: M. Scop

CHECKED BY: B. Ho

APPROVED BY: B. Ho

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GEOLOGICAL CROSS SECTION A-A' SOUTH TO NORTH

Phase A Source Area Investigation
Tronox Facility
Henderson, Nevada

SCALE: as noted

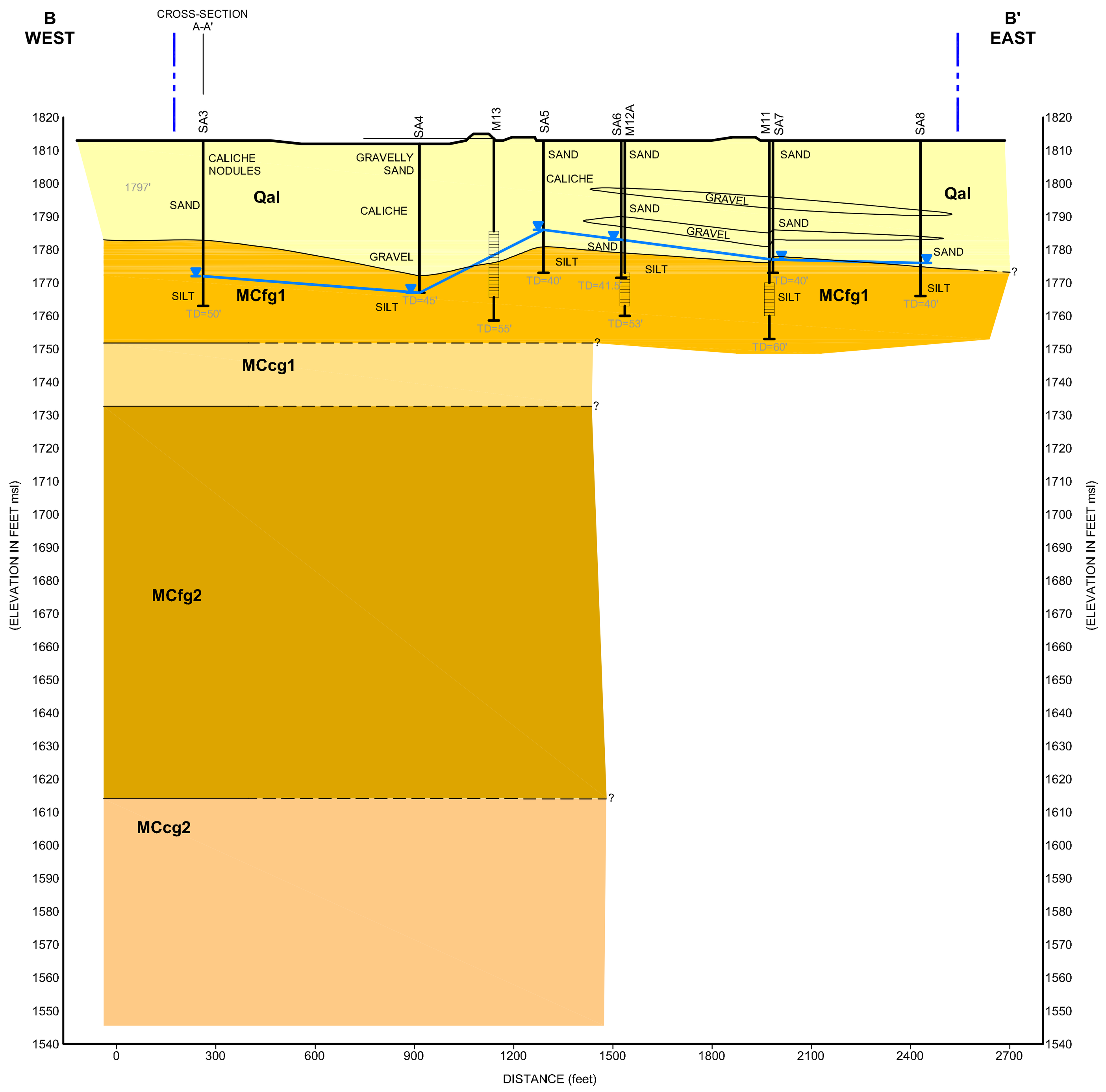
DATE: 9/25/2007

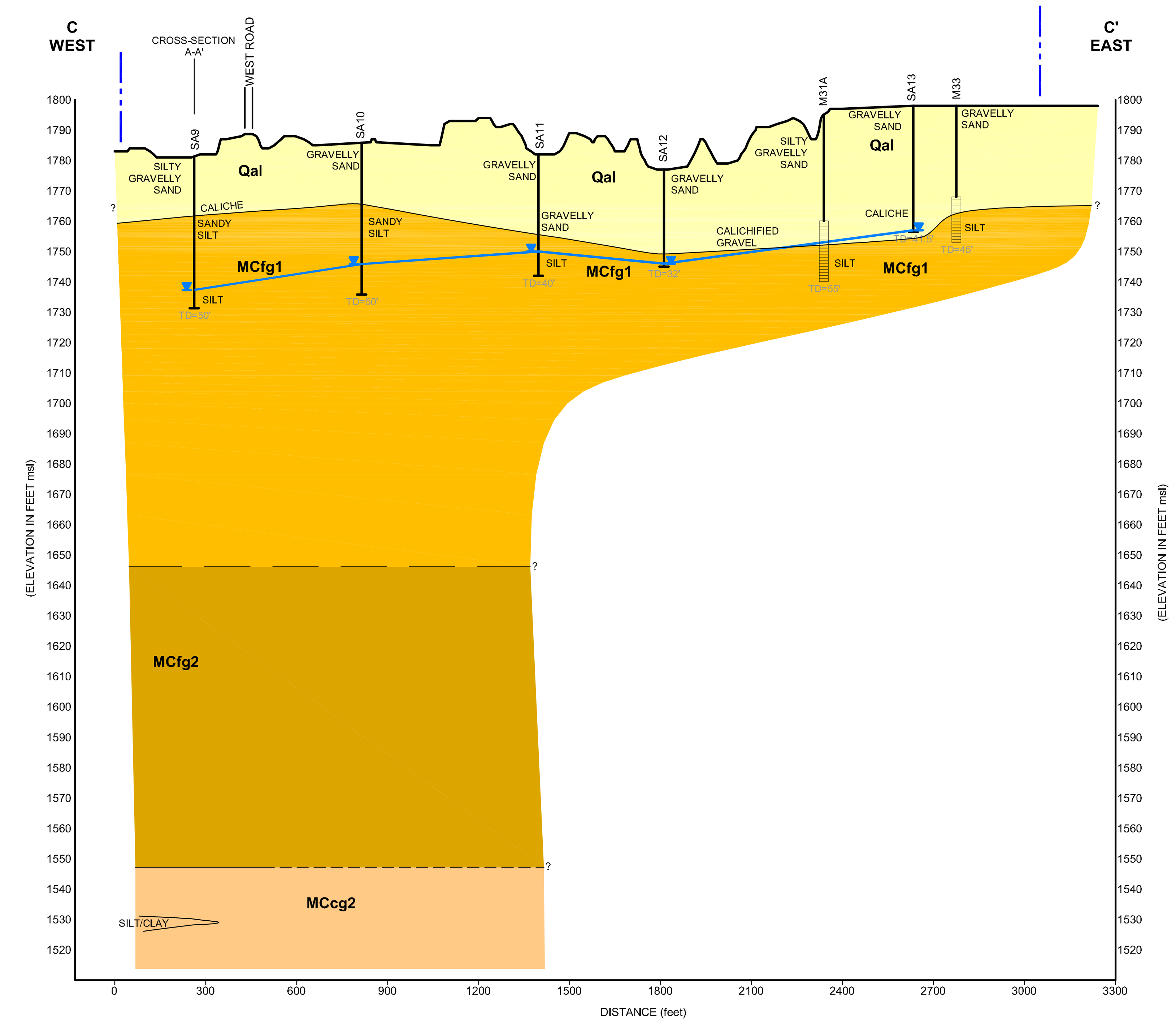
PROJECT NUMBER: 04020-023-402

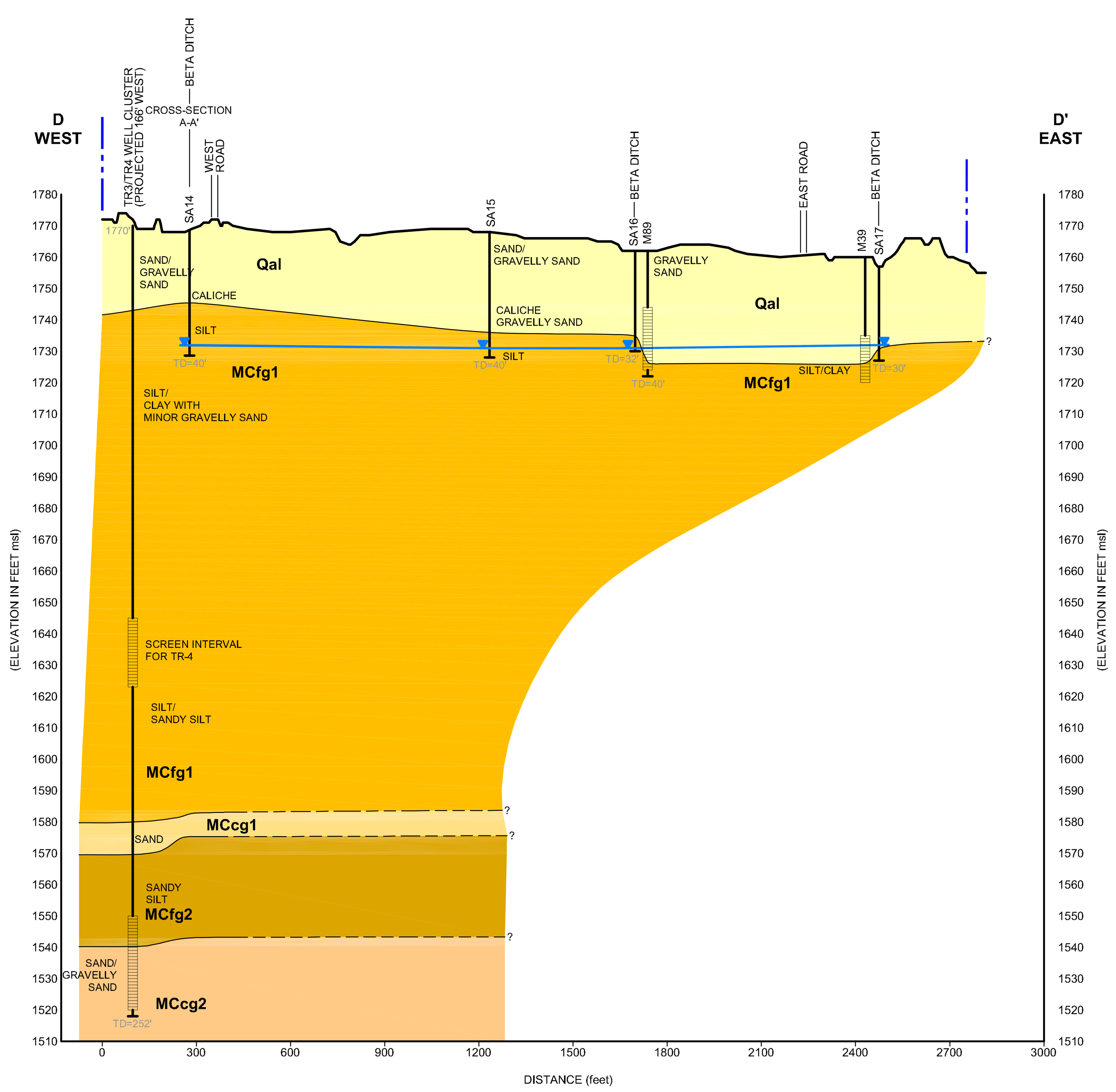
PLATE NUMBER: 4-1

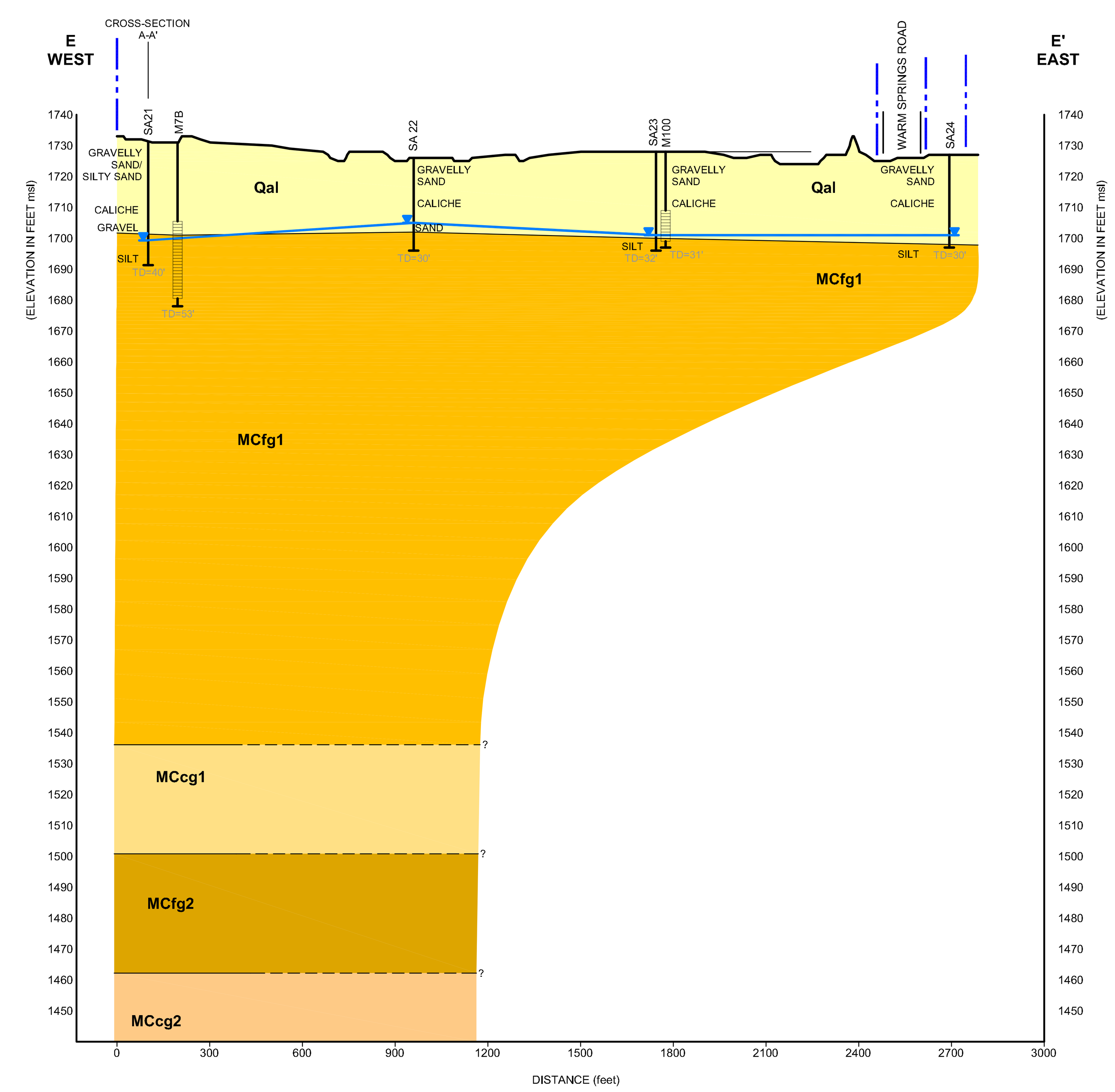
SHEET NUMBER:

FILENAME:









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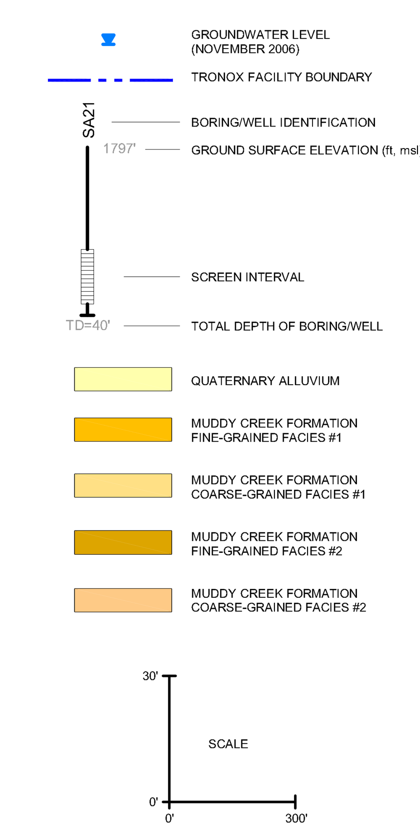

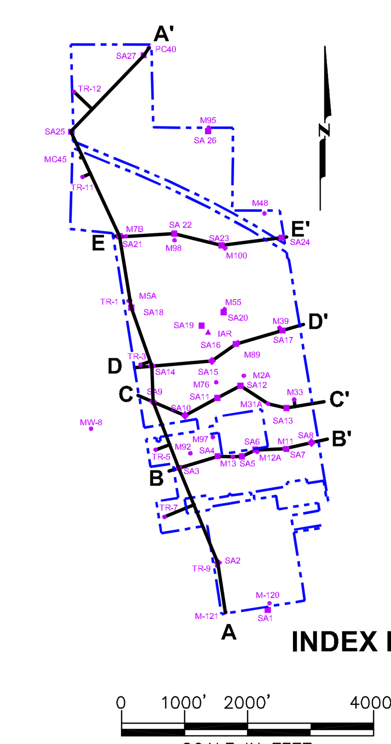

INDEX MAP

TRONOX

REVISIONS

NO.	DESCRIPTION:	DATE:	BY:

DESIGNED BY: B. Ho
DRAWN BY: M. Scop
CHECKED BY: B. Ho
APPROVED BY: B. Ho

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GEOLOGICAL CROSS SECTIONS B-B', C-C', D-D' & E-E' WEST TO EAST

Phase A Source Area Investigation
Tronox Facility
Henderson, Nevada

PROJECT NUMBER: 04020-023-402
DATE: 9/25/2007
SCALE: as noted

PLATE NUMBER: 4-2

SHEET NUMBER: X

FILENAME: