

#### **ENSR**

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April 9, 2007

Ms. Susan Crowley Tronox LLC P. O. Box 55 Henderson, Nevada 89009

ENSR Project: 04020-023-420

Subject: Volume Determination of Manganese Tailings Pile, Tronox Facility, Henderson,

Nevada.

Dear Ms. Crowley:

At your direction, ENSR drilled and sampled nine soil borings in the manganese tailings (Mn tailings) pile on the Tronox LLC (TRX) facility in Henderson, Nevada. The scope of work also included estimating the in-place volume of the Mn tailings. Field work was conducted on September 13 and 14, 2006, under the Master Services Agreement OKC MWA C-1488-11 between TRX Corporation and ENSR, and as described in the ENSR proposal dated August 23, 2006. Mr. Edward J. Krish was mobilized as the project supervising geologist and Mr. Eric Nelson as the staff geologist. Mr. David Gerry was the Nevada Certified Environmental Manager directing the activities.

#### Task 1: Drill and Sample Nine Soil Borings

According to existing maps and aerial photographs provided by Tronox, the Mn tailings pile is estimated to encompass an area of approximately eight-acres. ENSR contracted with WDC Exploration & Wells in Las Vegas, Nevada, to drill nine borings on the Mn tailings pile. The borings were laid out as a grid of three borings on three parallel traverses. Borings were drilled through the Mn tailings pile and terminated in the underlying native soil at depths ranging between 10 feet below ground surface (bgs) and 31 feet bgs. In general, the Mn tailings are composed of various combinations of dark gray to dark brown silty clay, silty sand and sandy clay with minor amounts of fine gravel. The underlying alluvium consists of light brown silty sand and silty gravelly sand. A total of 180 feet were drilled between the nine boring locations.

The borings were drilled using a hollow-stem auger. Split-spoon and bulk soil samples were collected approximately every ten feet, or from the approximate top, middle, and bottom of the pile. Additional split-spoon soil samples were collected, as needed, to confirm the location of the interface between the overlying Mn tails and the underlying native soil. The split-spoon and bulk samples are archived at the Tronox Henderson facility. The boring locations were surveyed using a high resolution GPS and are shown on Plate 1, the Manganese Tailings Reserve Map. Lithologic descriptions of the Mn tailings material were recorded for the nine borings (Appendix A). The soil boring drilling statistics and soil samples collected during this drilling activity are listed in Table 1. Three bulk samples of approximately 15 pounds each, MN-

Ms. Susan Crowley Tronox LLC Page 2

1-1-5, MN-6-10-15, and MN-9-25-30, were shipped to McClelland Labs in Sparks, Nevada on behalf of AIG for Profile 1 testing per the Meteoric Water Mobility Procedure.

### Task 2: Calculation of the Volume of the Manganese Tailings Pile

A search of the old Basic Magnesium, Inc. drawings collection yielded the pre-tails 1944 as-built drawings of the area. Plate 2, the Pre-Tailings Surface Configuration Map, shows the locations of the old cooling tower, roads, railroad grades, berms, and basins with spot elevations. These data, combined with the current topographic map of the Mn tailings pile, **Plate 1**, and the base elevations of the tailings from the drill holes, were used to construct the three cross sections of the Mn tailings pile (Figures 1, 2, and 3).

To calculate the volume of the Mn tailings pile, a cross-sectional block model technique was used. The pile was subdivided into three blocks as shown on Plates 1 and 2, each with a width extending half way between the adjacent drill hole and/or the edge of the pile.

The area of Mn tails in each cross section was measured and extrapolated across the width of the block to arrive at the cubic feet of tailings in each block. These cubic feet values were converted to cubic yards and summed to arrive at the total cubic yards of tailings in the pile. The calculation for each block is shown on its' respective figure. The results show that approximately 40,023 cubic yards of tails are in Block A, approximately 67,453 cubic yards are in Block B and approximately 105,555 cubic yards are in Block C, for a grand total of approximately 213,031 cubic yards of Mn tailings in the pile.

If you have any questions or concerns please contact me at 405-760-5777 or ekrish@frontiernet.net.

Sincerely,

David L. Gerry, R.G., C.E.G.

Senior Program Manager

Ed Krish

Supervising Geologist

Edward & Krish

#### Attachments:

Plate 1: Manganese Tailings Reserve

Plate 2: Pre-Tailings Surface Configuration

Figure 1: Manganese Tailings – Block A North-South Cross Section A-A'

Figure 2: Manganese Tailings – Block B North-South Cross Section B-B'

Figure 3: Manganese Tailings - Block C North-South Cross Section C-C'

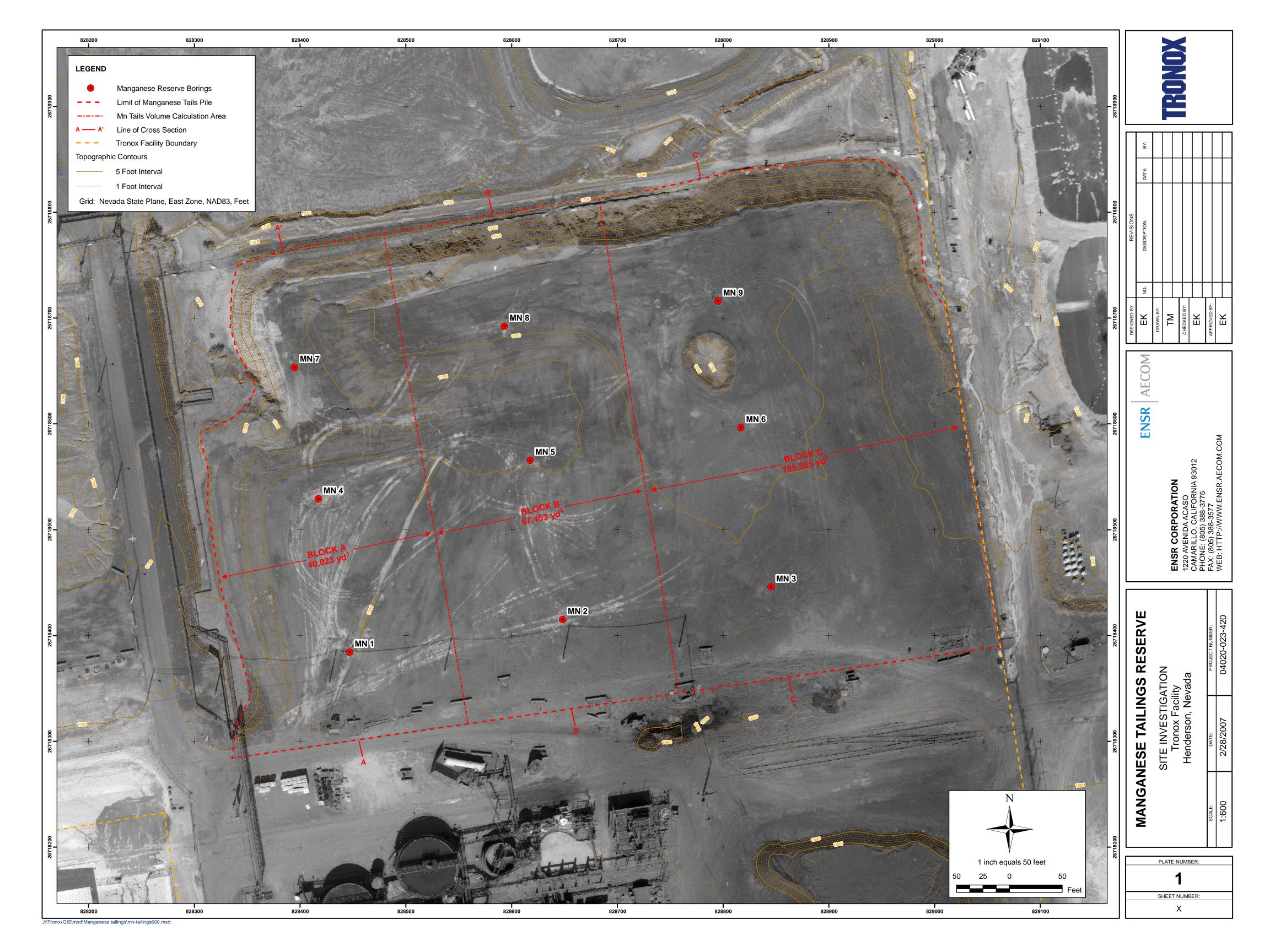
Ms. Susan Crowley Tronox LLC Page 3

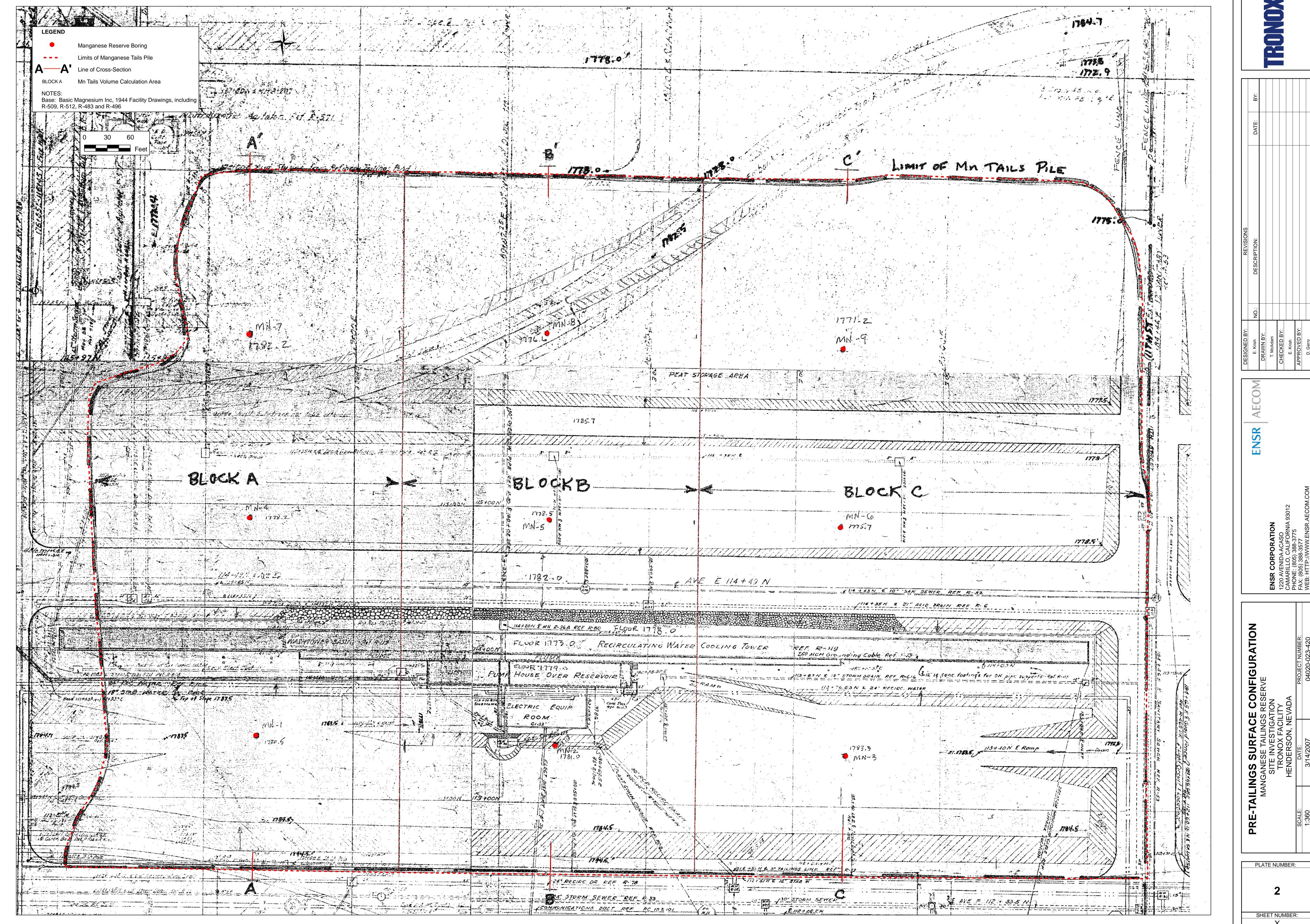
Table 1: Drilling Statistics, Manganese Tailings Pile, September 2006

Appendix A: Lithology Logs

## **PLATES**





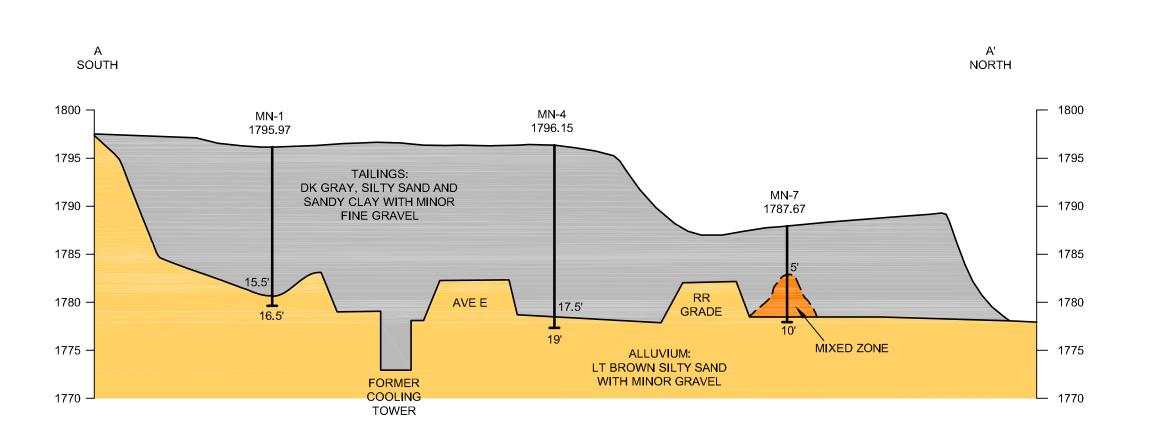


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PRE-TAILINGS SURFACE CONFIGURATION  MANGANESE TAILINGS RESERVE SITE INVESTIGATION TRONOX FACILITY HENDERSON, NEVADA  SCALE:  DATE:  PROJECT NUMBER:	1:360 3/14/2007	

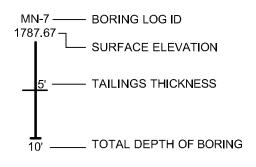
## **FIGURES**

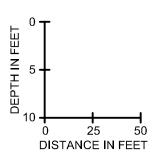




# **BLOCK A**

CROSS SECTIONAL AREA (FT <sup>2</sup>) = 5687.5 BLOCK WIDTH (FT) = 190 (wt. ave) TOTAL CUBIC FEET = 1,080,625 TOTAL CUBIC YARDS = 40,023





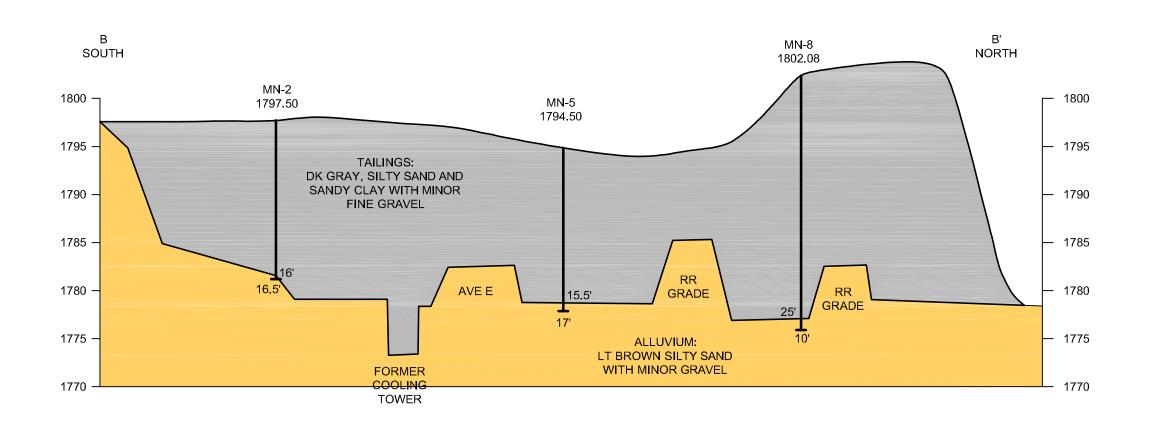
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MANGANESE TAILINGS - BLOCK A NORTH - SOUTH CROSS SEC TION A	ility evada	PROJECT NUMBER	04020-023-420
NESE TAILIN OUTH CROS	Tronox Facility Henderson, Nevada	DATE:	2/28/2007
MANGA NORTH - S		SCALE:	as noted

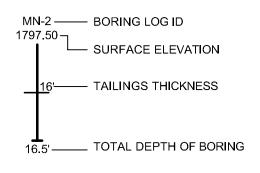
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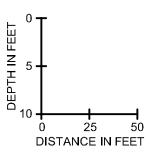
FN AMF.



## **BLOCK B**

CROSS SECTIONAL AREA (FT  $^2$ ) = 7750 BLOCK WIDTH (FT) = 235 TOTAL CUBIC FEET = 1,821,250 TOTAL CUBIC YARDS = 67,453





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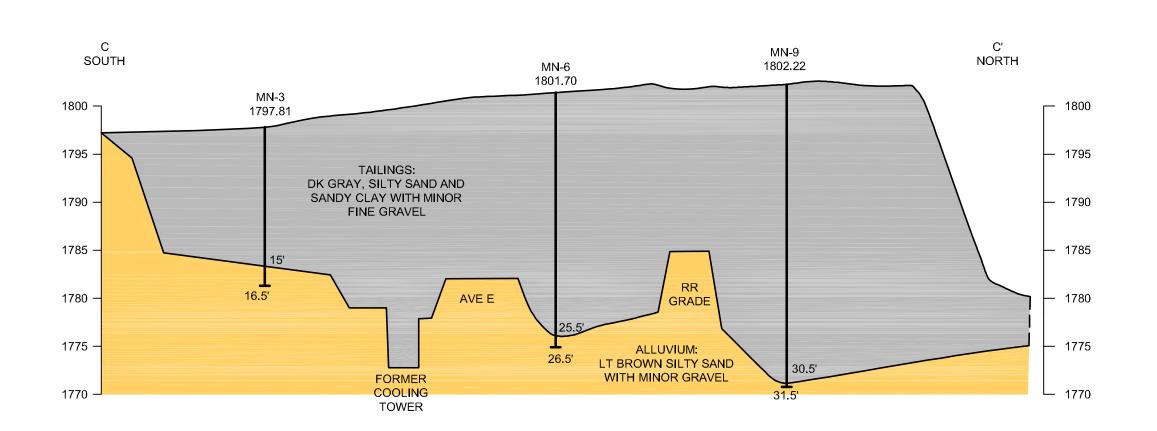
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MANGAI NORTH - S	VESE TAILIN OUTH CROS	MANGANESE TAILINGS - BLOCK B NORTH - SOUTH CROSS SEC TION B-I
	Tronox Facility Henderson, Nevada	lity evada
SCALE:	DATE:	PROJECT NUMBER:
as noted	3/28/2007	04020-033-420

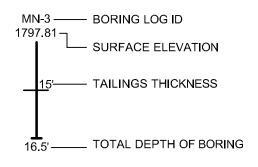
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SHEET NUMBER:
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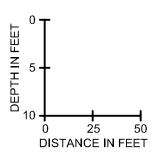
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# **BLOCK C**

CROSS SECTIONAL AREA (FT  $^2$ ) = 9500 BLOCK WIDTH (FT) = 300 TOTAL CUBIC FEET = 2,850,000 TOTAL CUBIC YARDS = 105,555





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ENSR AECO	ENSR CORPORATION 1220 AVENIDA ACASO CAMARILLO, CALIFORNIA 93012 PHONE: (805) 388-3775 FAX: (805) 388-3577 WEB: HTTP://WWW.ENSR.AECOM.COM

MANGANESE TAILINGS - BLOCK C NORTH - SOUTH CROSS SEC TION C-C'	cility Nevada	PROJECT NUMBER:	04020-023-420
VESE TAILIN OUTH CROS	Tronox Facility Henderson, Nevada	DATE:	3/28/2007
MANGAR NORTH - S		SCALE:	as noted

FIGURE NUMBER:
3
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### **TABLES**



## **Table 1. Drilling Statistics for the Manganese Tailings Pile**

Tronox Facility, Henderson Nevada

Boring ID	Easting <sup>1</sup>	Northing <sup>1</sup>	Surface Elevation (feet)	Total Depth (feet)	Thickness of Mn Tails (feet)	Depth of Water Perched in Mn Tails (feet bgs)	Bottom Elevation of Mn Tails (feet bgs)	Split Spoon Samples Colleted (feet bgs)	Bulk Samples Collected (feet bgs)
MN-1	828446.716	26718384.506	1795.97	16.5	15.5	dry	1780.47	0-1.5	1-5*
								5-6.5	5-10
								10-11.5	10-15
								12.5-14	
								15-16.5	
MN-2	828648.251	26718415.216	1797.50	16.5	16.0	15.0	1781.50	0-1.5	1-5
								5-6.5	5-10
								10-11.5	10-15
								15.5-16.5	
MN-3	828845.441	26718445.992	1797.81	16.5	15.0	14.5	1782.81	0-1.5	1-5
								5-6.5	5-10
								10-11.5	10-15
								15-16.5	
MN-4	828417.304	26718529.372	1796.15	19.0	17.5	17.5	1778.65	0-1.5	5-10
								10-11.5	10-15
								17.5-19	15-18
MN-5	828617.569	26718565.853	1794.50	17.0	15.5	10.0	1779.00	0-1.5	1-5
								10-11.5	5-10
								15.5-17	10-15
MN-6	828816.869	26718596.661	1801.70	26.5	25.5	12.0	1776.20	0-1.5	1-5
								15-16.5	10-15*
								25-26.5	20-25
MN-7	828394.842	26718653.665	1787.67	10.0	5.0	dry	1782.67	0-1.5	1-5
						,		5-6.5	5-10
MN-8	828593.194	26718692.603	1802.08	26.5	25.0	dry	1777.08	0-1.5	1-5
			<u> </u>			,		15-16.5	10-15
								25-26.5	20-25
MN-9	828795.182	26718716.346	1802.22	31.5	30.5	13.0	1771.72	0-1.5	1-5
-								15-16.5	15-20
								25-26.5	25-30*
								30-31.5	

### NOTES:

1) NV State Plane Coordinates

bgs = below ground surface

Mn - Manganese

\* Bulk samples sent to McClelland Labs, Sparks, Nevada

## **APPENDIX A**



				Client:	Tronox								
	1			Project .	Number	: 04020	-023-420				BORING ID	: Mn-1	
ENS	R	AFC	COM				ese tailings pile, Henderson,	NV					
LING	"	ALC	JOIVI	Coordin	ates: T	22S, R 6.	2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 1		
				Drilling	Method	l: Hollo	w Stem Auger				Monitoring Well	Installed:	No
				Sample	Type(s):	Split Sp	poon	Boring Diameter:			Screened Interval		
Weather							Logged By: E. Nelson	Date/Time Started:			Depth of Boring:	16.5'	
Drilling		ctor: WD	C Drilling	Inc.	1	1	Ground Elevation:	Date/Time Finished	d: 9/13/06	1046	Water Level: NA		
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	component(s), moisture of	or, size, range, MA content, structure, a , and Geologic Unit	ngularity	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
							MANGANESE TAILINGS for	rom 0 to 15.5 feet				Mn-1-0-1.5	0-1.5
2 3 4		0-1.5	17,25,19	18		SM	SILTY SAND, dark gray, 60% density, no odor or staining obs with SANDY GRAVEL, light max gravel size is 0.75 inch, 20 staining observed.	subangular, fine graine served. The top 6 inches gray, 70% subangular,	s of this are	a are co l gravel.	vered		
5 6 7 8		5-6.5	7,8,8	18		SM	SILTY SAND, dark gray, suba 65% sand, 30% fines, 5% grav 0.75, no odor or staining obser	_	Mn-1-5-6.5	5-6.5			
9		10-11.5	2,10,30	18		SM	SILTY SAND, dark gray, suba 60% sand, 30% fines, 10% gra gravel size 2.5 inchs, no odor o	vel, medium density, m		-	-	Mn-1-10-11.5	10-11.5
13		12.5-14	11,12,21	14		SM	SILTY SAND, dark gray, suba 65% sand, 30% fines, 5% grav 0.25 inch, no odor or staining of	el, low density, moist, s		_	-	Mn-1-12.5-14	12.5-14
15		15-15.5	7,21,30	14								Mn-1-15-16.5	15-16.5
		15.5-16.5				SM			Mn Tailin	gs-Allu	vium Contact		
16						SM	ALLUVIUM at 15.5 feet						
17							SILTY SAND, light brown, su	<i>c</i> , <i>c</i>			· · · · · · · · · · · · · · · · · · ·		
17		low density, dry, alluvium contact at 15.5 feet, no odor or staining obser Boring Terminated at 16.5 Feet target depth achieved							g observ	ea.			
18													
19													
20													
		1	1	1		1	I .		Date	Time	Depth to groundwater	while drilling	
NOTE	S:	The borin	g was back	filled with	native s	oil and th	e surface restored				NA		
												·	<del></del>
		Checked by	у	SWB		Date:_04/	/09/07						

				Client:	Tronox								
	- 1			Project .	Number	: 04020	1-023-420				BORING ID	: Mn-2	
ENS	SR	AF(	COM				ese tailings pile, Henderson,						
		,					2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 1		
							w Stem Auger	Daning Diameter	011		Monitoring Well		No
Weather.	· Sunn	Windy		Sample	1 ype(s):	Spiit S	Logged By: E. Nelson	Boring Diameter: Date/Time Started:		1245	Screened Interval Depth of Boring:		
			C Drilling	Inc			Ground Elevation:	Date/Time Startea.  Date/Time Finished			Water Level: 15'		
Druing			Druing		~		Ground Lievation.	Dute/Time Timisnet	<i>a.</i> 2/13/00	1302	Water Level. 13		
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	component(s), moisture	lor, size, range, MA content, structure, a , and Geologic Unit	ngularity	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
							MANGANESE TAILINGS from	0 to 16 feet				Mn-2-0-1.5	0-1.5
234		0-1.5	5,4,8	18		CL	SANDY CLAY, dark gray, 80% m miost, medium density, medium The top 6 inches are covered w gravel, max gravel size 0.75, 10% f low density, no odor or staining obs	edium plastic fines, 20% su m plasticity, no odor or vith SILTY GRAVEL, § ine grained sand, 20% non	staining ob gray, 70% s	served ubangul	ar, fine		
5	5-6.5 2,3,3 18 CL SANDY CLAY, dark gray, subangular, fine grained sand, 10% sand, 9 soft, high plasticity, moist, no odor or staining observed.								and, 90%	6 fines,	Mn-2-5-6.5	5-6.5	
8		10-11.5	1,1,2	16		CL	SANDY CLAY, dark gray, subangular, fine grained sand, 10% sand, 90% fines, very soft, high plasticity, moist, no odor or staining observed.					Mn-2-10-11.5	10-11.5
14 15 16							ıgs-Allu	vium Contact	Mn-2-15-16.5	15-16.5			
						SM	ALLUVIUM at 16 feet						
18 19 20							SILTY SAND, light brown, su medium density, dry, alluvium Boring Terminated :						
20		1	1	1	1	1	1		Date	Time	Depth to groundwater	while drilling	<u> </u>
NOTE	S:	The borin	ng was back	filled with	native so	oil and th	e surface restored		9/13/06	1302	15' perched		
		Checked by	у	SWB		Date:_04	/09/07						

				Client:	Tronox								
	- 1						-023-420				BORING ID	: Mn-3	
<b>ENS</b>	R	AF(	COM				se tailings pile, Henderson,						
							2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 1	I t . 11 . J.	N7 -
						Split Sp	w Stem Auger	Boring Diameter:	Q"		Monitoring Well Screened Interval		NO
Weather.	Sunny	Windy		затре	1 ype(s).	эрш эр	Logged By: E. Nelson	Date/Time Started:		1314	Depth of Boring:		
			C Drilling	Inc.			Ground Elevation:	Date/Time Finished			Water Level: 15'		
					â								
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	component(s), moisture	lor, size, range, MA content, structure, a r, and Geologic Unit	ngularity	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
							MANGANESE TAILINGS from 0	15 feet				Mn-3-0-1.5	0-1.5
23		0-1.5	5,7,5	18		CL	SILTY CLAY, dark gray, subangu stiffness, high plasticity, no od SANDY GRAVEL, gray, 90% sub 5% fine grained sand, dry, low den	or or staining observed.	The top 6	inches a	re		
5		5-6.5	2,3,4	18		CL	SILTY CLAY, dark gray, 90% clay observed.	y, moist, medium stiffness,	high plasticit	y, no odo	r or staining	Mn-3-5-6.5	5-6.5
789													
10		10-11.5	1,1,2	16		CL	SANDY CLAY, dark gray, subang very soft, high plasticity, moist, no		6 sand, 90%	fines,		Mn-3-10-11.5	10-11.5
13		15-16.5	10,34,40	9		СН	SILTY CLAY, dark gray, 95% clay	y, wet, stiff, high plasticity,			served. vium Contact	Mn-3-15-16.5	15-16.5
			, , ,			SM	ALLUVIUM				****		
16							SILTY SAND, light brown, subang	gular, coarse grained sand, f	ine grained g	gravel, 65	% sand, 30%		
							fines, 5% gravel, dense, dry, alluvi	um contact 15-15.5 feet, ma	x gravel size	.1, no oc	or or staining		
17							observed.  Boring Terminated	at 16.5 Feet, target dept	h achieved				
18						Boring Terminated at 16.5 Feet, target depth achieved.							
19													
1		1	1	1	1	1	1		Date	Time	Depth to groundwater		
NOTES	S:	The borin	ig was back	filled with	native s	oil and th	e surface restored		9/13/2006	1330	15' perc	hed	
<u> </u>		Checked by	y	SWB		Date:_04/	09/07						

E. 10		150	2014		Number		-023-420 se tailings pile, Henderson, N	IV.			BORING ID	: Mn-4	
ENS	K	AE(	COM				2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 1		
	- 1						w Stem Auger				Monitoring Well	Installed:	No
				Sample	Type(s).	: Split S <sub>l</sub>	poon	Boring Diameter: 8	8"		Screened Interva	!:	
Weather.	: Sunny	, Windy					Logged By: E. Nelson	Date/Time Started:	9/13/06	1353	Depth of Boring:	19'	
Drilling		ctor: WD	C Drilling	Inc.			Ground Elevation:	Date/Time Finished	l: 9/13/00	5 1407	Water Level: 17.	5' (perche	d)
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Colo component(s), moisture co odor,	, , ,	ngularity	y, maxi	,	Lab Sample ID	Lab Sample Depth (Ft.)
							MANGNESE TAILINGS from 0 to	17.5 feet				Mn-4-0-1.5	0-1.5
1 2 3 4 5 6 7 8 9		0-1.5	6,4,6	18		SM/ML	SILTY SAND TO SANDY SILT, da low density, dry, low plasticity, inches are SANDY GRAVEL, light § 0.25 inches, 20% fine grained sand, 1	rk gray, 50% subangular, some iron staining, no gray, 70% subangular, fine	odor obse	rved. Tavel, max	ne top 6 gravel size		
10 11 12 13 14 15 16		10-11.5	6,7,5	18		ML	SANDY SILT, dark gray, suban low density, moist, medium plas	-			70% fines,	Mn-4-10-11.5	10-11.5
						CL	SANDY CLAY, dark gray, suba	ngular, fine grained sa	nd, 30% s	and, 709	6 fines,		
17							medium plasticity, stiff, no odor	-					
		17.5-19	19,23,20	15				-	Mn Taili	ngs-Allu	vium Contact	Mn-4-17.5-19	17.5-19
18					_	SM	ALLUVIUM at 17.5						
							SILTY SAND, light brown, sub-	angular, medium grain	ed sand, 6	5% sand	, 30% fines,		
19		1					low density, dry, alluvium conta			g observ	ed.		1
							Boring Terminated a	t 19 Feet, target depth	achieved.				
20										1	T	]	
NOTES	c.	The borin	ia was book	filled with	native c	oil and th	e curface rectored		Date 9/13/06	Time 1407	Depth to groundwater		l
NOTE		THE DOTIN	ig was back	imea with	i iiative s	on and th	e surface restored		z/13/Ub	140/	17.5' pe	ached	
								-					
		Checked by	у	SWB		Date:0	1/09/07						

				Client:	Tronox								
							-023-420				BORING ID	: Mn-5	
ENS	R	AEC	COM				se tailings pile, Henderson,						
							2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 1	I 4 . 11 . J.	N7 -
				Sample			w Stem Auger	Boring Diameter:	Q"		Monitoring Well Screened Interval		NO
Weather.	Sunn	Windy		sumple	1 ype(3).	эрш эр	Logged By: E. Nelson	Date/Time Started:		1437	Depth of Boring:		
			C Drilling	Inc.			Ground Elevation:	Date/Time Finished			Water Level: 10'		
					â								
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	component(s), moisture of	or, size, range, MA content, structure, a , and Geologic Unit	ngularity	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
							MANGANESE TAILINGS from	0 to 16 feet				Mn-5-0-1.5	0-1.5
1		0-1.5	6,7,12	18		CL	SILTY CLAY, dark brown, 90% cli observed. The top 6 inches are SAN gravel, max gravel size 0.25 inches, or staining observed	grained					
10		10-11.5	6,5,6	12		CL	SANDY CLAY, dark gray to b 30% sand, 55% fines, max grav or staining observed.	_	-		-	Mn-5-10-11.5	10-11.5
14		15.5-17	11,15,16	18		CL	SANDY CLAY, dark gray, sub gravel, 35% sand, 50% fines, n density, no odor or staining obs	nax gravel size .2, medi served.	um plastici	ty, medi		Mn-5-15.5-17	15.5-17
						SM	ALLUVIUM at 16 feet						
17 18 19 20							SILTY SAND, light brown, sul gravel size .2, 10% gravel, 40% alluvium contact at 16 feet, no Boring Terminated	sand, 50% fines,low d	lensity, dry ed.	-	-		
,			ı				_		Date	Time	Depth to groundwater		
NOTE	S:	The borin	g was back	filled with	native so	oil and the	e surface restored		9/13/06	1448	10' pero	hed	-
<u> </u>		Checked by	у	SWB		Date:_04/	09/07						

				Client:	Tronox								
						: 04020	-023-420				BORING ID	: Mn-6	
ENIC	D	A E	NO				ese tailings pile, Henderson,	NV					
ENS	N.	ALL	COM				2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 2		
	- 1						w Stem Auger				Monitoring Well	Installed:	No
				Sample !	Type(s):	Split S	poon	Boring Diameter:	8"		Screened Interva	l:	
Weather:	Rainy,	Windy					Logged By: E. Nelson	Date/Time Started	: 9/14/06 0	728	Depth of Boring:	26.5'	
Drilling (	Contrac	tor: WD	C Drilling	Inc.			Ground Elevation:	Date/Time Finishe	d: 9/14/06	0756	Water Level: 12	(perched)	
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	component(s), moisture	lor, size, range, MA content, structure, a r, and Geologic Unit	angularity,	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
1		0-1.5 15-16.5	13,6,6	18		CL	MANGANESE TAILINGS from CLAY to SANDY CLAY, dark gra grained sand, dry, stiff, no odo SANDY GRAVEL, light gray, 50% fine to coarse grained sand, 25% no wet at 12 feet  CLAY to SANDY CLAY, black, 9 subangular sand, wet, soft, no odor	y, up to 90% medium plas r or staining observed. 6 fine grained gravel, max on-plastic fines, dry, low de	The top 6" a gravel size 0.5 ensity, no odor	are cove.	ered with ubangular ing observed	Mn-6-0-1.5 Mn-6-15-16.5	0-1.5
20													
NOTE		That:	a me-1 .	£11, 4	noti-	oil en 1.º	o guefoco eost		Date	Time	Depth to groundwater		1
NOTES	<b>:</b>	The borin	g was back	muled with	native s	oil and th	e surface restored		9/14/06	0740	12' per	ened	
													-
		Charles 11		CWP		Date:	4/0/2007						
		Checked by	L	_SWB		Date:	_4/9/2007		1				

				Client:	Tronox								
	- 1			Project .	Number.	04020	-023-420				BORING ID.	Mn-6	
ENS	R	AFC	COM				se tailings pile, Henderson, l	VV					
LING	'1X	ALC	.011	Coordin	ates: T2	22S, R 62	2E, SE 1/4 sec 12	Elevation:			Sheet: 2 of 2		
							v Stem Auger				Monitoring Well		No
				Sample	Type(s):	Split Sp		Boring Diameter:			Screened Interval		
Weather				_			Logged By: E. Nelson	Date/Time Started:			Depth of Boring:		
Drilling			C Drilling				Ground Elevation:	Date/Time Finished	d: 9/14/06 (	0756	Water Level: 12'	(perched)	1
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Cole component(s), moisture c odor,		ngularity,	maxir		Lab Sample ID	Lab Sample Depth (Ft.)
21							MANGANESE TAILINGS (contin	nued)					
22 23 24 25 26		25-26.5	21,45,41	14		CL	SANDY CLAY, black, 75% low pla odor or staining observed ALLUVIUM at 26 feet				, wet, stiff, no vium Contact	Mn-6-25-26	.25-26.5
27								-	, no odor or st. h achieved.	Time	Depth to groundwater		
NOTE	S:	The borin	ig was back	filled with	native so	oil and the	e surface restored		9/14/06	)740	12' perc	hed	
		Checked by	v	SWB		Date:	4/9/2007						

				Client:	Tronox								
	1			Project	Number.	: 04020	-023-420				BORING ID	: Mn-7	
ENS	SP	VE(	COM	Site Loc	ation: M	1angane	se tailings pile, Henderson, N	VV					
LIN	אכ	AL	JOIVI	Coordin	ates: T2	22S, R 62	2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 1		
	- 1			Drilling	Method	: Hollov	w Stem Auger				Monitoring Well	Installed:	No
				Sample	Type(s):	Split Sp	poon	Boring Diameter:	8"		Screened Interval	:	
Weather	r: Rainy	, Windy					Logged By: E. Nelson	Date/Time Started:	9/14/06 0	0816	Depth of Boring:	10'	
Drilling		ctor: WD	C Drilling	Inc.			Ground Elevation:	Date/Time Finished	d: 9/14/06	0824	Water Level: NA	1	
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Cole component(s), moisture codor,		ngularity	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
		0.15	422	18		CI	MANGANESE TAILINGS from 0					Mn-7-0-1.5	0-1.5
23		0-1.5	4,3,3	18		CL	SANDY CLAY, dark gray, 70% low medium stiffness, no odor or staining SAND, light gray, 40% fine grained sand, 20% non-plastic fines, dry, low	g observed. The top 6" are gravel, max gravel size 0.	e covered wit 2", 40% coar	h GRAV	ELLY		
4	 						SILTY SAND, gray mixed with brow	wn, 60% coarse grained, s	ubangular sa	nd, 40% l	ow plastic		
5		5-6.5	18,38,42	14		SM	fines, low density, no odor or stainin	g observed at 5 ft.	Mn Tailin	gs-Allu	vium Contact	Mn-7-5-6.5	5-6.5
6 7 8 9						GM	ALLUVIUM at 5.5 feet SILTY GRAVELLY SAND, light by gravel, max gravel size 0.75", 25% le						
10							Boring	g Terminated at 10 Feet					
11 12 13													
14													
16													
18													
20													
NOTE	es:	The borin	g was back	filled with	native s	oil and the	e surface restored		Date	Time	Depth to groundwater NA	while drilling	1
HOIL		1110 00111	.5 was back	cu will	, 0 50	on and all	Sarrace restored				IVA		
									<u> </u>			-	·
									<del></del>				
		Checked b	у	SWB		Date:	_4/9/2007		l				

				Client:	Tronox								
	- 1						-023-420				BORING ID	: Mn-8	
ENS	R	AF(	COM				ese tailings pile, Henderson,	NV					
LITO		/ 11	.0111				2E, SE 1/4 sec 12	Elevation:			Sheet: 1 of 2		
							w Stem Auger				Monitoring Well		No
TI7 .1	D '	117: 1		Sample	Type(s):	Split Sp		Boring Diameter:		0.20	Screened Interval		
Weather.			C Drilling	Ina			Logged By: E. Nelson	Date/Time Started: Date/Time Finished			Depth of Boring: Water Level: NA		
Druing							Ground Elevation:	Date/Time Timisne	u. 9/14/00 (	0900	water Level. IVA		
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	component(s), moisture	lor, size, range, MA content, structure, a , and Geologic Unit	ngularity,	maxiı		Lab Sample ID	Lab Sample Depth (Ft.)
1	gray, non-y					CL	MANGANESE TAILINGS from SANDY CLAY, dark gray, 70% md dry, stiff, no odor or staining of gray, 60% fine grained gravel, max non-plastic fines, dry, low density, to the standard gray of the standard	edium plasticity clay, 25% bserved. The top 6" are gravel size 0.5", 30% coan no odor or staining observed observed.	e SANDY Gl rse grained, su d.	RAVEI bangula	es, 5% fine	Mn-6-0-1.5	0-1.5
18													
1		1	I .	1	l .	1	<u>I</u>		Date	Time	Depth to groundwater	while drilling	)
NOTES	S:	The borin	ig was back	filled with	native so	oil and th	e surface restored				NA		
		Checked by	y	SWB		Date:	_4/9/2007						
						-							

				Client:	Tronox								
	- 1			Project	Number.	04020	-023-420				BORING ID	: Mn-8	
ENS	SP	VE(	COM				se tailings pile, Henderson, N	VV					
LING	ן אינ	AL	LOIVI	Coordin	ates: T2	22S, R 62	2E, SE 1/4 sec 12	Elevation:			Sheet: 2 of 2		
	- 1			Drilling	Method	: Hollov	v Stem Auger				Monitoring Well	Installed:	No
				Sample	Type(s):	Split Sp	poon	Boring Diameter:			Screened Interva	!:	
Weather							Logged By: E. Nelson	Date/Time Started:			Depth of Boring:		
Drilling		ctor: WD	C Drilling	Inc.		I	Ground Elevation:	Date/Time Finished	d: 9/14/06	0908	Water Level: NA		1
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Cole component(s), moisture condor,		ngularity	, maxi		Lab Sample ID	Lab Sample Depth (Ft.)
21							MANGANESE TAILINGS (contin	nued)					
21 22 23 24							SANDY SILT, dark gray, 60% low pmedium density, no odor or staining		grained, subar	ngular sai	nd, moist,		
25		25-26.5	11,20,26	18		ML	, , , , , , , , , , , , , , , , , , ,		Mn Tailin	gs-Allu	vium Contact	Mn-8-25-26	.25-26.5
							ALLUVIUM at 25.5 feet			<u> </u>			
26							SILTY GRAVELLY SAND, light bi	rown, 40% coarse grained	, subangular	sand, 309	6 fine grained		
							gravel, max gravel size 0.2" 30% nor	n-plastic fines, dry, mediu at 26.5 Feet, target depth achi		odor or	staining observed		
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40									T				
NOTE	S:	The borin	o was hack	filled with	native e	oil and the	e surface restored		Date	Time	Depth to groundwater NA	while drilling	1
MIL		111C 001II	. <sub>5</sub> was back	cu Will	. mati ve 80	, and ult	, January Testoreu				INA		
		Cheele-11	v	ÇW/D		Data	4/9/2007						
		Checked b	у	SWB		Date:	4/9/2007						

	52 Yang			Client: Tronox Project Number: 04020-023-420 Site Location: Manganese tailings pile, Henderson, NV							BORING ID: Mn-9			
ENSR   AECOM						Sheet: 1 of 2								
				Coordinates: T 22S, R 62E, SE 1/4 sec 12 Elevation: Drilling Method: Hollow Stem Auger							Monitoring Well Installed: No			
				Sample '				Boring Diameter:	8"		Screened Interval:			
Weather.	: Rainy	, Windy					Logged By: E. Nelson	Date/Time Started:		922	Depth of Boring:	26.5'		
Drilling	Contrac	ctor: WD	C Drilling	Inc.			Ground Elevation:	Date/Time Finishe	d: 9/14/06	0952	Water Level: 13	(perched)		
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size odor, and Geologic Unit (If Known)					Lab Sample ID	Lab Sample Depth (Ft.)	
1		0-1.5	7,7,7	18		CL	MANGANESE TAILINGS from 0 CLAY to SANDY CLAY, dark gray moist, medium stiffness, no odo SANDY GRAVEL, light gray, 60% grained, subangular sand, 10% non-p  CLAY, dark gray to black, 90%-100 encountered, no odor observed	, 90% medium plastic fin or or staining observed. fine grained gravel, max a plastic fines, dry, low dens	. The top 6' gravel size 0.3 gravel size 0.3 gravel size 0.3 gravel size 0.4 gravel size 0.5 g	' are co	vered varie g observed	Mn-9-0-1.5	0-1.5	
20 NOTES	S:	The borin	g was back	filled with	native so	oil and the	e surface restored		Date 9/14/06	Time 0930	Depth to groundwater			
	-		Juon								15 por			
		Checked by	у	SWB		Date:	4/9/2007							

				Client: Tronox Project Number: 04020-023-420							BORING ID: Mn-9				
	- 1														
ENSR		AF(	COM	Site Location: Manganese tailings pile, Henderson, NV  Coordinates: T 22S, R 62E, SE 1/4 sec 12 Elevation:											
							Elevation:			Sheet: 2 of 2					
				Sample Sample			w Stem Auger	Parina Diamatan					nitoring Well Installed: No		
Weather.	· Rainy	Windy		sample	1 ype(s).	Spili S	Logged By: E. Nelson	Date/Time Started:		Screened Interval: 0922 Depth of Boring: 26.5'					
			C Drilling	Inc.			Ground Elevation:	Date/Time Started:							
27111118					ê		Oroma Elevanon	Date Time Time	>/1 1/00	0,02	raici zerei. 15				
Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONEN component(s), moisture content, structure, angularity, maxin odor, and Geologic Unit (If Known)					Lab Sample ID	Lab Sample Depth (Ft.)		
-							MANGANESE TAILINGS (cor	ntinued)							
21 22 23 24 25 26 27 28 29 30		25-26.5	6,8,7	1.5		СН	CLAY, black, 100% high plastic f	85% medium plastic fines, 1				Mn-9-25-26. Mn-9-30-31.			
30		30-31.5	10,27,31	18		CL	sand, wet, stiff, no odor or staining observed				Mn-9-30-31.	.30-31.5			
21						m.			Mn Tailir	ıgs-Allu	vium Contact				
31		SM ALLUVIUM at 31 feet  SILTY SAND, brown, 50% coarse grained, subangular sand, 40% low plastic fines,						100/ E							
32							grained gravel, max gravel size .2'	-	•						
32								ted at 31.5 Feet, target depth ach		ig observ	ou.				
33															
34															
35															
36															
37															
38															
30															
39															
40									_	I		L			
NOTES	S:	The boring was backfilled with native soil and the surface restored 9/14/06 0930								Time 0930	Depth to groundwater while drilling 13' perched				
			J	with mative son and th			e surrice restored				pere				
Checked by SWB															
									1	1					