

LEGEND

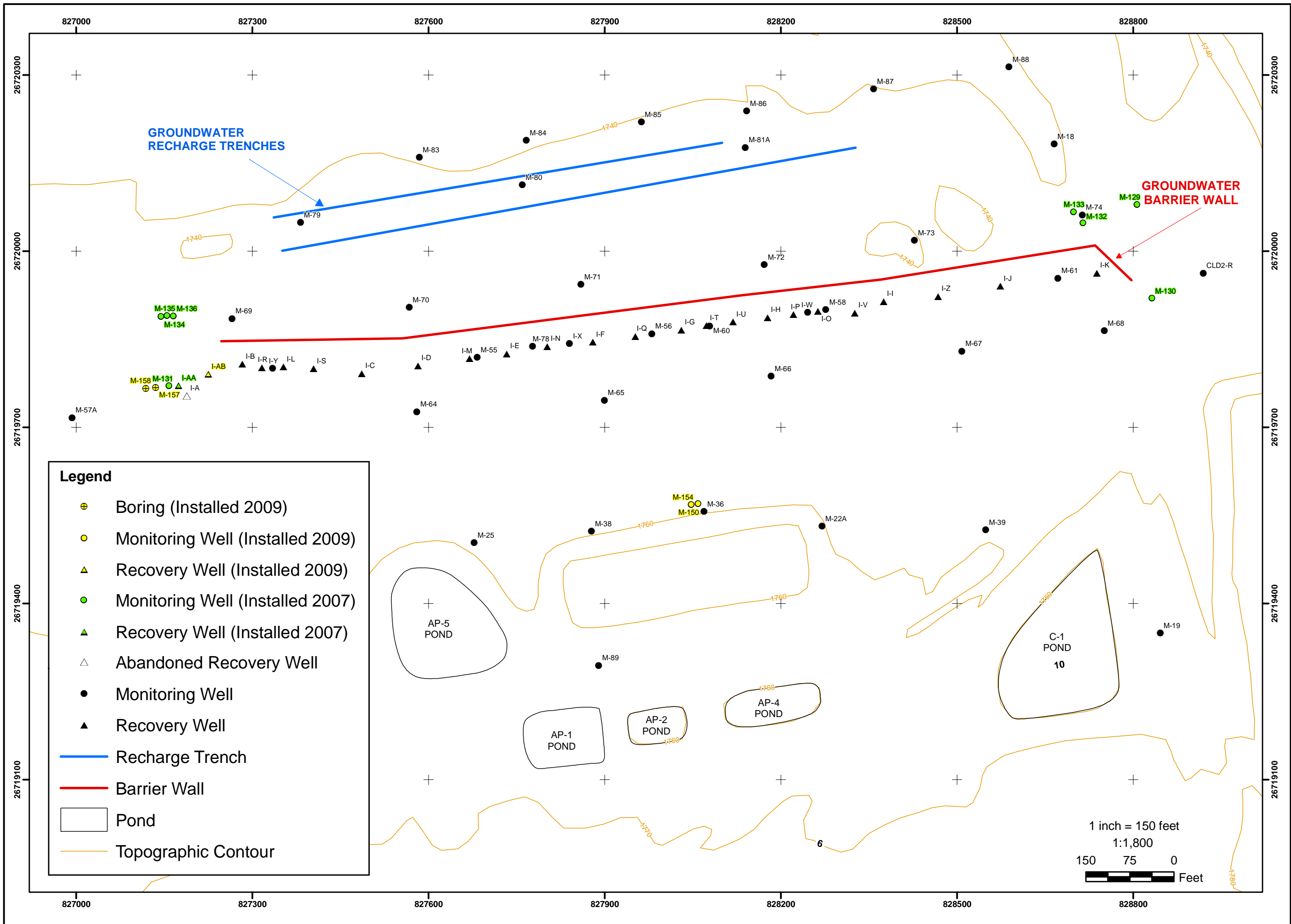
- Groundwater Well
- New Well or Boring
- A — A' Cross Section Line
- ★ Seep Pumping Station

LAND OWNERSHIP

- BMI
- Chemstar
- Pioneer
- Timet
- Tronox

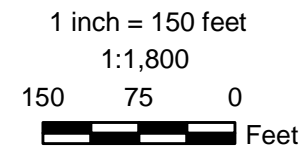
SHEET NUMBER: 1	FIGURE NUMBER: 1	LOCATION MAP			DESIGNED BY: E. Krish							
		Interim Groundwater Capture Evaluation and Vertical Delineation Report Tronox Facility Henderson, Nevada			NO.:							
SCALE: 1:24,000			DATE: 12/22/09			PROJECT NUMBER: 2027			REVISIONS			
APPROVED BY: NGEM			APPROVED BY: NGEM			APPROVED BY: NGEM			DESCRIPTION:			
DATE: 12/22/09			DATE: 12/22/09			DATE: 12/22/09			DATE: BY:			





Legend

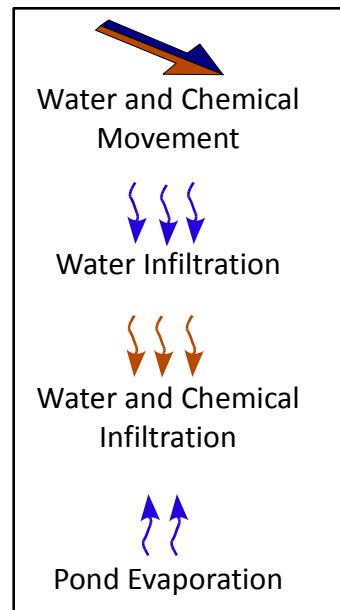
- ⊕ Boring (Installed 2009)
- Monitoring Well (Installed 2009)
- △ Recovery Well (Installed 2009)
- Monitoring Well (Installed 2007)
- ▲ Recovery Well (Installed 2007)
- △ Abandoned Recovery Well
- Monitoring Well
- ▲ Recovery Well
- Recharge Trench
- Barrier Wall
- Pond
- Topographic Contour



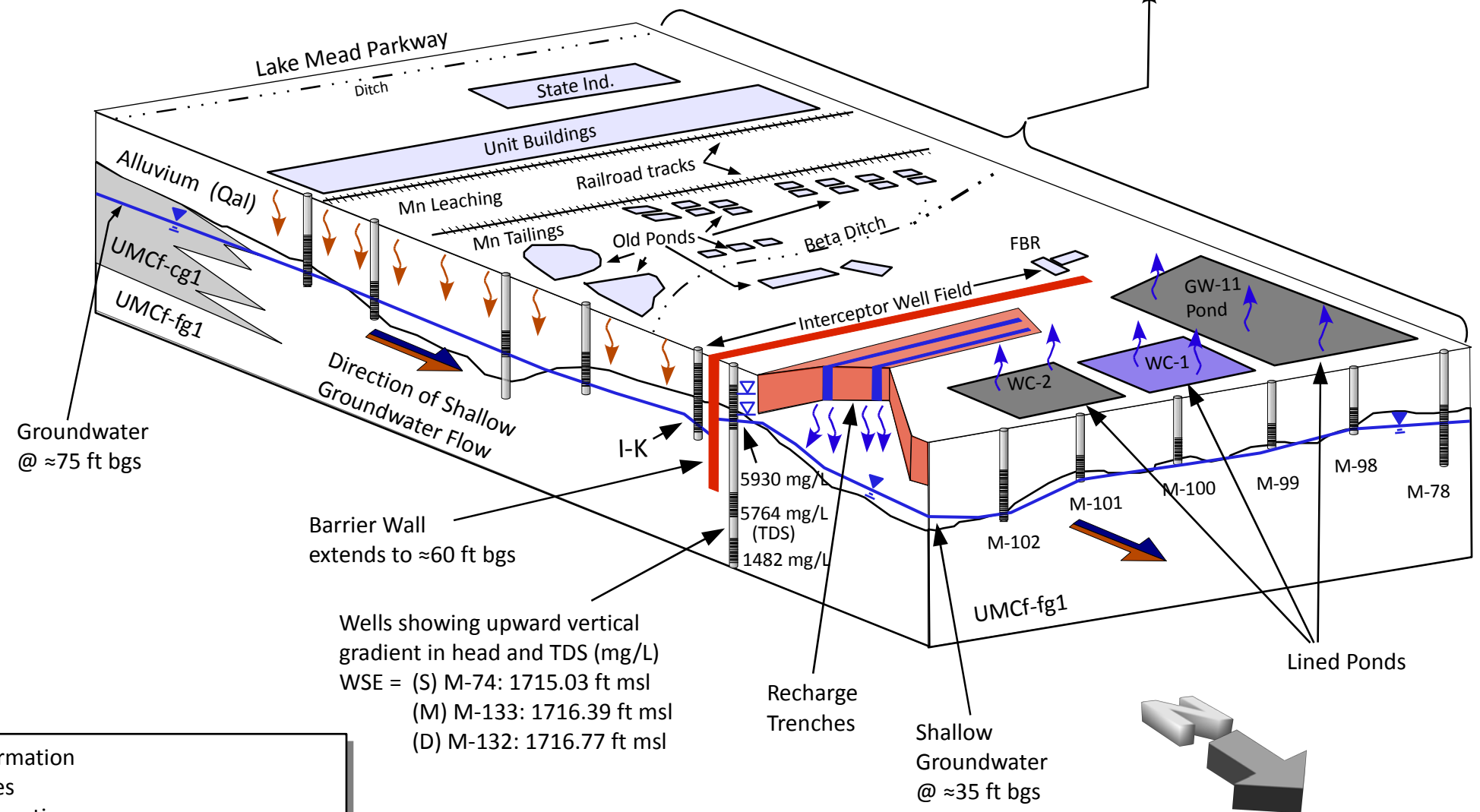
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NO.	DESCRIPTION:	NO.	DATE:
DRAWN BY:			
CHECKED BY:			
APPROVED BY:			

INTERCEPTOR WELL FIELD		PROJECT NUMBER: 2027.01	
Interim Groundwater Capture Evaluation and Vertical Delineation Report		DATE: 12/22/09	
Tronox Facility Henderson, Nevada		SCALE: AS SHOWN	

FIGURE NUMBER: 2
SHEET NUMBER: 1



- Potential Contaminant Source Areas (69 LOUs identified)**
- Unit Building operations
 - Manufacturing activities
 - Spills and leaks from storage activities
 - Leaks from underground and above ground pipelines
 - Leaks from underground tanks
 - Spills from above ground tanks
 - Infiltration from surface impoundments
 - Infiltration from ditches
 - Overtopping from surface impoundments
 - Incidental spills from roasting operations
 - Airborne dispersion of asbestos
 - Leaching from non hazardous waste pile
 - Spills along Railroad lines
 - Impacted surface soil blowing off site



UMCf-cg1 – Muddy Creek Formation
 First fine-grained facies

UMCf-fg1 – Muddy Creek Formation
 First coarse-grained facies

WSE = water surface elevation
ft msl – feet above mean sea level
ft bgs – feet below ground surface

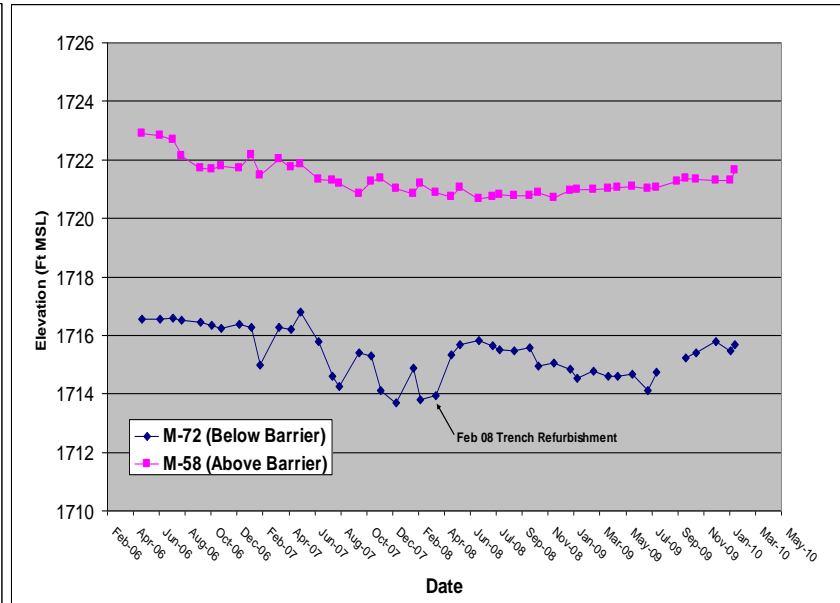
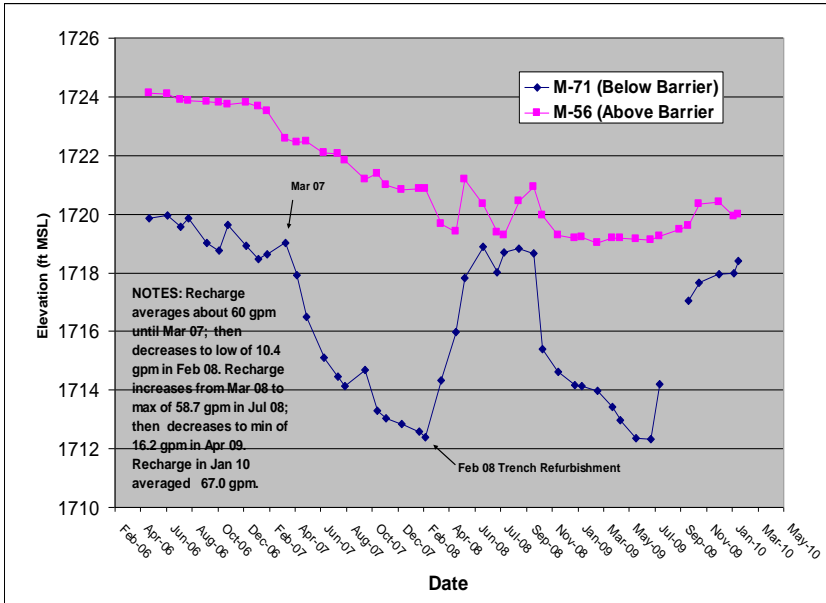
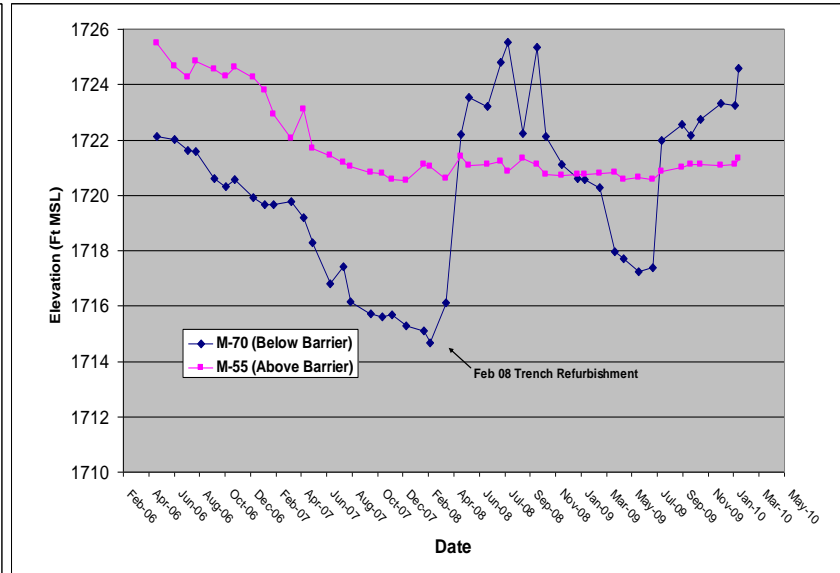
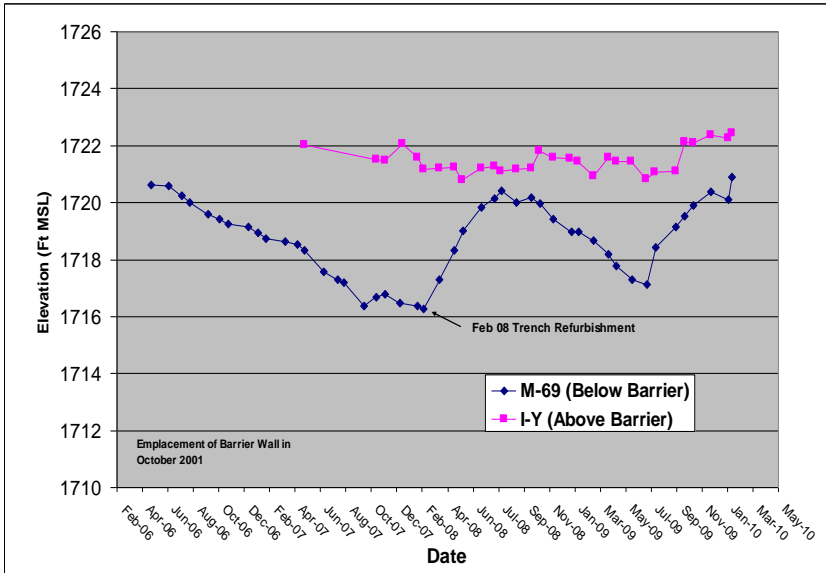
(S) Shallow well
 (M) Middle well
 (D) Deep well

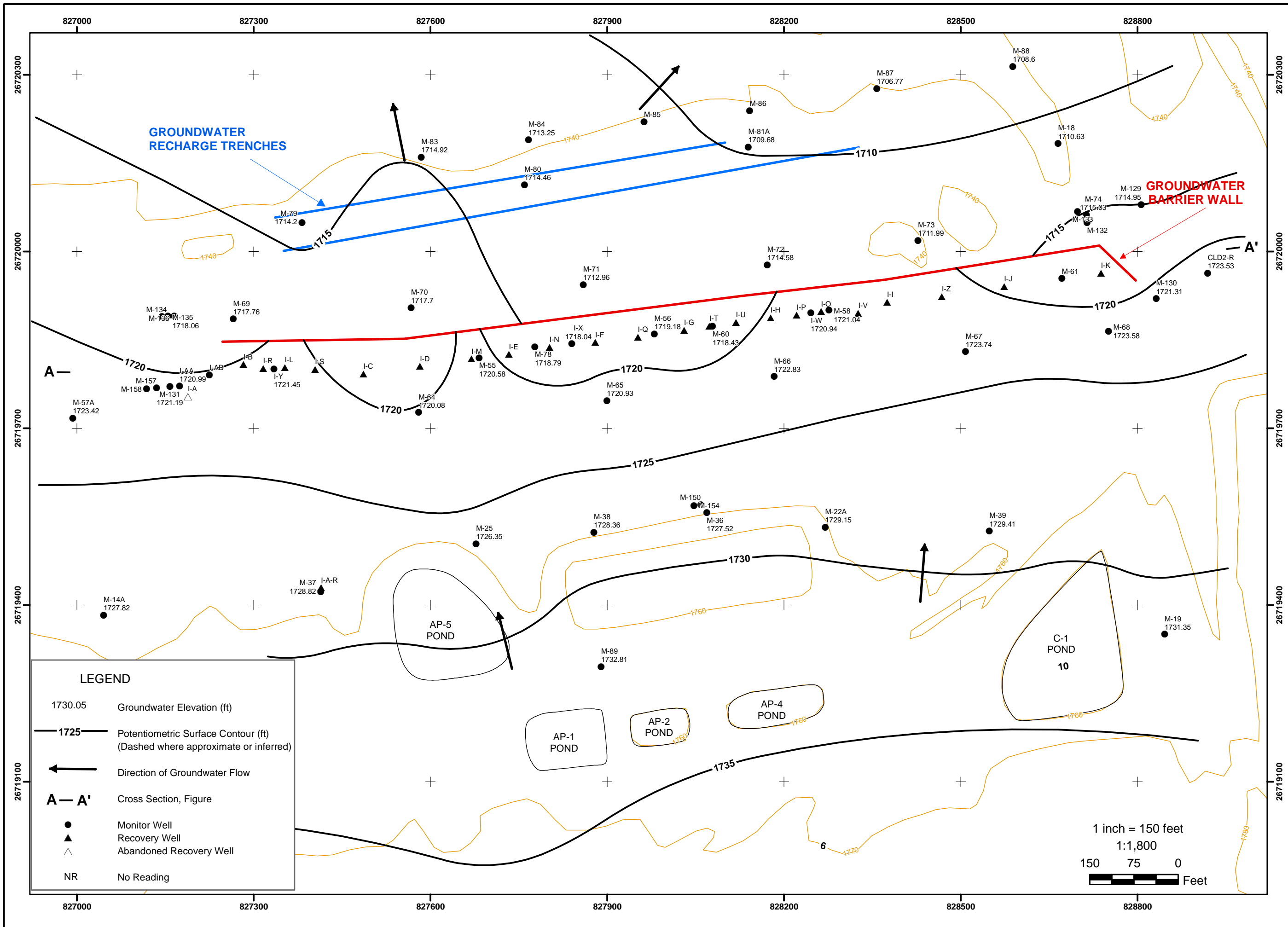
Figure 3

Interceptor Well Field Block Diagram
 Interim Groundwater Capture Evaluation and
 Vertical Delineation Report
 Tronox Facility, Henderson Nevada

Data from May 2009
 (Not to Scale)

Figure 4: Hydrograph Pairs across the Barrier Wall
Tronox LLC, Henderson, Nevada





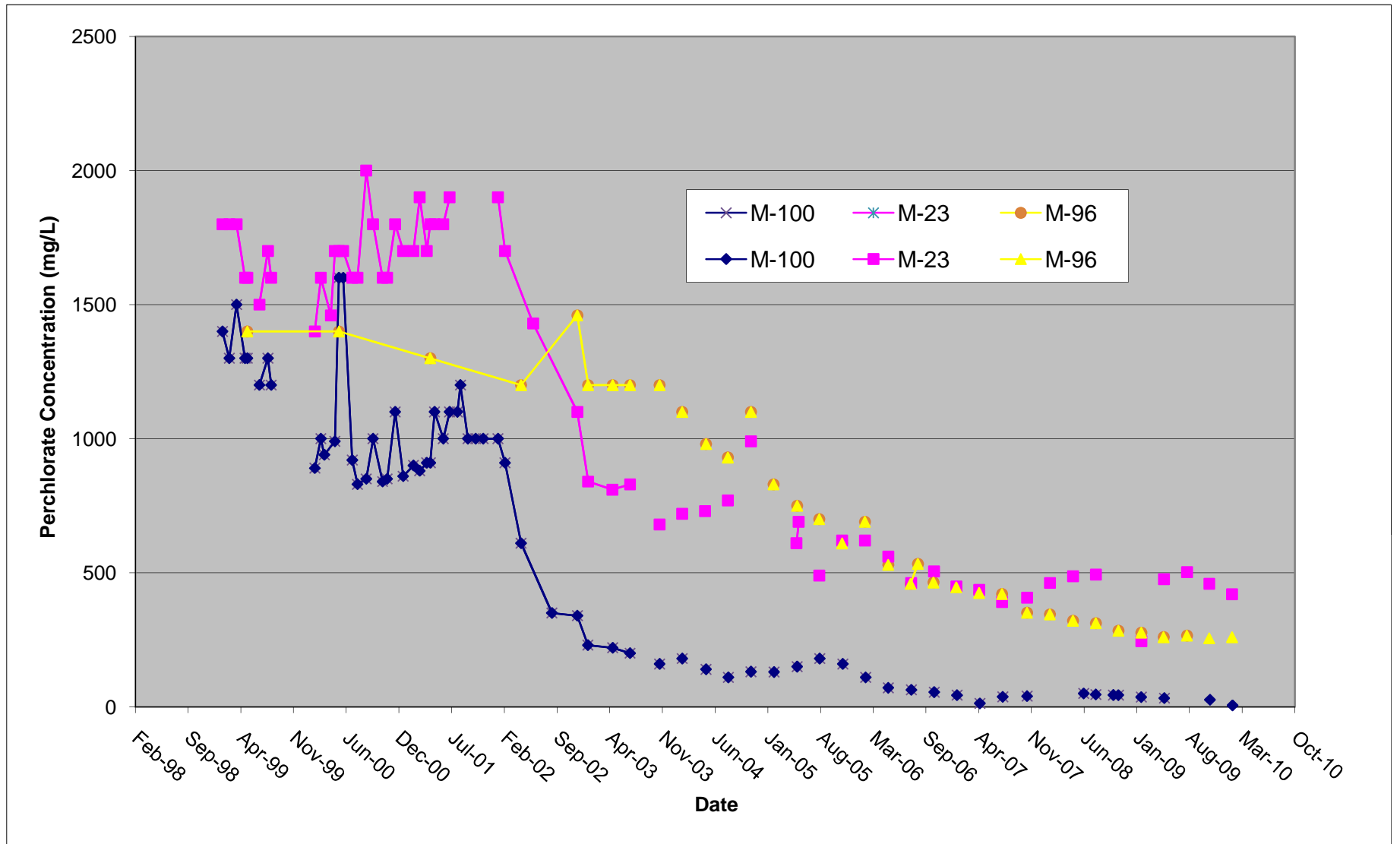
DESIGNED BY:		REVISIONS:	
E. Krish	NO.	DESCRIPTION:	DATE:
T. McAdam	BY:		
E. Krish	NO.		
S. Blodreau	BY:		
	NO.		
	BY:		
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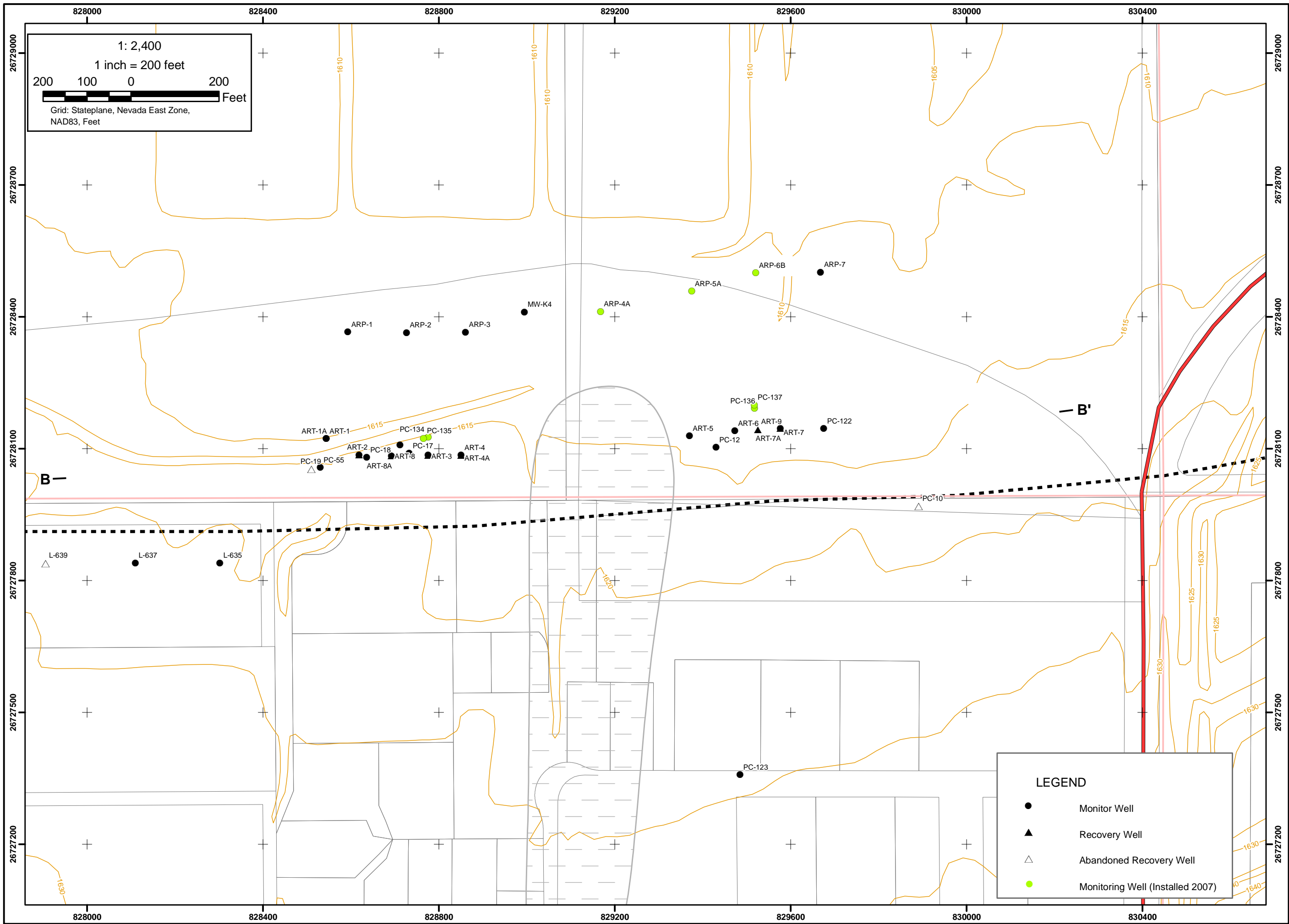
POTENTIOMETRIC SURFACE		PROJECT NUMBER: 2027.01	
AT THE INTERCEPTOR WELL FIELD, MAY 2009		DATE: 12/22/09	
Interim Groundwater Capture Evaluation and Vertical Delineation Report		SCALE: AS SHOWN	
Tronox Facility Henderson, Nevada			

FIGURE NUMBER:	5
SHEET NUMBER:	1

Figure 7: Perchlorate Concentrations Downgradient of the Interceptor Well Field Trend Graph, January 1999 to February 2010

Tronox LLC, Henderson, Nevada





1: 2,400
1 inch = 200 feet

200 100 0 200 Feet

Grid: Stateplane, Nevada East Zone, NAD83, Feet

LEGEND

- Monitor Well
- ▲ Recovery Well
- △ Abandoned Recovery Well
- Monitoring Well (Installed 2007)

northgate
environmental management, inc.

TRONOX

<http://www.ngem.com>

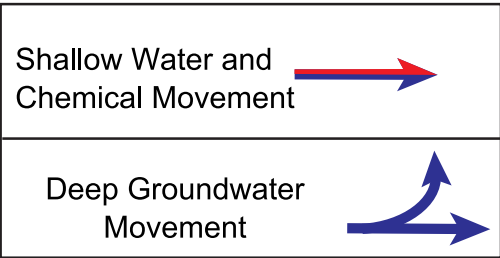
DESIGNED BY:		REVISIONS:	
E. Krish	NO.	DESCRIPTION:	DATE:
NGEM	BY:		
E. Krish	DATE:		
NGEM			

INSTALLED WELLS AT THE ATHENS ROAD WELL FIELD
Interim Groundwater Capture Evaluation and Vertical Delineation Report
Tronox Facility
Henderson, Nevada

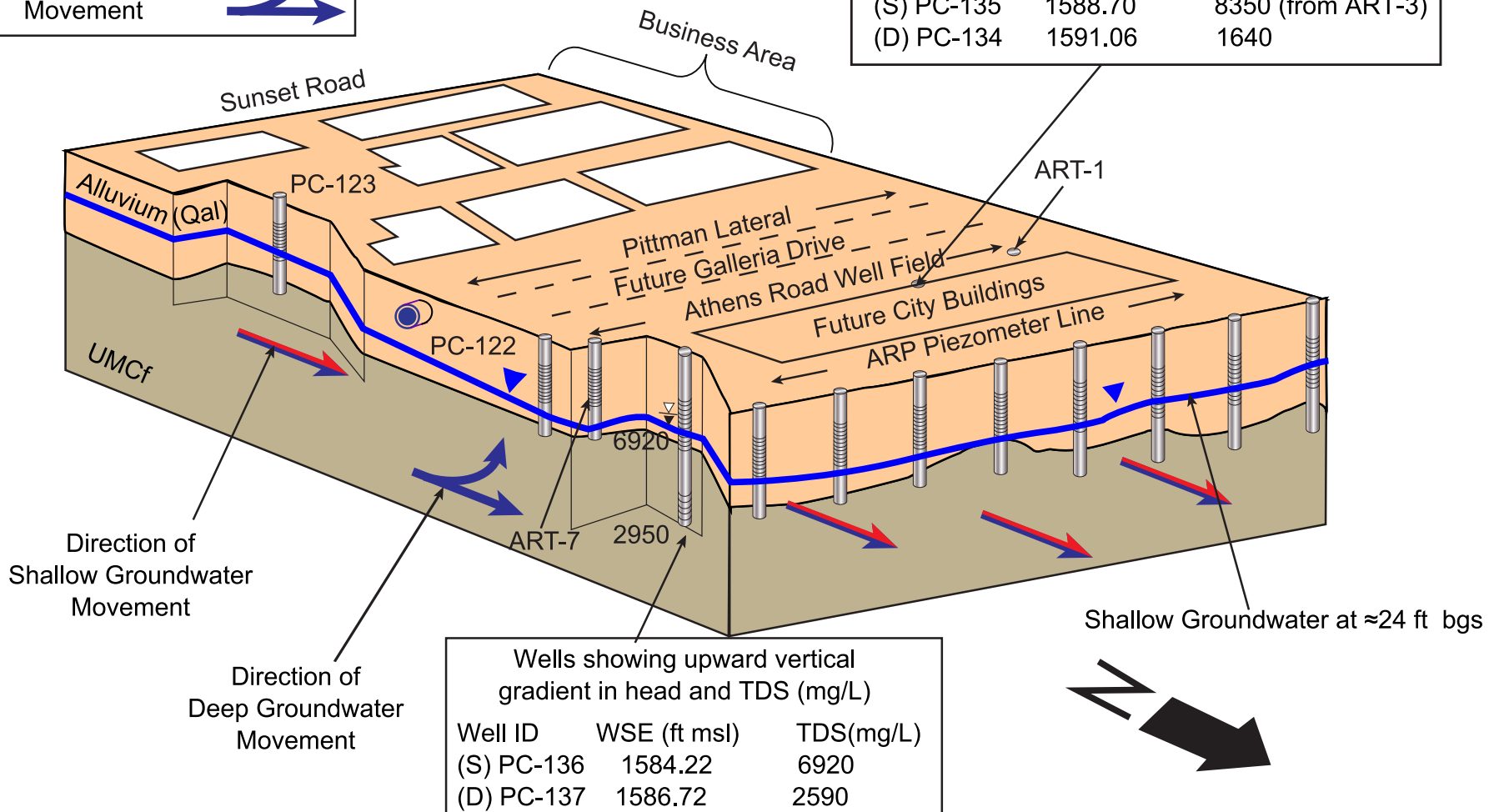
SCALE: AS SHOWN DATE: 12/22/09 PROJECT NUMBER: 2027.01

FIGURE NUMBER:
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SHEET NUMBER:
1



Wells showing upward vertical gradient in head and TDS (mg/L)		
Well ID	WSE (ft msl)	TDS (mg/L)
(S) PC-135	1588.70	8350 (from ART-3)
(D) PC-134	1591.06	1640



Wells showing upward vertical gradient in head and TDS (mg/L)		
Well ID	WSE (ft msl)	TDS(mg/L)
(S) PC-136	1584.22	6920
(D) PC-137	1586.72	2590

UMCf - Muddy Creek formation
(fine-grained facies undifferentiated)

(S) Shallow Well
(D) Deep Well
(NA) No Analysis

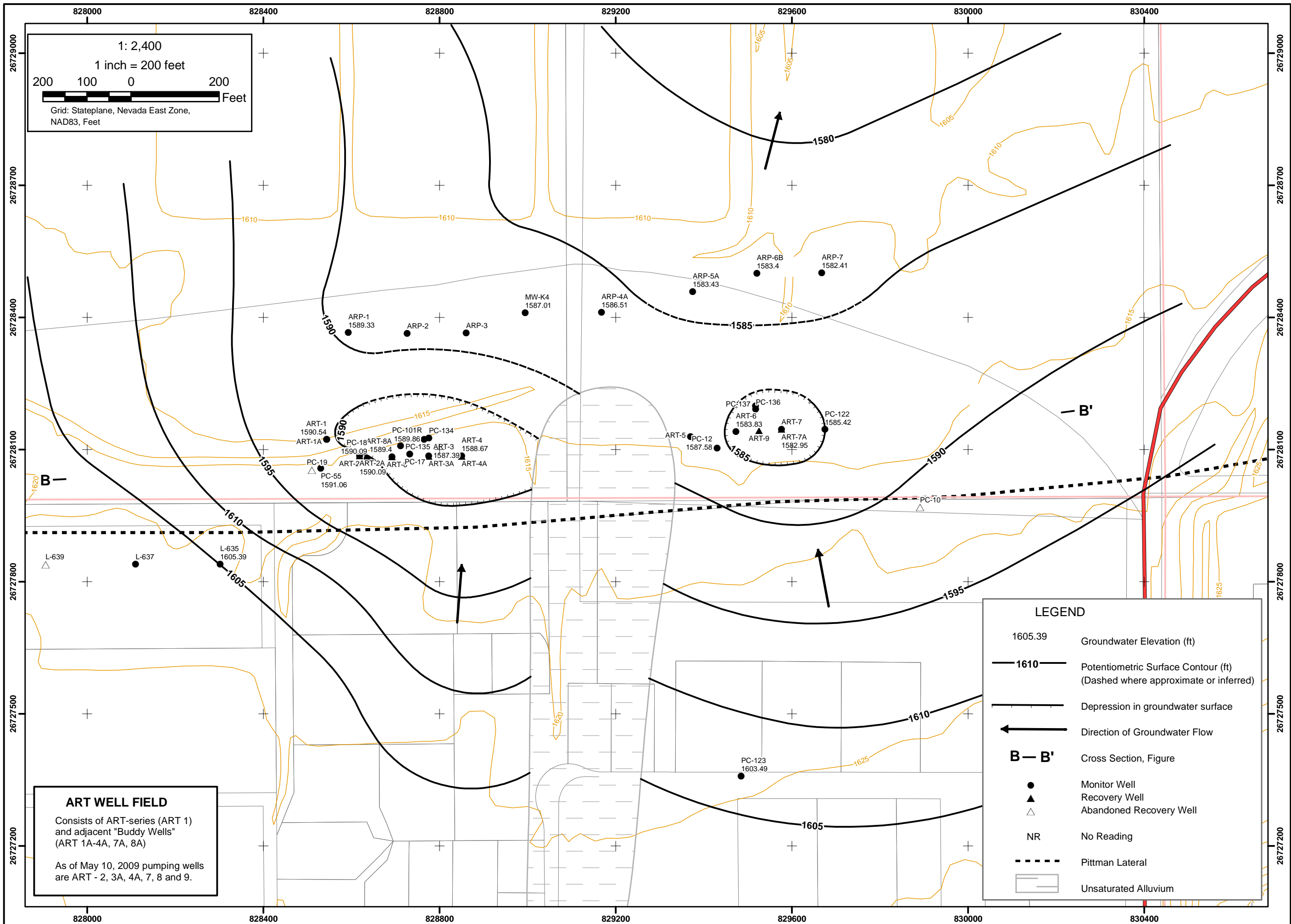
ft msl = feet above mean sea level
ft bgs = feet below ground surface

WSE = water surface elevation

Figure 9

Athens Road Well Field Block Diagram
Tronox LLC, Henderson, Nevada

Data from May 2008
(Not to Scale)



ART WELL FIELD
 Consists of ART-series (ART 1) and adjacent "Buddy Wells" (ART 1A-4A, 7A, 8A)
 As of May 10, 2009 pumping wells are ART - 2, 3A, 4A, 7, 8 and 9.

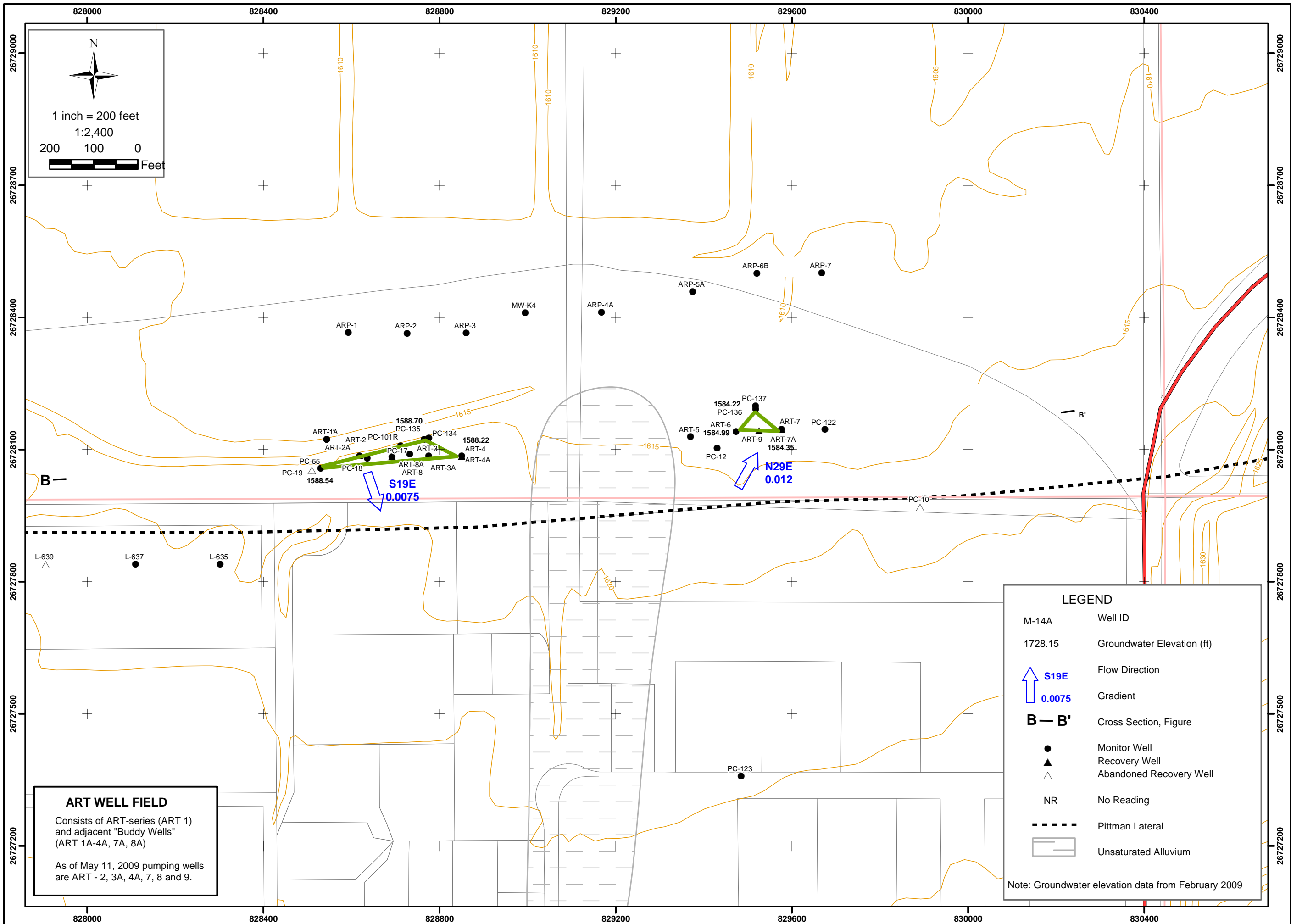
LEGEND

- 1605.39 Groundwater Elevation (ft)
- 1610 Potentiometric Surface Contour (ft)
(Dashed where approximate or inferred)
- Depression in groundwater surface
- Direction of Groundwater Flow
- B - B'** Cross Section, Figure
- Monitor Well
- ▲ Recovery Well
- △ Abandoned Recovery Well
- NR No Reading
- Pittman Lateral
- Unsaturated Alluvium

DESIGNED BY:		REVISIONS:	
E. Krish	NO.	DESCRIPTION:	DATE:
NGEM	BY:		
NGEM	DATE:		
E. Krish			
NGEM			

POTENTIOMETRIC SURFACE ATHENS ROAD WELL FIELD	
MAY 2009	
Interim Groundwater Capture Evaluation and Vertical Delineation Report	
Tronox Facility	
Henderson, Nevada	
SCALE:	PROJECT NUMBER:
AS SHOWN	2027.01
DATE:	
12/22/09	

FIGURE NUMBER:
10
SHEET NUMBER:
1



DESIGNED BY:		REVISIONS:	
NGEM	DATE:	NO.	DESCRIPTION:

THREE POINT GRADIENT SOLUTIONS		PROJECT NUMBER:	2027.01
ATHENS ROAD WELL FIELD		DATE:	03/15/10
Interim Groundwater Capture Evaluation and Vertical Delineation Report			
Tronox Facility Henderson, Nevada			
SCALE:	AS SHOWN	DATE:	03/15/10

FIGURE NUMBER:	11
SHEET NUMBER:	1

Figure 12: City of Henderson WRF Well Perchlorate Trend Graph - May 2003 to August 2009
Tronox LLC, Henderson, Nevada

