

Prepared for:  
**Tronox LLC**  
Henderson, Nevada

# Quarterly Performance Report Perchlorate Recovery System Henderson, Nevada January – March 2007

ENSR Corporation  
May 2007  
Document No.: 04020-023-110

**TRONOX**

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Prepared for:  
**Tronox LLC**  
**Henderson, Nevada**

**Quarterly Performance Report**  
**Perchlorate Recovery System**  
**Henderson, Nevada**  
**January – March 2007**

ENSR Corporation  
May 2007  
Document No.: 04020-023-110



Susan Crowley  
Staff Environmental Specialist

(702) 651-2234  
Fax (405) 302-4607  
susan.crowley@tronox.com

May 29, 2007

Mr. Brian Rakvica, P.E.  
Nevada Division of Environmental Protection  
2030 East Flamingo Road, Suite 230  
Las Vegas, Nevada 89119-0818

**Subject: Tronox LLC Quarterly Performance Report –  
Perchlorate Recovery System, Henderson, Nevada,  
January – March 2007**

Dear Mr. Rakvica:

Please find enclosed the above mentioned report prepared for the Tronox LLC facility in Henderson, Nevada.

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

Sincerely,

Susan M. Crowley  
Staff Environmental Specialist

Overnight Mail

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January – March 2007

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Prepared for:  
Tronox LLC  
Henderson, Nevada

**Quarterly Performance Report  
Perchlorate Recovery System  
Tronox LLC  
Henderson, Nevada  
January – March 2007**

**Responsible CEM for this project**

*I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.*

*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.*



---

Susan M. Crowley, CEM 1428 exp. date 3/8/09  
Staff Environmental Specialist  
Tronox LLC

**Individuals who provided input to the document**

Ed Krish, ENSR

Robert Kennedy, ENSR

ENSR Corporation  
May 2007  
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## Contents

<b>1.0 Introduction.....</b>	<b>1-1</b>
<b>2.0 Interceptor Well Field.....</b>	<b>2-1</b>
<b>3.0 Athens Road Well Field and Piezometer Wells.....</b>	<b>3-1</b>
<b>4.0 Seep Area Well Field and Seep Surface Flow Capture.....</b>	<b>4-1</b>
<b>5.0 On-Site Perchlorate Remediation.....</b>	<b>5-1</b>
<b>6.0 Conclusions.....</b>	<b>6-1</b>
<b>7.0 Proposed Future Activities.....</b>	<b>7-1</b>

## List of Appendices

- A** GROUNDWATER ELEVATION AND ANALYTICAL DATA TABLES
- B** MONITOR WELL PERCLORATE TREND GRAPHS
- C** GROUNDWATER ANALYTICAL DATA AND FIELD SHEETS (CD)
- D** CORRESPONDENCE WITH NDEP
- E** DATA REVIEW MEMORANDA
- F** LIST OF KEY WELLS FOR PROPOSED SAMPLING PLANS

## Contents (Continued)

### List of Figures

- Figure 1 Location Map
- Figure 2 Perchlorate Removed from the Environment January to December 2007
- Figure 3 Interceptor Well Field Perchlorate Section Graph
- Figure 4 Interceptor Well Field Perchlorate Trend Graph
- Figure 5 Interceptor Well Field Average Perchlorate Concentration and Mass Removed
- Figure 6 Well M-100 Perchlorate vs. Water Elevation Trend Graph
- Figure 7 Athens Road Well Field Perchlorate Concentration Trend Graph
- Figure 8 Athens Road Well Field Perchlorate Section Graph
- Figure 9 Athens Road Well Field Average Perchlorate Concentration in ART 8 and Mass Removed
- Figure 10 Athens Road Piezometer Well Line Perchlorate Concentration Trend Graph
- Figure 11 COH WRF Well Line Perchlorate Concentration Trend Graph
- Figure 12 Well PC-98R Perchlorate vs. Water Elevation Trend Graph
- Figure 13 Lower Ponds Well Line Perchlorate Concentration Trend Graph
- Figure 14 Seep Well Field Perchlorate Concentration Trend Graph
- Figure 15 Seep Area Average Perchlorate Concentration and Mass Removed
- Figure 16 Seep Stream Flow vs. Perchlorate Concentration Trend Graph

### List of Tables

- Table 1 Interceptor Well Discharge Rates (GPM)
- Table 2 Athens Road Well Discharge Rates (GPM)
- Table 3 Seep Well and Seep Stream Discharge Rates (GPM)
- Table 4 Perchlorate Removed from the Environment, Henderson, Nevada

## 1.0 Introduction

In accordance with the Administrative Order on Consent (AOC) for remediation of perchlorate impacted groundwater in the Henderson area, finalized October 8, 2001, Tronox LLC (TRX) submits this quarterly performance report to the Nevada Division of Environmental Protection (NDEP). This report is a limited data report for perchlorate only. A more detailed presentation of data will be presented in the Semi-Annual Performance Report for Chromium and Perchlorate due to the NDEP in August 2007.

This report covers the first quarter of 2007 (January through March). This performance report summarizes performance data for the perchlorate recovery system (consisting of the Interceptor well field, the Athens Road well field, the Seep well field and the Seep area surface flow capture sump) and evaluates the effectiveness of the groundwater recovery system installed to carry out the perchlorate recovery program. In addition, information is provided on the status of the treatment technologies used for perchlorate removal from the water collected. The discussion of the system in this report will be mostly limited to variances from historic normal operating conditions.

For this report, Appendix A contains the groundwater elevation and analytical data of all sampled on- and off-site wells. Appendix B contains selected perchlorate trend graphs and Appendix C contains groundwater analytical data and field sheets (on CD). Appendix D contains correspondence with NDEP and the Tronox Response to March 29, 2007 NDEP Comments on the Semiannual Performance Report Dated February 26, 2007. Appendix E contains the data review memoranda. Appendix F contains the proposed list of wells for periodic sampling.

The locations of the components of the perchlorate recovery system are shown on Figure 1. The performance of each component will be discussed separately starting with the Interceptor well field and proceeding to the successively northward components. In the first quarter of 2007, a total of about 156,940 pounds of perchlorate have been removed from the environment with the overall system. For the first quarter of 2007 the total pounds of perchlorate captured amounted to about 1,744 pounds per day. Of this total, about 82,386 pounds came from the on-site well field, about 66,222 pounds came from the Athens Road well field, about 8,163 pounds came from the Seep area well field and 169 pounds came from the Seep surface flow capture sump. Figure 2 shows the 2007 monthly perchlorate recovery totals and the relative significance of each of the four components, whereas Table 4 shows the average pounds of perchlorate per day removed by each component. Note on Figure 2 that the March 2007 recovery is an estimate that will be recalculated next month. A work plan to evaluate the effectiveness of groundwater capture in the perchlorate recovery system will be submitted as a separate document due to the NDEP on May 30, 2007.



## 2.0 Interceptor Well Field

The three components of this system, the interceptor wells, the barrier wall and the groundwater recharge trenches are shown on Figure 1. The purpose of the barrier wall is to intercept downgradient movement of groundwater containing high perchlorate concentrations. The purpose of the Interceptor well field is to extract the groundwater upgradient of the barrier wall. For this quarter, the interceptor well field continued to extract groundwater at a rate above 65 gpm (70.3 gpm on March 31, 2007), as shown on Table 1.

In the vicinity of the downgradient recharge trenches perchlorate concentrations down to 6 milligrams per liter (mg/L) have been sampled in March, little changed from November 2006. Appendix A contains perchlorate concentration data and groundwater elevations for wells in this area. Perchlorate concentration trend graphs containing groundwater elevation data were prepared for monitor wells M-11, M-23, M-36, M-48, M-69, M-70, M-71, M-72, M-74, M-86, M-87, M-94 and M-100 and are presented in Appendix B.

On the west end of the barrier wall interceptor well I-B has decreased from 3000 mg/L in May 2006 to 1280 mg/L in February 2007 whereas monitor well M-69, directly downgradient from I-B, has increased to 1350 mg/L from 921 mg/L during the same period. Tronox is continuing to study options to improve capture in this area. On the east end of the well field, the easternmost three wells are pumping a total of 17.9 gpm as of March 31, 2007 in an effort to pump down this area to stop or minimize groundwater movement in the vicinity of the east side of the barrier wall.

Figure 3, the Interceptor Well Field Perchlorate Section Graph, shows the perchlorate concentrations for the Interceptor wells over the last five quarters. The most recent data from February 2007 show that the perchlorate concentrations in many of the Interceptor wells are lower than in November 2006 but slightly higher than August 2006. This graph shows that since at least May 2002 there have been two sub-plumes entering the well field; a major plume east of well I-M and a minor plume west of I-M. This minor plume may be the result of historic pipe leakage in the vicinity of I-AR/M-37. Figure 4, the Interceptor Well Field Perchlorate Trend Graph, shows that many wells exhibit an overall gentle decrease of perchlorate concentrations (with local fluctuations).

The monthly average perchlorate concentration collected at the well field has been generally decreasing, with short-lived minor reversals, from a high of about 1,900 mg/L in 2002 to about 1,075 mg/L in March 2007 (see Figure 5). The mass removed has held steady and increased slightly mainly due to the increase in pumping rate. This figure shows that the monthly average perchlorate removed from the environment is estimated to be 27,771 pounds in March 2007. Data from monitor well M-100, 700 feet north of the recharge trenches, demonstrate that the recharge trenches are effective. As shown in Figure 6, the perchlorate concentration in this well is currently about twenty-three times lower (at 43 mg/L) than January 2002 concentrations (at 1000 mg/L) and for the fourth quarter in a row is below 100 mg/L. The groundwater elevation trend demonstrates that the groundwater mounding effect from the trenches reach at least to this well.

Lines of evidence that indicate hydraulic and contaminant capture at the well field are presented in the *Work Plan to Evaluate Effective Groundwater Capture at Tronox Facility Extraction Systems, Henderson, Nevada*, which will be submitted under separate cover.

### 3.0 Athens Road Well Field and Piezometer Wells

Figure 1 shows the location of the Athens Road well field. Table 2 shows that as of March 31, 2007, the pumping Athens Road wells are ART-1, 2, 3A, 4, 7A, 8A and 9 and the recovery well discharge rate was about 264 gpm up from 253 gpm in December 2006. Appendix A presents groundwater elevations and analytical data from the wells in this area.

Perchlorate concentrations of the ART wells, since October 31, 2001, are shown in Figure 7. This graph shows that since January 2003 the perchlorate concentrations have basically stabilized in most wells with only minor variations. The figure shows that ART-3 and ART-8 track together and have slightly decreasing concentrations. Perchlorate concentrations in ART-7 increased from September 2005 to October 2006 and have been decreasing since mid-October except for one spike in early December 2006. Perchlorate concentrations in ART-6 exhibited a gradual increase from January 2003 to about September 2006 when they decreased significantly except for two spikes in early March 2007. ART-9 has decreased slightly over the same period. An unexplained two-week anomaly occurred in ART-1 at the end of 2006 during which time the perchlorate concentrations jumped from less than 0.2 to over 200 mg/L and then returned to the 0.2 mg/L range.

Figure 8, a west-east section graph through the well field, shows perchlorate concentrations across the well field in the last five quarters. Currently, ART-3, at 390 mg/L, contains the highest perchlorate concentration in a recovery well. ART-9, at 332 mg/L, continues to contain the highest concentration of perchlorate in the eastern sub-channel. Note that the perchlorate concentrations on the western (PC-55 and ART-1) and the eastern sides of the well field (PC-122) continue to remain very low. The monthly perchlorate concentration in ART-8, as shown on Figure 9 currently containing 295 mg/L, continues to be at the low end of its range. This graph also shows that, since September 2006, the time that ART-9 came on-line, the ART-8 concentration and the perchlorate removed graphs have been diverging although the graphs still have similar shapes. This is due to the additional perchlorate being removed by ART-9 which was partly offset in February by a decreased perchlorate concentration and pumping rate in ART-8. The monthly average perchlorate mass removed from the well field is estimated to be 21,243 pounds in March.

Subsidence surveys have been conducted annually at the well field since 2002. Because no subsidence has occurred in the last five years, since the well field began pumping, future subsidence surveys will be conducted on a bi-annual basis with the next survey scheduled for May 2008.

Lines of evidence that indicate hydraulic and contaminant capture at the well field are presented in the *Work Plan to Evaluate Effective Groundwater Capture at Tronox Facility Extraction Systems, Henderson, Nevada*, which will be submitted under separate cover.

In order to gauge the extent of perchlorate capture in the Athens Road well field, mass flux and groundwater underflow volumes were calculated for pre-pumping groundwater conditions from May 1998. The cross-sectional area used in the calculations was limited to areas of perchlorate concentrations greater than 5 mg/l. Hydraulic conductivity (K) values derived from the pump tests of the ART wells were used to calculate the rate of groundwater flow. A rate of flow of about 313 gpm and a perchlorate mass flux of about 755 pounds/day were calculated to be present at Athens Road in May 1998 when the saturated aquifer containing greater than 5 mg/l was up to 11 feet thicker and 400 feet wider.

The present-day groundwater flow and perchlorate mass flux at the Athens Road well field can only be approximated because the ongoing pumping activities have lowered the water table. However, the January 2007 perchlorate capture statistics show that from the 256 gpm pumping rate the well field was capturing 804 pounds of perchlorate per day. However, due to pumping problems in ART-8, the February 2007 capture has been reduced to 716 pounds/day. The pump in ART-8 will be replaced and/or the well rehabilitated to

increase the mass capture. These mass flux data along with past evaluations of capture using Modflow particle tracking and demonstrated overlapping cones of depression are converging lines of evidence that the Athens Road well field is capturing the available perchlorate mass flux.

About 250 feet north of the Athens Road well field, seven ARP-series wells make up the Athens Road piezometer well line. In early March three of the ARP wells – ARP-4, 5 and 6A - were temporarily abandoned in order to make way for construction of a new storm drain. These wells will be reestablished once construction is completed, estimated to be in 6 to 9 months. The perchlorate concentrations of these wells are shown in Figure 10. The western two wells, ARP-1 and 2, and the eastern well, ARP-7, continue to contain very low perchlorate concentrations. ARP-5, which had been slowly exhibiting increasing perchlorate concentrations since September 2005, exhibited a significant decrease in concentration to 237 mg/L in December 2006 (the last analyses before going dry) since ART-9 came online. MW-K4, which had decreased perchlorate concentration of 93 mg/L in December 2006, has recently increased to 171 mg/L in mid-March.

Intermediate between the Athens Road area and the Seep area are the City of Henderson Wastewater Recovery Facility (COH WRF) and the Lower Ponds monitor well lines. Figure 11 shows the perchlorate concentrations in the COH WRF wells from January 2001 to March 2007. As shown, wells MW-K5 and PC98R, which have previously been erratic, have been exhibiting decreasing perchlorate concentrations over the last three months. As of March 14, 2007 MW-K5 and PC-98R contain 19.0 and 26.9 mg/L perchlorate, respectively.

Figure 12, the PC-98R Perchlorate vs. Water Elevation Trend Graph, shows that since February 2003 the groundwater level has continued to generally decline, but significant groundwater “mounding events” due to increased COH WRF surface water infiltration continue sporadically. It is significant to note that during the last four mounding events, back to December 2003, a spike in perchlorate in groundwater occurred as well. This would indicate that during higher water levels additional perchlorate from the vadose zone is put into solution and that the current higher than normal perchlorate concentrations in this well line are more a function of COH WRF discharge than presumed perchlorate leakage past the Athens Road well field. Groundwater elevation data on this graph is current to March 15, 2007 and shows that no mounding events have occurred since October 2006.

The Lower Ponds well line is 2200 feet north of the COH WRF well line. Figure 13, the Lower Ponds Well Line Perchlorate Concentrations Trend Graph, shows that perchlorate concentrations continue the decline started about February 2004. In March 2007, PC-59 contained the highest concentration of 6.4 mg/L, down from 13.1 mg/L in August 2006.

## 4.0 Seep Area Well Field and Seep Surface Flow Capture

Figure 1 shows the location of the Seep well field, located about 600 feet upgradient of the seep surface-flow capture sump. Appendix A presents groundwater elevations and analytical data from the wells in this area. Table 3 shows the March 31, 2007 discharge rates from the individual wells and the total for the well field area (610 gpm total) which consisted of 581 gpm from the well field and 29 gpm from the seep stream. Figure 14 shows the Seep Well Field Perchlorate Trend Graph. The perchlorate content of the wells varies from 1.8 to 21.3 mg/L as of March 19, 2007. Four adjacent wells in the center of the channel continue to contain the bulk of the perchlorate with PC-99R2/R3 containing the most at 21.3 mg/L.

The combined monthly average perchlorate concentration in the well field and the seep stream, as shown on Figure 15, averaged 13.2 mg/L in March. The monthly average perchlorate mass removed, estimated to be 2,755 pounds in March, is down from 3,739 pounds in December 2006. This decrease is due to an overall decrease in perchlorate mass in the well field, a pump failure in a desirable well and forced pumping of a less desirable well.

The seep stream began its seasonal flow in mid-October 2006 as shown on Figure 16. The March 19<sup>th</sup> flow had decreased to about 41 gpm with a perchlorate concentration of about 2.8 mg/L. The seep stream is slowing and will probably stop flowing shortly.

Lines of evidence that indicate hydraulic and contaminant capture at the well field are presented in the *Work Plan to Evaluate Effective Groundwater Capture at Tronox Facility Extraction Systems, Henderson, Nevada*, which will be submitted under separate cover.

## 5.0 On-Site Perchlorate Remediation

Groundwater collection and treatment equipment operated to remove 78.5 tons of perchlorate from the environment during the quarter. Problems with theft of copper electrical wiring from Lift Station #1 (near Las Vegas Wash) and a broken 10-inch stabilized lake water line on the plant site, were addressed quickly and with minimal impact to the biological treatment plant. The chromium treatment plant operated at essentially full capacity through the period. There were no exceedances of NPDES permit limitations.

Transfers of perchlorate solution from the AP-5 pond to the GW-11 pond continued. A total of 137.8 tons of perchlorate were transferred during the quarter, about the same as in the last quarter of 2006. The total perchlorate moved from the AP-5 pond since August 2006 is 392.3 tons. This is nearly 40 percent of the perchlorate thought to be contained in the pond at the start of decommissioning.

## 6.0 Conclusions

Based on the data gathered from water levels, extraction rates, and contaminant concentrations, perchlorate capture appears to be improving in the four components of the remediation program. The evidence that supports this conclusion is discussed in the context of the components of the remediation system including the interceptor well field, barrier wall, Athens Road well field, and the seep well field. It is recognized that additional data are needed to refine our understanding of hydraulic conditions and contaminant capture. In response to NDEP March 29, 2007 comments, Tronox is providing a work plan under separate cover regarding this issue.

The Interceptor well field has been in operation for many years and, through continued pumping, has lowered the water table in the area upgradient of the barrier wall. The barrier wall forms a vertical aquiclude/aquitard across the alluvial aquifer downgradient of the interceptor wells. The barrier wall is keyed 20-30 feet into the fine grained sediments of the Muddy Creek formation but was not intended to cut off all Muddy Creek groundwater flow. Due to the low permeability of the Muddy Creek sediments in this area and upwelling of water from the formation into the alluvium, it is unlikely that significant perchlorate is flowing under the barrier wall. Although data indicate that some impacted groundwater is migrating around the interceptor well field and barrier wall, in general, they provide significant capture of impacted groundwater. Tronox anticipates that implementation of the capture work plan mentioned above will allow better demonstration of capture in the future.

Since October 2002 the Athens Road area well field has been in continuous operation and is maturing into an efficient interception line. Based on Modflow particle tracking, trends of contaminant concentrations in the area, and observations of water levels in the area, the Athens Road well field provides significant and effective capture of impacted groundwater. The installation of the new ART-9 well supported the goal of capturing the impacted groundwater in the area. The capture work plan mentioned above will present a plan to further assess contaminant migration in this area.

The Seep well field and the seep area surface flow capture sump make up the remaining portions of the perchlorate recovery system. The Seep well field is advantageously located over the main part of the alluvial channel and is in close proximity to Las Vegas Wash. The perchlorate concentration in seep area groundwater exhibits a general decrease with minor reversals that may be partly due to periodic groundwater mounding events from the COHWRF. We anticipate that the impact of groundwater extraction at the Athens Road well field will continue to be observed as a general decrease of the seep area concentrations. It is understood that these trends may be affected by discharge activities at COHWRF.

The mass of perchlorate measured in Las Vegas Wash at Northshore Road has, for the first time in recent history, declined below 91 pounds per day for three successive months. This represents a 90 percent decline from perchlorate loading in the Wash in 1998.

## 7.0 Proposed Future Activities

TRX will continue the process of merging the chromium mitigation report and the perchlorate recovery system performance report into one document. These ongoing changes will be based on discussions with NDEP to determine schedule implementation and format revisions.

A work plan to assess and improve perchlorate capture is being provided to the NDEP for review.

TRX will evaluate the apparent movement of groundwater around the west and east ends of the on-site barrier wall and will propose appropriate measures to NDEP to remediate this situation. TRX will continue to record water levels in the AOC area. Potentiometric surface maps will be developed as well as chromium and perchlorate in groundwater maps. Future maps will be at the scale of one inch equals 1000 feet with inserts to show congested areas. The effect of changing the pumping rates of the recovery wells will be monitored, and responses (i.e. pumping rate adjustments) will be made to ensure optimal drawdown and plume interception at the well fields. Replacement of the pump in ART-8 will increase capture at the Athens Road well field an estimated 1000 pounds/month. Pumping wells will be rehabilitated as necessary. The monitoring plan in current use will be modified, as necessary, to facilitate collection of pertinent data to track the progress of chromium and perchlorate capture at the well fields and the seep.

A list of wells for future periodic sampling is attached as Appendix F.

## **TABLES**



**TABLE 1  
INTERCEPTOR WELL DISCHARGE RATES (GPM)**

**Tronox, LLC  
Henderson, Nevada**

<b>Well #</b>	<b>March 31, 2007</b>
I-AR	1.19
I-B	1.27
I-C	4.70
I-D	1.90
I-E	1.93
I-F	4.70
I-G	0.00
I-H	1.21
I-I	5.22
I-J	7.57
I-K	3.65
I-L	2.03
I-M	5.96
I-N	1.90
I-O	2.27
I-P	4.53
I-Q	1.26
I-R	1.94
I-S	5.38
I-T	0.00
I-U	1.07
I-V	3.79
I-Z	6.81
<b>TOTAL</b>	<b>70.3</b>

**TABLE 2  
ATHENS ROAD WELL DISCHARGE RATES (GPM)**

**Tronox, LLC  
Henderson, Nevada**

<b>Well #</b>	<b>March 31, 2007</b>
ART-1	16.0
ART-1A	Not Pumping
ART-2	78.5
ART-2A	Not Pumping
ART-3	Not Pumping
ART-3A	39.6
ART-4	11.8
ART-4A	Not Pumping
ART-6	Not Pumping
ART-7	Not Pumping
ART-7A	31.3
ART-8	Not Pumping
ART-8A	47.2
ART-9	39.6
<b>TOTAL</b>	<b>263.9</b>

**Note: Wells designated with an “A” are the co-located “buddy wells”**

**TABLE 3  
SEEP WELL AND SEEP STREAM DISCHARGE RATES (GPM)**

**Tronox, LLC  
Henderson, Nevada**

<b>Well #</b>	<b>March 31, 2007</b>
PC-99R2/R3	93.8
PC-115R	66.7
PC-116R	168.8
PC-117	93.8
PC-118	79.9
PC-119	78.5
PC-120	0.0
PC-121	0.0
PC-133	0.0
<b>TOTAL</b>	<b>581.3</b>
SEEP STREAM	28.5
<b>GRAND TOTAL</b>	<b>609.8</b>

**TABLE 4**  
**PERCHLORATE REMOVED FROM THE ENVIRONMENT, HENDERSON, NEVADA**

Tronox LLC  
Henderson, Nevada

<b>DATE</b>	<b>SEEP WELLS AND SEEP (lbs/day)</b>	<b>ATHENS RD WELL FIELD (lbs/day)</b>	<b>INTERCEPTOR WELL FIELD (lbs/day)</b>	<b>TOTAL (lbs/day)</b>	<b>TOTAL TONS REMOVED (per month)</b>
OCT 2002*	495	331	1402	2228	34.5
NOV 2002	422	1001	1146	2569	38.5
DEC 2002	208	1164	1292	2664	41.3
JAN 2003	335	1074	1467	2876	44.6
FEB 2003	570	783	1060	2413	33.8
MAR 2003**	485	806	1067	2358	36.5
APR 2003	713	713	1033	2460	36.9
MAY 2003	703	729	1148	2581	40.0
JUN 2003	686	907	1098	2691	40.4
JUL 2003	594	755	1034	2383	36.9
AUG 2003	452	741	999	2192	34.0
SEP 2003	417	770	937	2124	31.9
OCT 2003	370	769	1003	2142	33.2
NOV 2003	337	713	949	1999	30.0
DEC 2003	321	751	932	2005	31.1
JAN 2004	305	689	953	1947	30.2
FEB 2004	311	630	895	1836	26.6
MAR 2004	221	743	931	1895	29.4
APR 2004	151	733	849	1733	26.0
MAY 2004	126	765	904	1795	26.9
JUN 2004	157	754	994	1905	28.6
JUL 2004	195	757	968	1920	29.8
AUG 2004	201	805	914	1920	29.8
SEP 2004	169	835	981	1985	29.8
OCT 2004	262	799	1020	2081	31.2
NOV 2004	168	814	1032	2014	30.2
DEC 2004	122	816	1002	1940	30.1
JAN 2005	122	811	1008	1941	30.1
FEB 2005	157	859	991	2007	28.1
MAR 2005	158	781	980	1919	29.7
APR 2005	145	787	987	1919	28.8
MAY 2005	153	759	982	1894	29.4
JUN 2005***	150	794	985	1929	29.9
JUL 2005	154	770	1077	2001	31.0
AUG 2005	135	800	1109	2044	31.7
SEP 2005	84	821	1140	2045	31.7

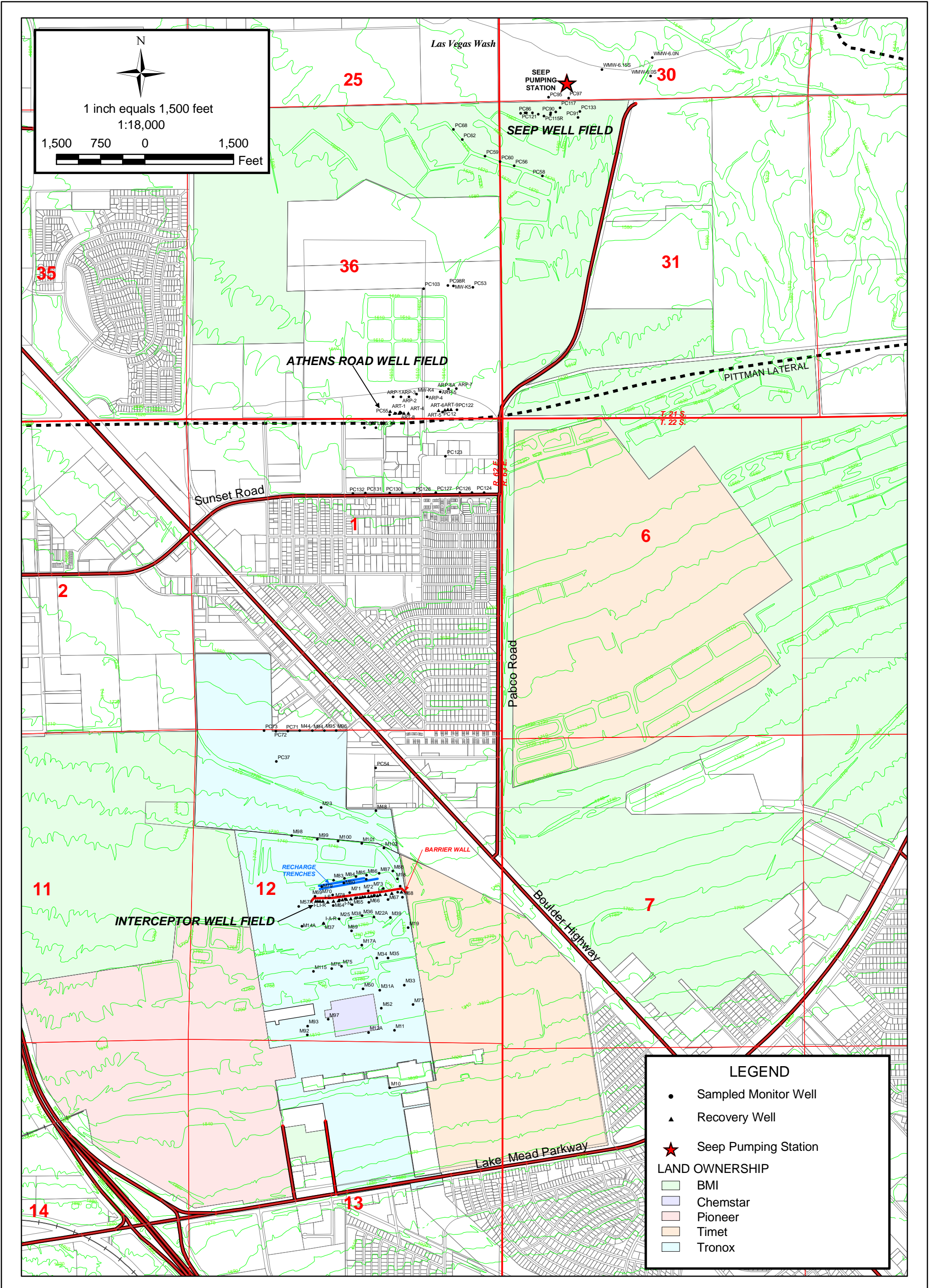
**TABLE 4 Continued**  
**PERCHLORATE REMOVED FROM THE ENVIRONMENT, HENDERSON, NEVADA**

Tronox LLC  
Henderson, Nevada

<b>DATE</b>	<b>SEEP WELLS AND SEEP (lbs/day)</b>	<b>ATHENS RD WELL FIELD (lbs/day)</b>	<b>INTERCEPTOR WELL FIELD (lbs/day)</b>	<b>TOTAL (lbs/day)</b>	<b>TOTAL TONS REMOVED (per month)</b>
OCT 2005	99	797	1077	1973	30.6
NOV 2005	111	773	1103	1987	30.8
DEC 2005	121	726	1141	1988	30.8
JAN 2006	141	750	999	1890	29.3
FEB 2006	136	752	993	1881	29.2
MAR 2006	107	736	983	1826	28.3
APR 2006	129	755	1027	1911	29.6
MAY 2006	131	712	960	1803	27.9
JUN 2006	135	753	887	1775	27.5
JUL 2006	123	647	935	1705	26.4
AUG 2006	141	652	932	1725	26.7
SEP 2006****	142	762	1062	1966	30.5
OCT 2006	134	778	1034	1946	30.2
NOV 2006	101	714	881	1696	26.3
DEC 2006	121	745	884	1750	27.1
JAN 2007	100	804	963	1867	28.9
FEB 2007	89	716	884	1689	26.2
MAR 2007#	89	685	896	1670	25.9

\* Athens Rd recovery wells begin full time operation on 10/22/02  
\*\* Five new Seep Area recovery wells began operation on 3/24/03  
\*\*\* One new Seep Area recovery well began operation on 6/21/05  
\*\*\*\* One new Athens Rd recovery well began full time operation on 9/7/06  
# Estimated

## FIGURES



SHEET NUMBER:	1
FIGURE NUMBER:	1

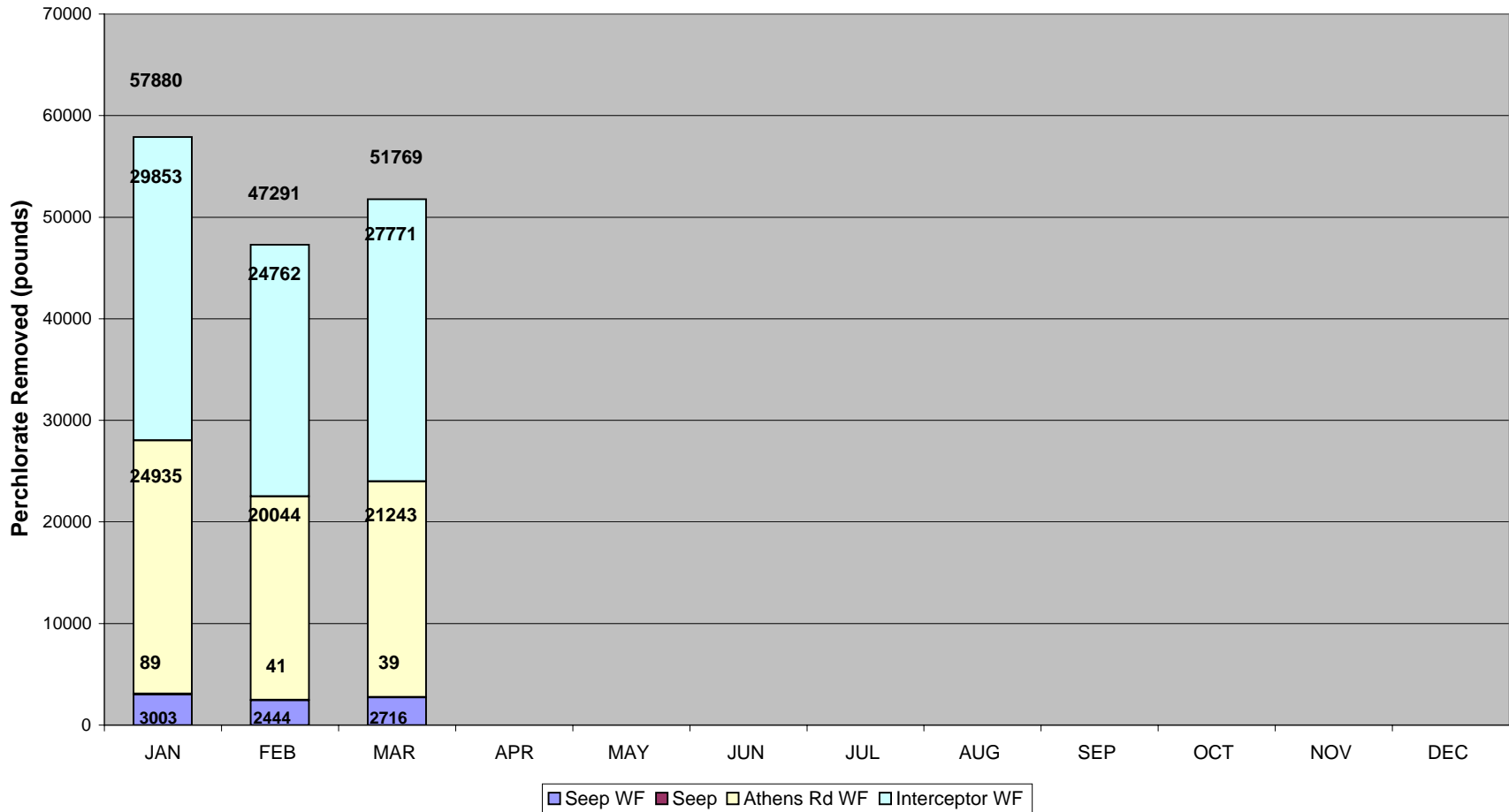
LOCATION MAP		
First Quarter 2007 Perchlorate Performance Report Tronox Facility Henderson, Nevada		
SCALE: 1" = 1,500'	DATE: 5/14/2007	PROJECT NUMBER: 04020-023-110

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

**ENSR | AECOM**

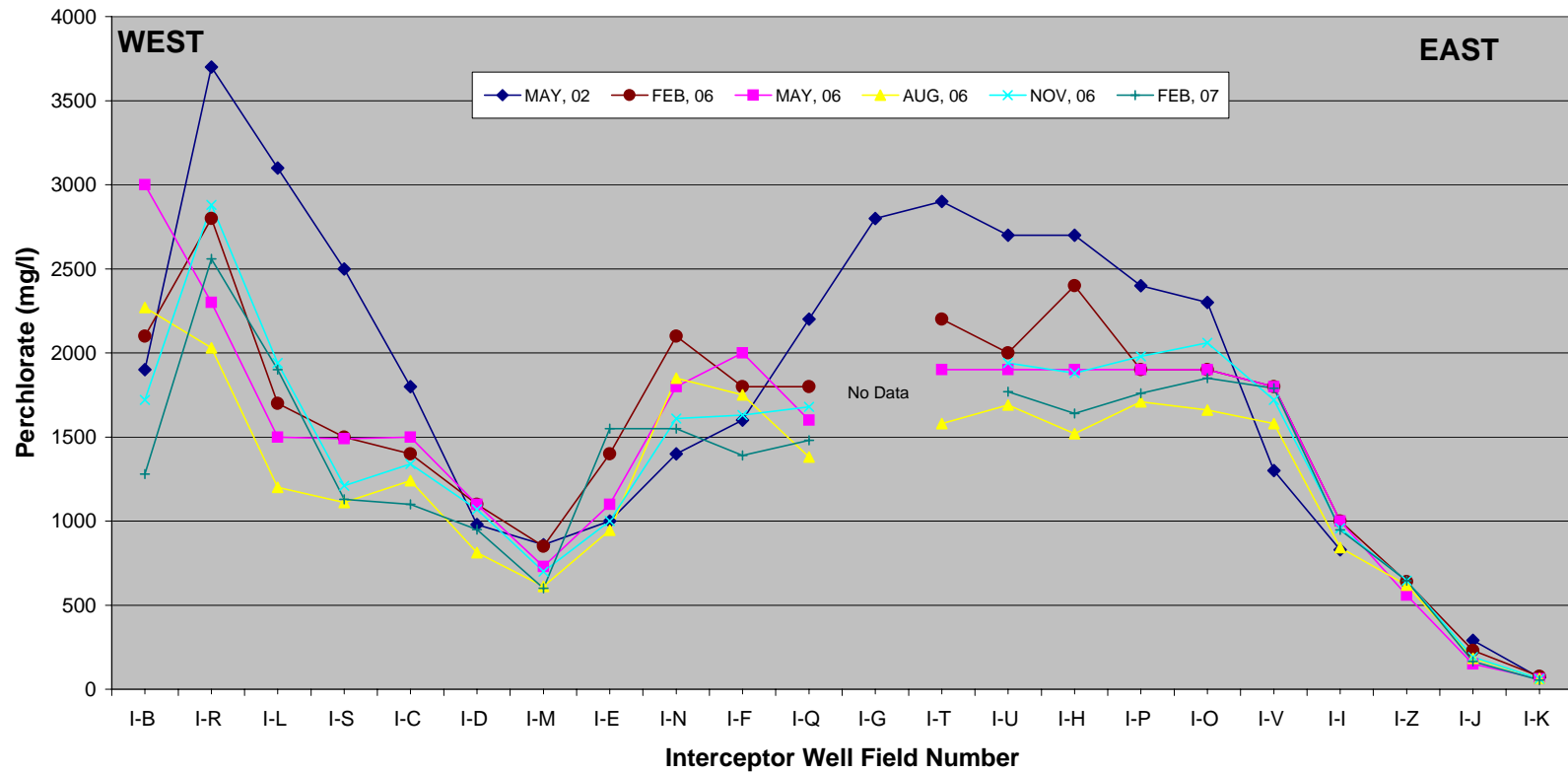
DESIGNED BY: E. Krish	REVISIONS:			
DRAWN BY: M. Scop	NO:	DESCRIPTION:	DATE:	BY:
CHECKED BY: E. Krish				
APPROVED BY: D. Gerry				

**FIGURE 2: PERCHLORATE REMOVED FROM THE ENVIRONMENT JANUARY  
TO DECEMBER 2007  
TRONOX LLC, HENDERSON, NEVADA**

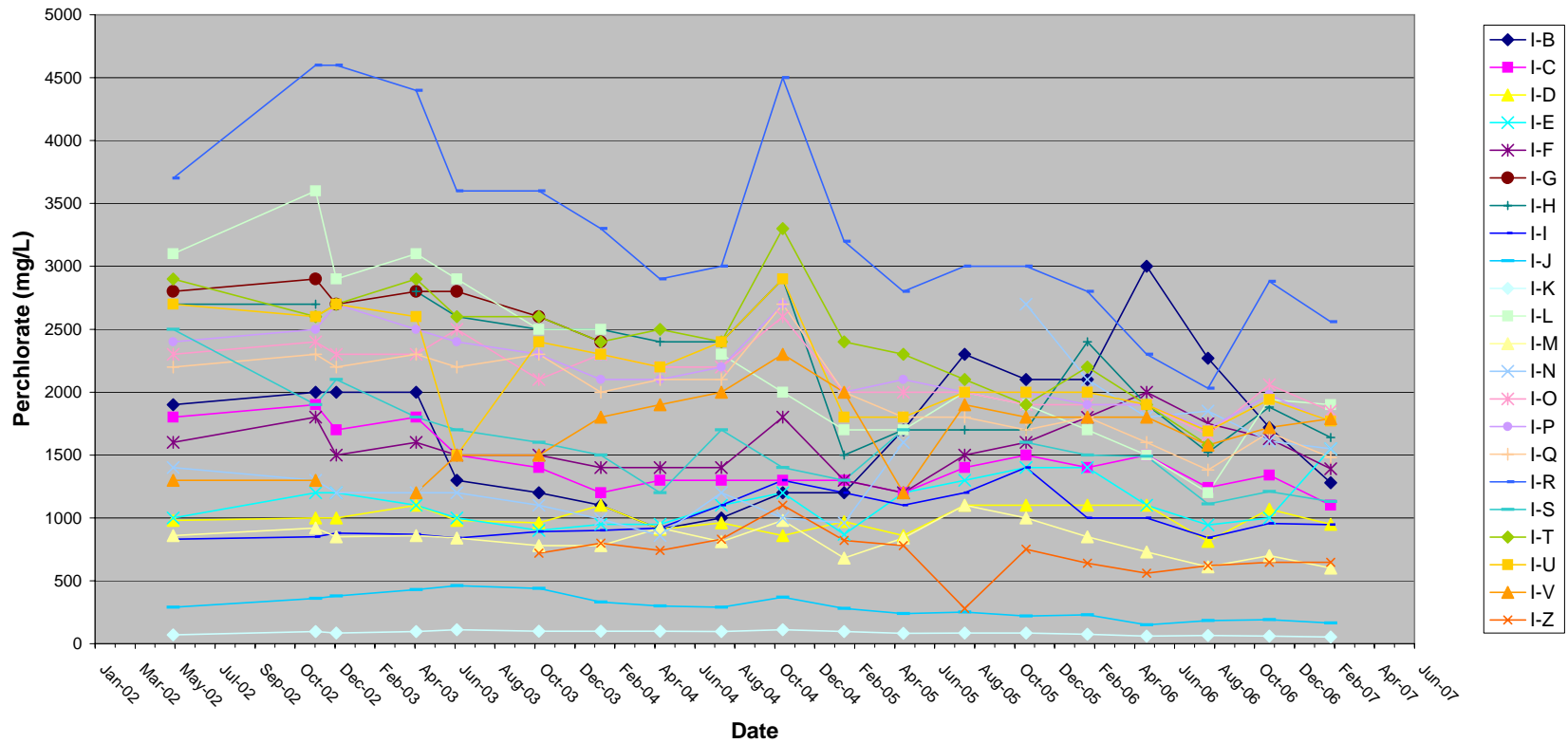




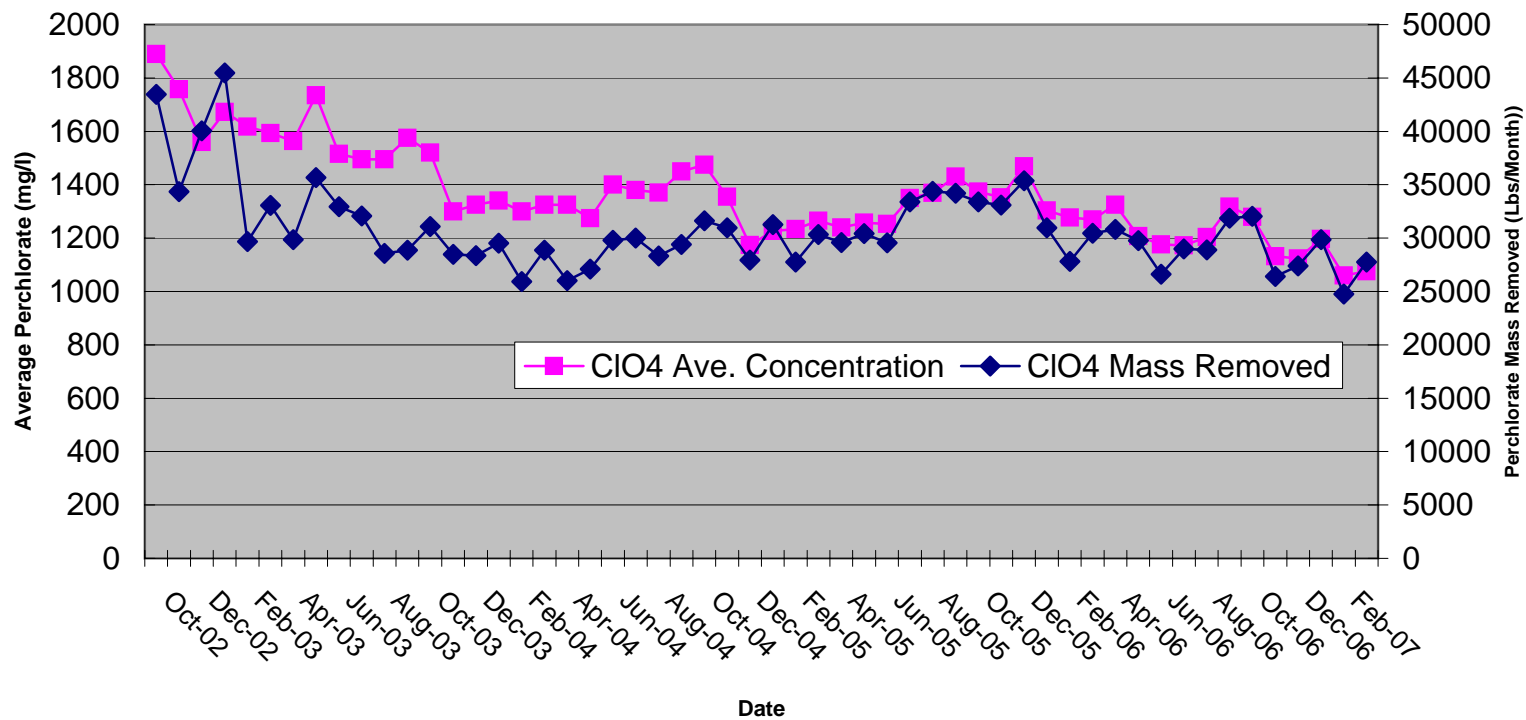
**FIGURE 3: INTERCEPTOR WF PERCHLORATE SECTION GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



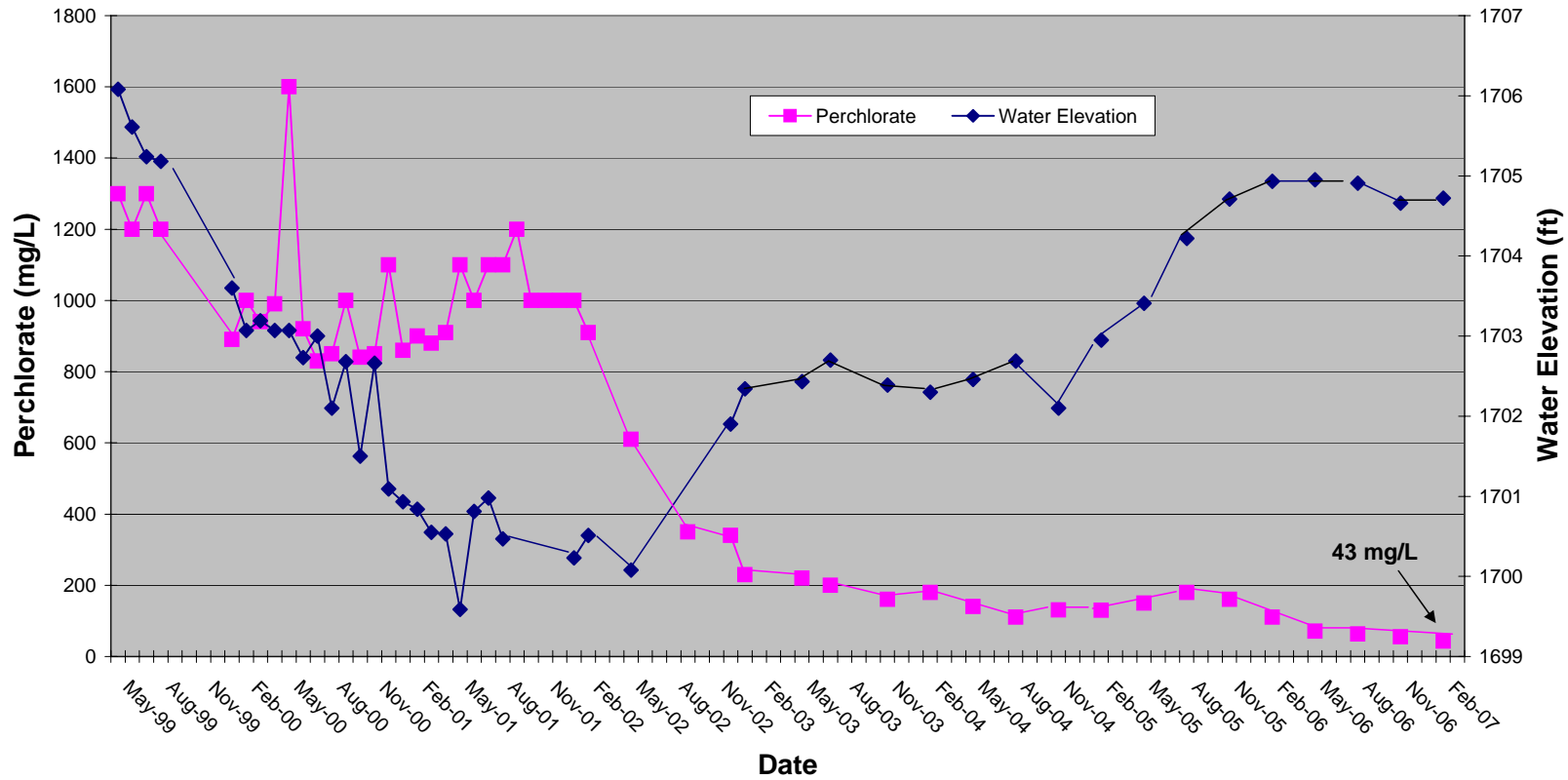
**FIGURE 4: INTERCEPTOR WF PERCHLORATE TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



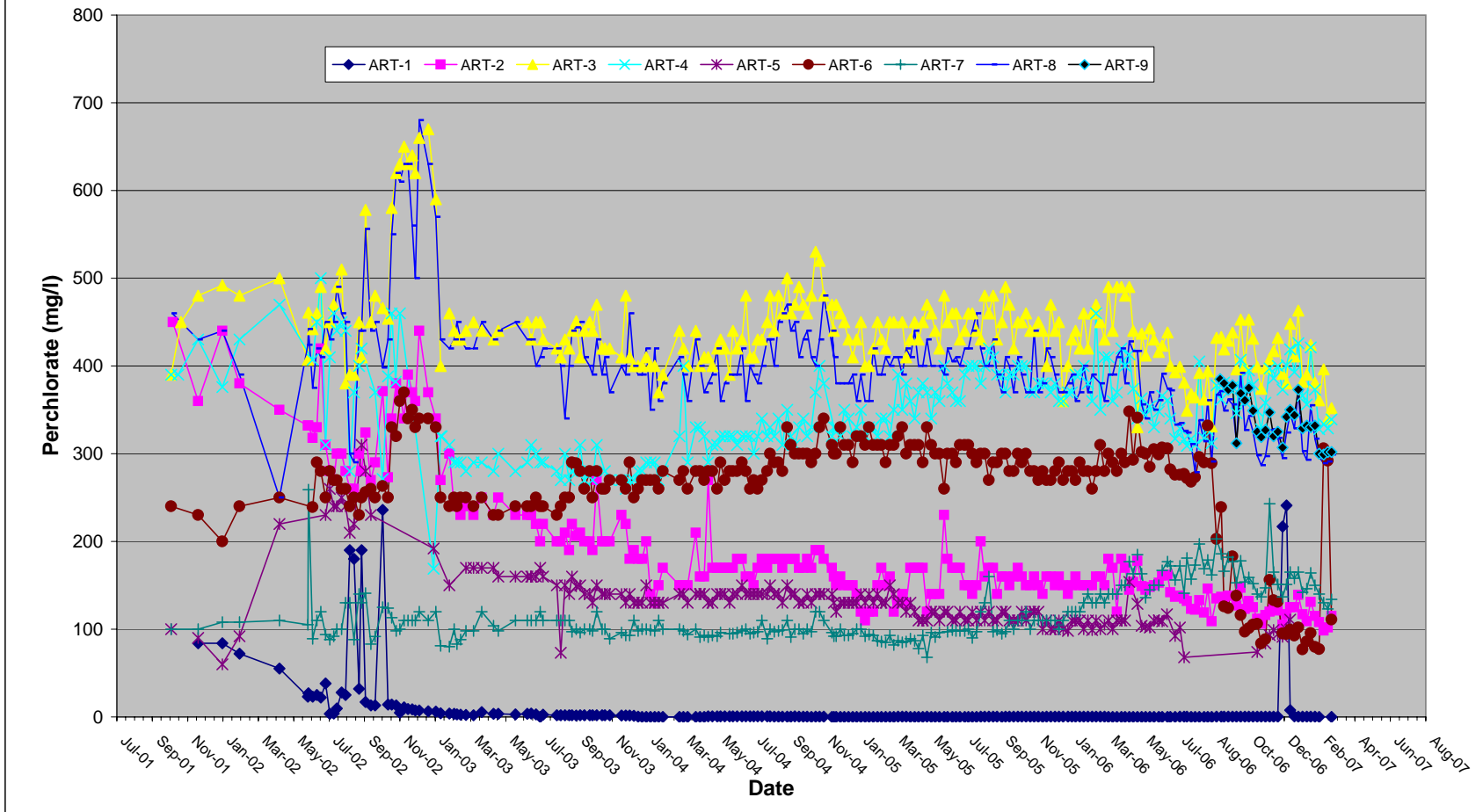
**FIGURE 5: INTERCEPTOR WF AVERAGE PERCHLORATE CONCENTRATION AND MASS REMOVED  
TRONOX LLC, HENDERSON, NEVADA**



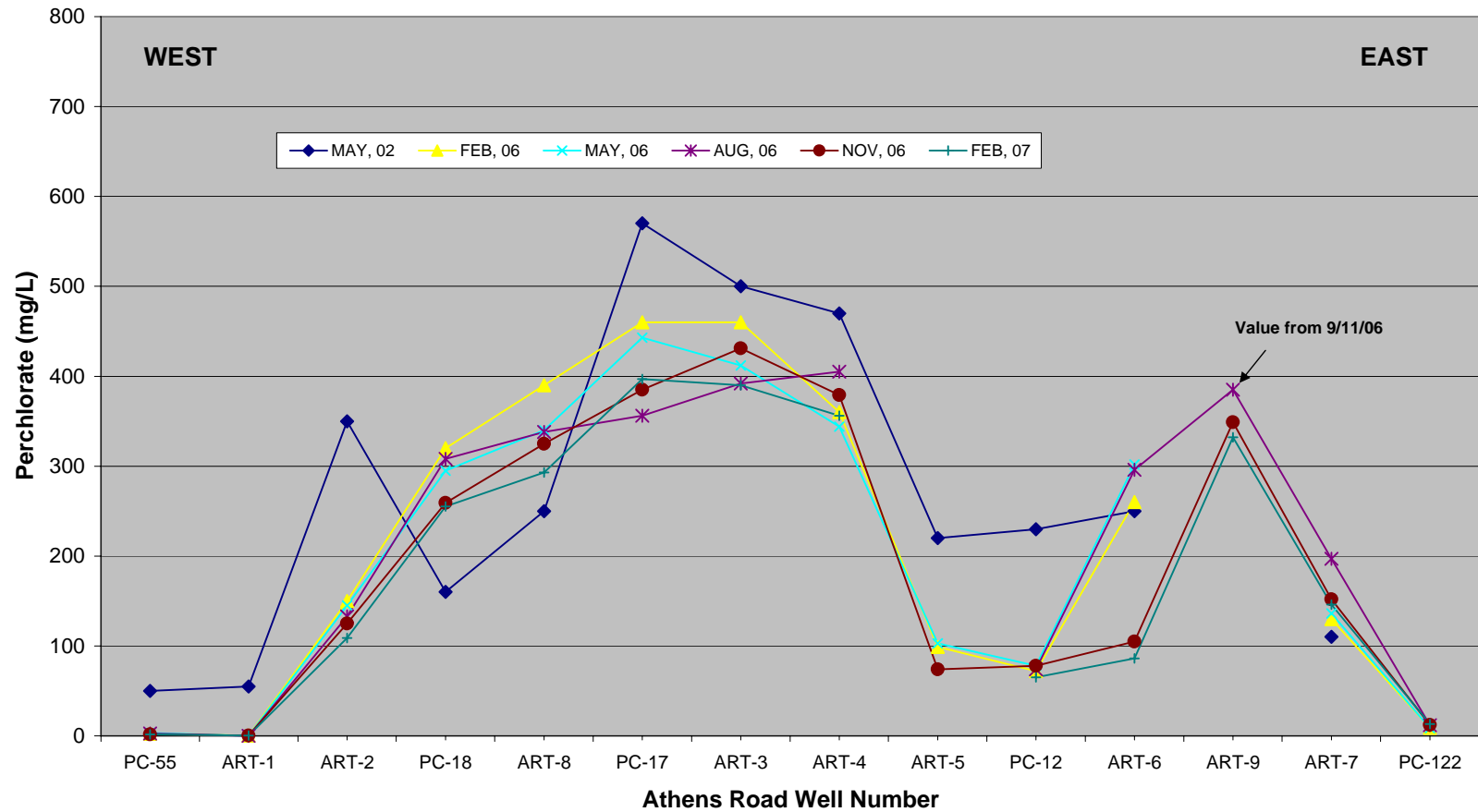
**FIGURE 6: WELL M-100 PERCHLORATE VS. WATER ELEVATION TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



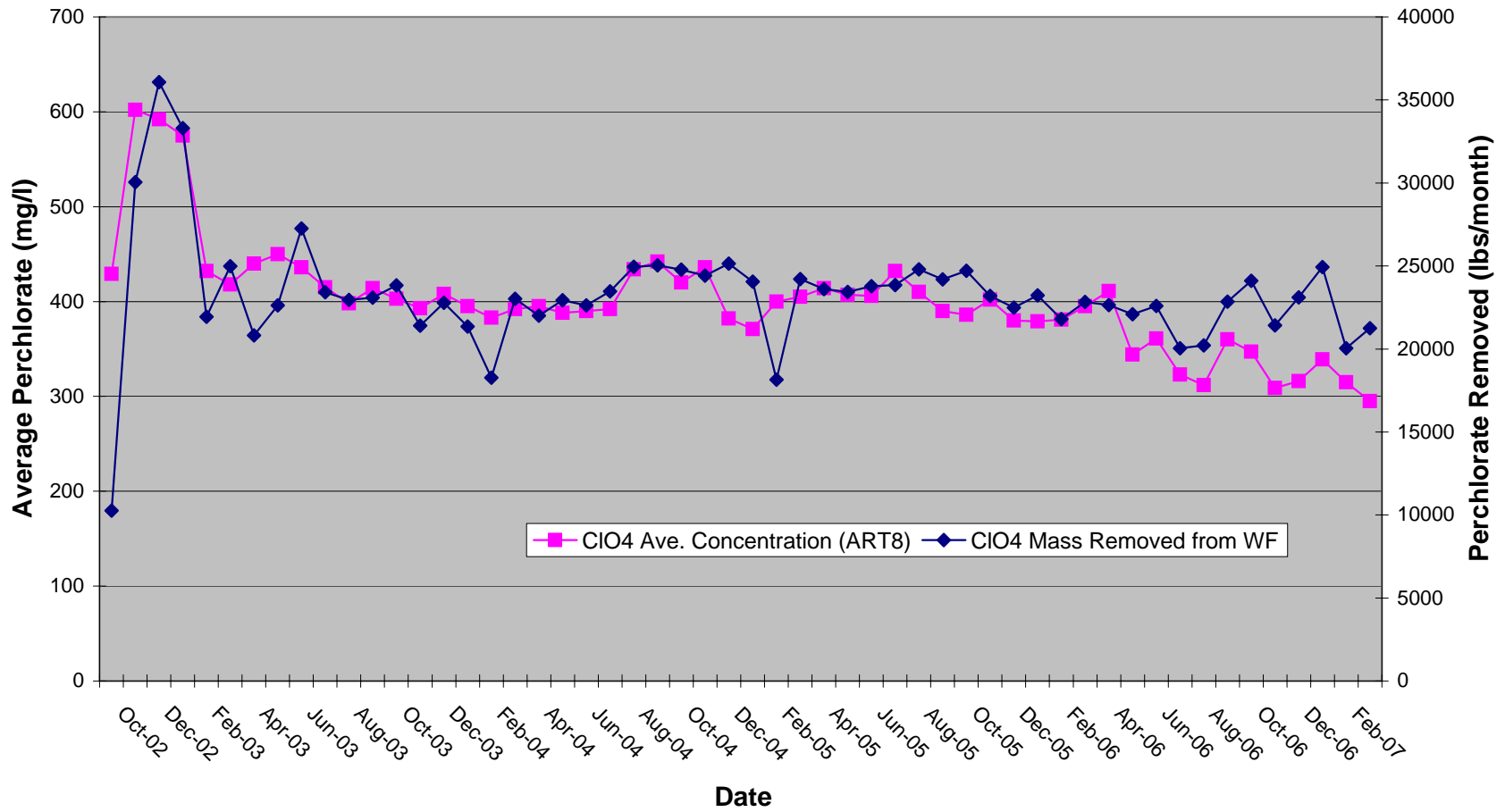
**FIGURE 7: ATHENS ROAD WF PERCHLORATE CONCENTRATION TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



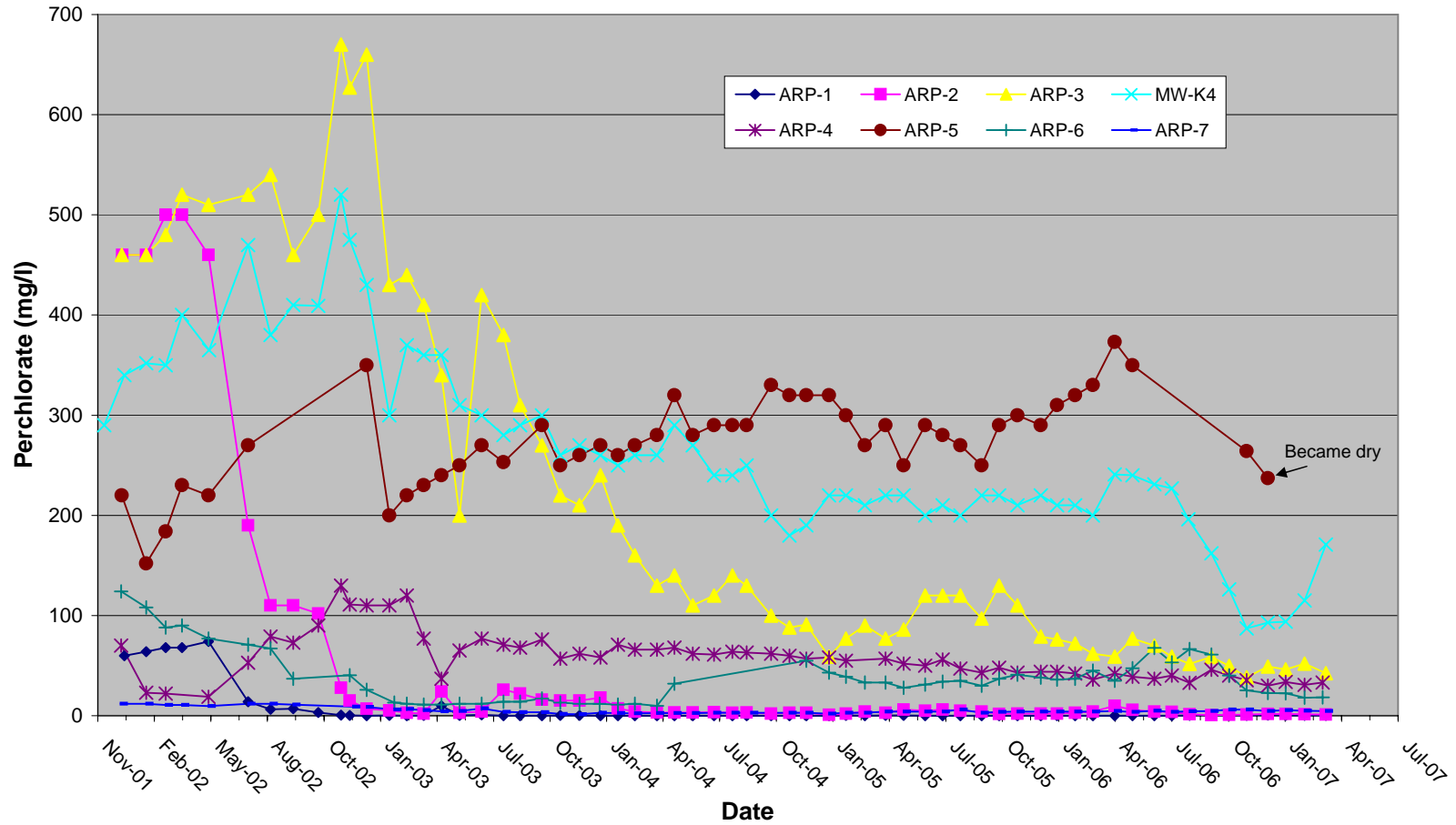
**FIGURE 8: ATHENS ROAD WF PERCHLORATE SECTION GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



**FIGURE 9: ATHENS ROAD WF AVERAGE PERCHLORATE CONCENTRATION IN ART 8 AND MASS REMOVED  
TRONOX LLC, HENDERSON, NEVADA**

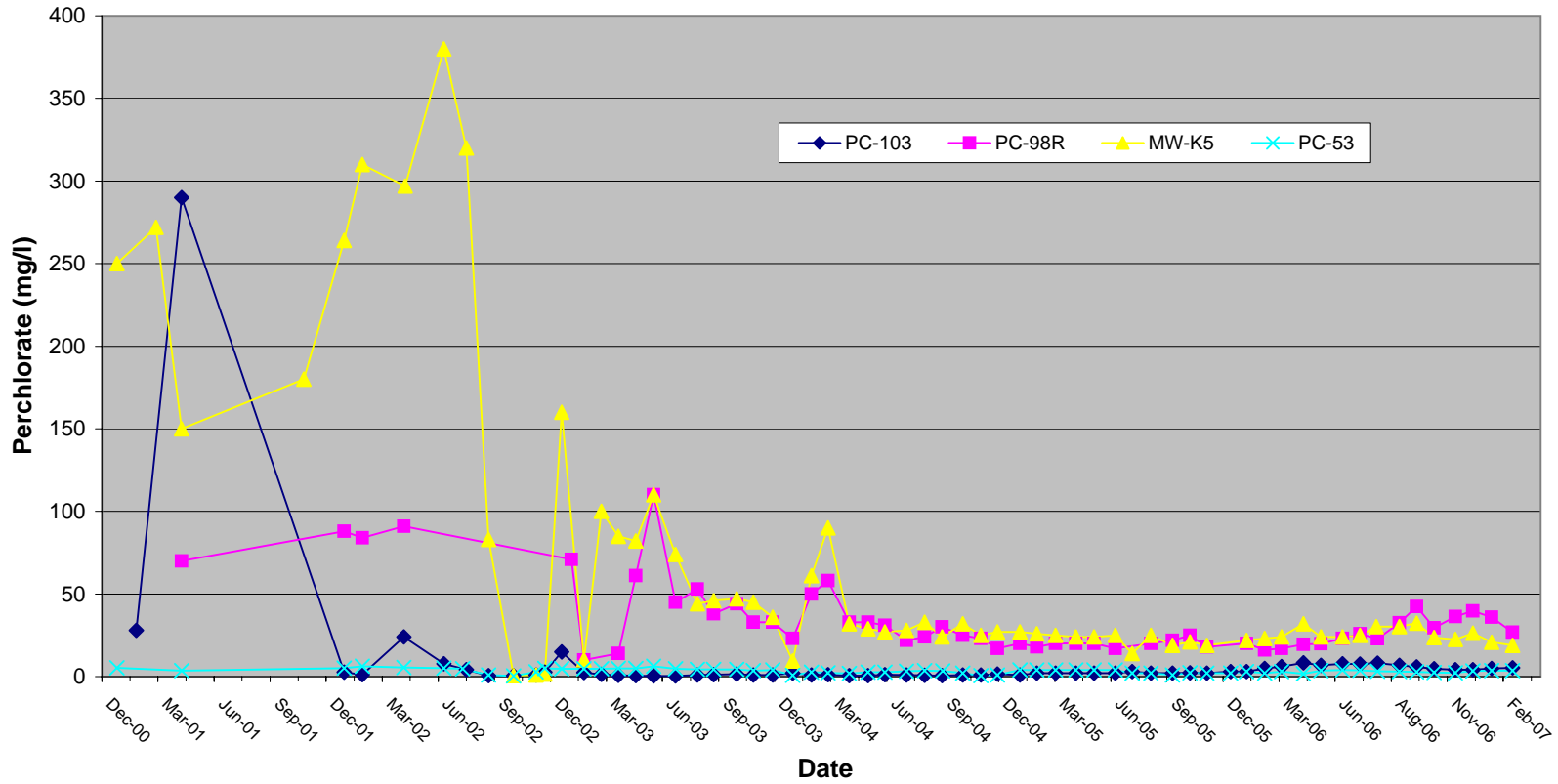


**FIGURE 10: ATHENS ROAD PIEZOMETER WELL LINE PERCHLORATE CONCENTRATION TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**

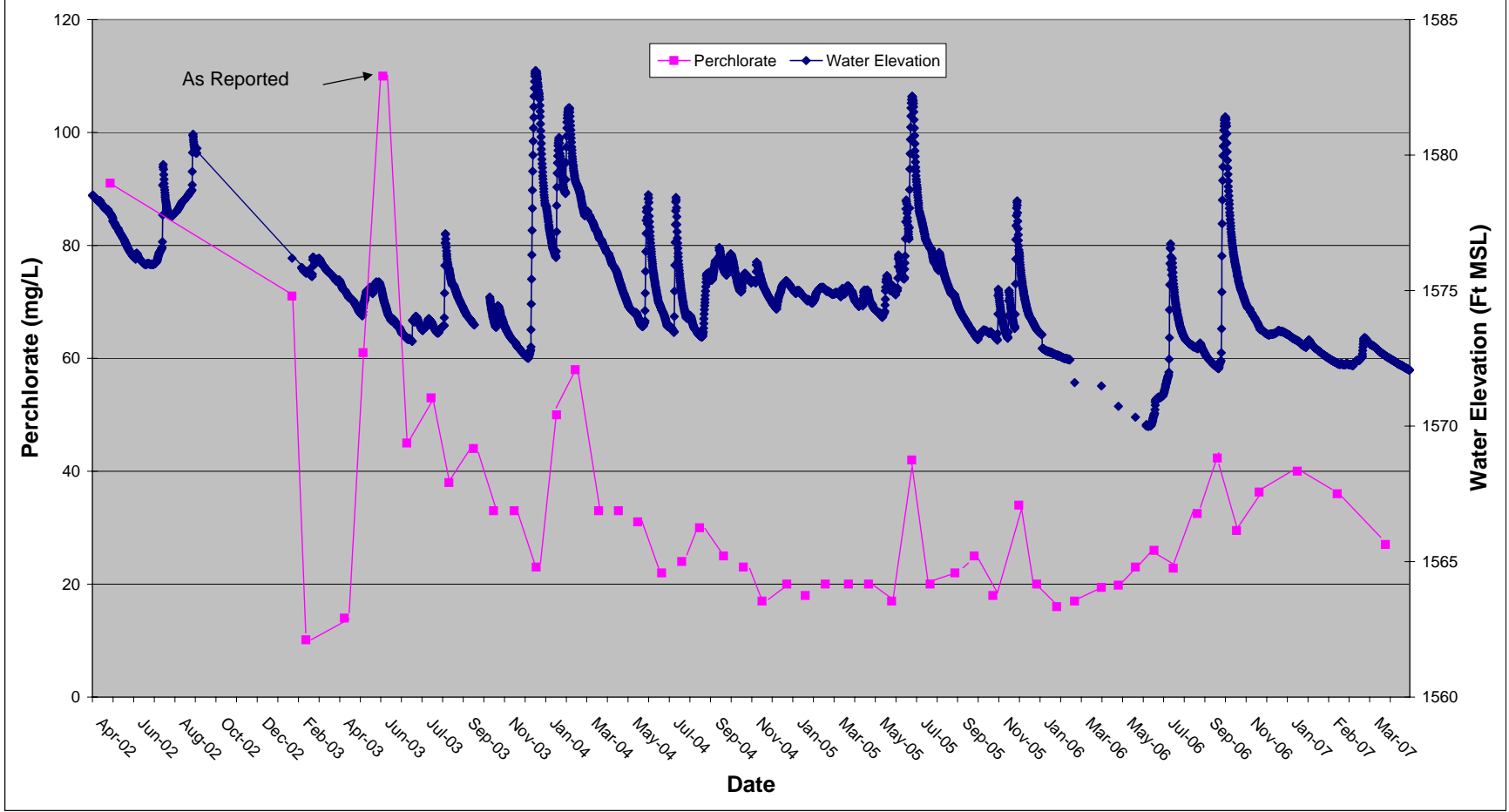




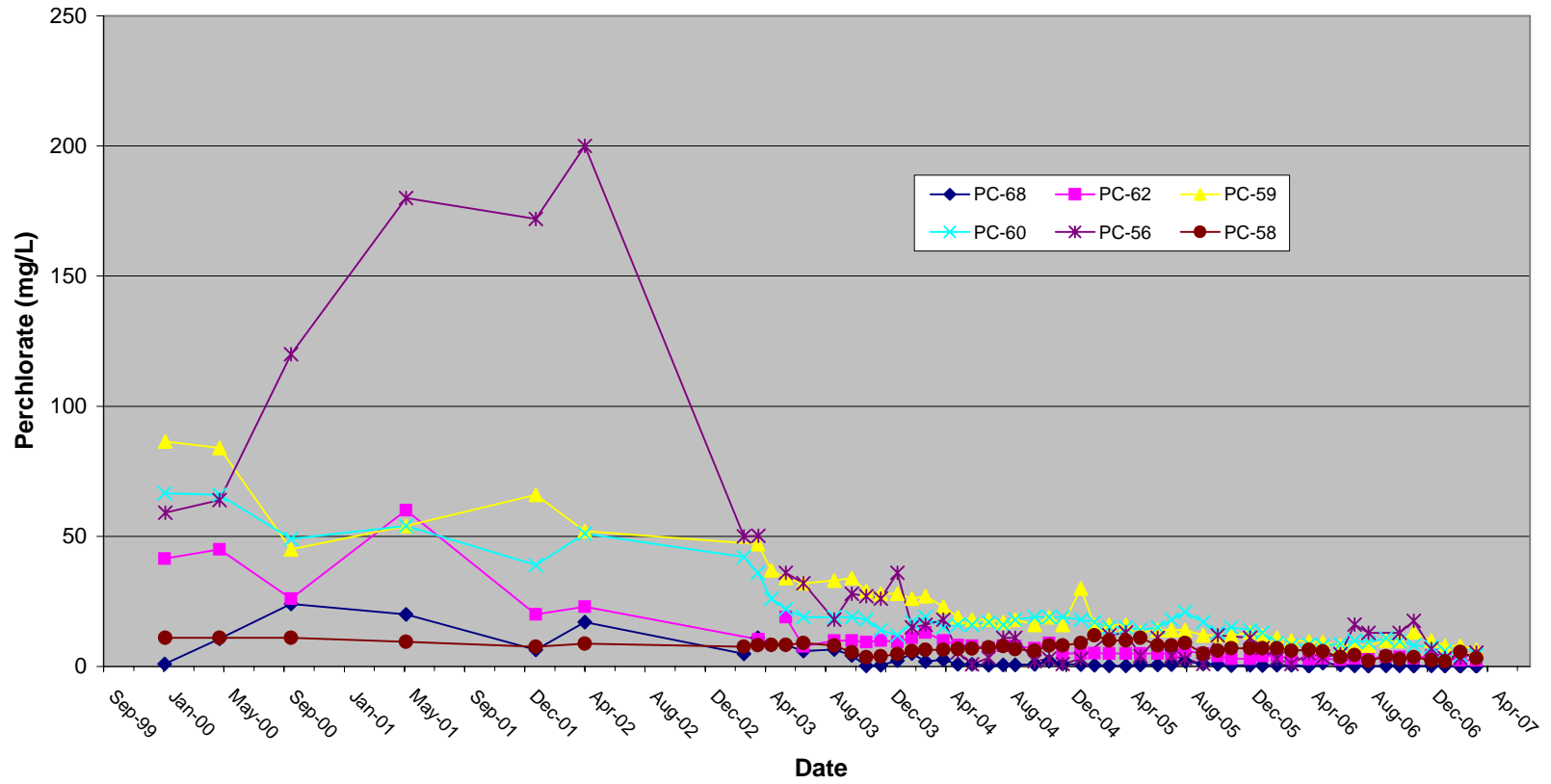
**FIGURE 11: COH WRF WELL LINE PERCHLORATE TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



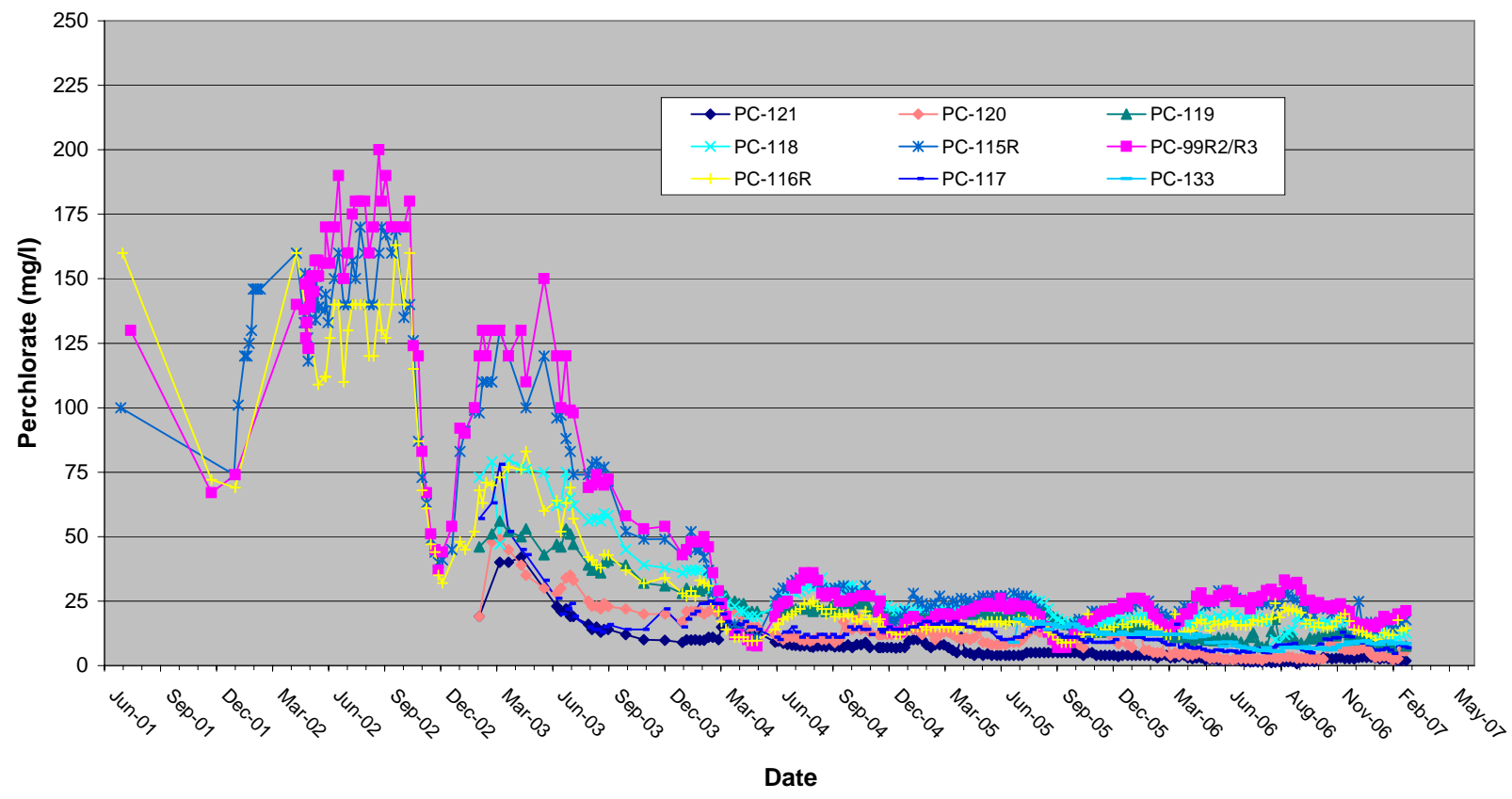
**FIGURE 12: WELL PC-98R PERCHLORATE VS. WATER ELEVATION TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



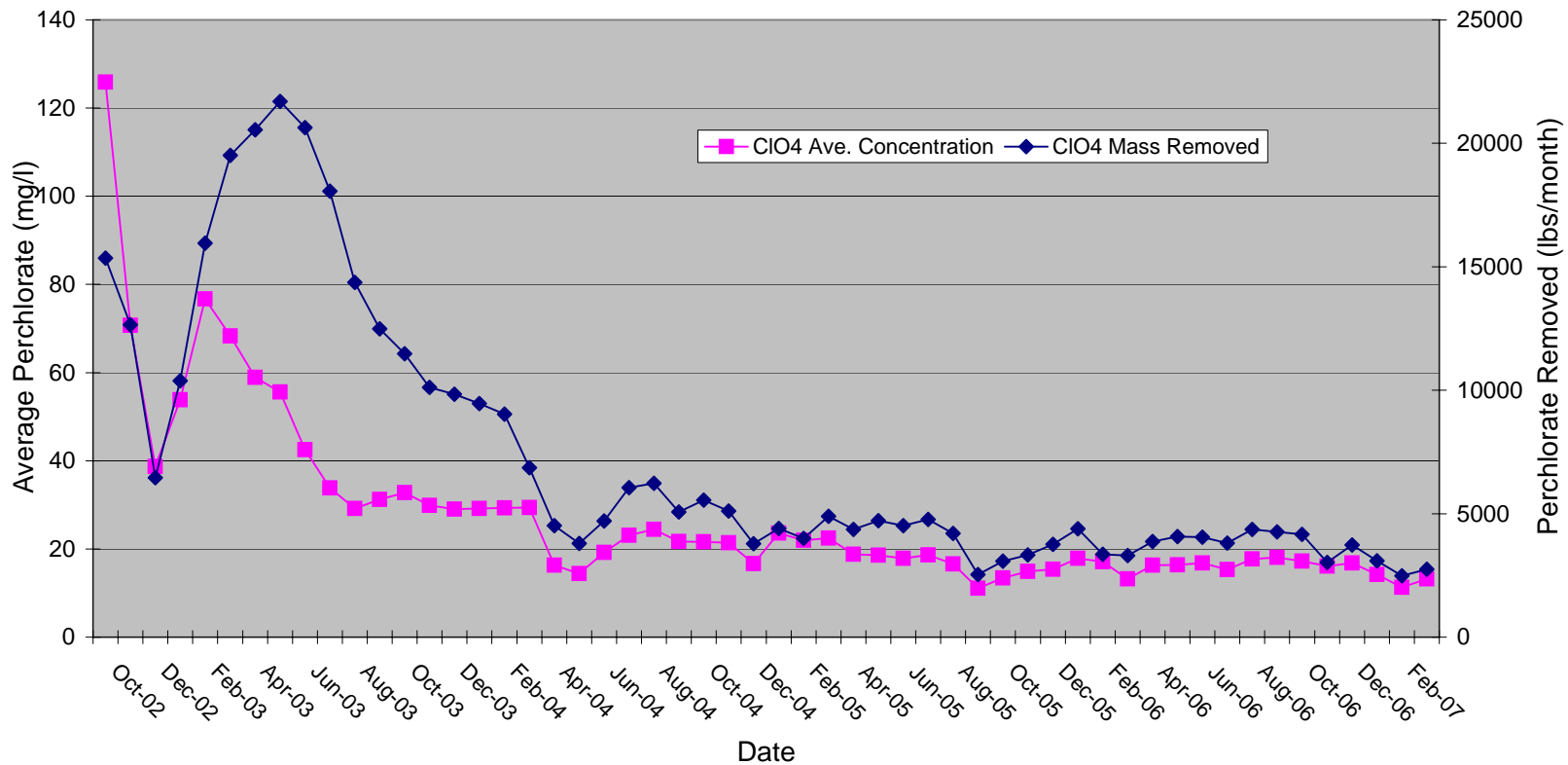
**FIGURE 13: LOWER PONDS WELL LINE PERCHLORATE TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



**FIGURE 14: SEEP WF PERCHLORATE TREND GRAPH  
TRONOX LLC, HENDERSON, NEVADA**



**FIGURE 15: SEEP AREA AVERAGE PERCHLORATE CONCENTRATION AND MASS REMOVED  
TRONOX LLC, HENDERSON, NEVADA**



**FIGURE 16: SEEP STREAM FLOW VS. PERCHLORATE CONCENTRATION TREND GRAPH**  
**TRONOX LLC, HENDERSON, NEVADA**

