AECOM Environment

Prepared for:
Superfund Standby Program
NYSDEC
625 Broadway
Albany, New York 12233

Prepared by:
AECOM
Latham, NY
60133958.05
April 2012

Periodic Review Report – April 2012
Beaver Smelting Site
Site # 353005
Work Assignment No. D004445-25.1

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Engineering Certification

I, Scott A. Underhill, certify that I am currently a NYS registered professional engineer and that this Periodic Review Report for the Beaver Smelting Site (Site Number 353005) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Respectfully submitted,

AECOM Technical Services Northeast, Inc.

STATE OF NEW YORK SCOTT ANDREW UNDERHILL LICENSED PROFESSIONAL ENGINEER 075332

8-27-12

Scott Underhill
Registered Professional Engineer
New York License No. 075332

Date

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Executive Summary

The Beaver Smelting Site (the "Site") is located in the Town of Woodbourne, Sullivan County, New York. The Site (Site No. 3-53-005) is approximately 13 acres in size.

The Site is a former aluminum recycling facility that operated for twenty five years, resulting in several large and small piles of ash at the facility. The ash from these piles failed an EP toxicity test for lead, and a Remedial Investigation/Feasibility Study (RI/FS) was conducted in 1989 by the responsible party (RP) under a Consent Order (CO) agreement with the Attorney General, to further evaluate conditions at the site.

The results of the RI showed lead, cadmium, and selenium at values above New York State Department of Environmental Conservation (NYSDEC) groundwater standards. Subsequently, a Record of Decision (ROD) for the site was signed and implemented. According to the ROD, the waste from the smaller ash piles was consolidated into the main ash pile. This waste was treated by physically mixing lime into the upper portion of the waste, and then grading. The waste was capped with a soil cap and seeded. Trenches were installed to help divert surface water away from the capped area.

Due to the high clay content of the soil, migration of contaminants into the groundwater was deemed unlikely. Site management began in January 1992 as part of the CO. In accordance with the CO, the last round of sampling to be performed by the RP was conducted in October 1994. The State then assumed the responsibility to sample and analyze selected monitoring wells.

In 2005, the NYSDEC retained AECOM to do groundwater monitoring for selected Superfund Sites under their Standby Contract, one of which was the Beaver Smelting Site. The monitoring wells were sampled twice during 2005 and once each during 2007, 2008, 2010 and 2011.

Based on AECOM's review of the existing historical data and information, the selected remedy at the Site continues to function as intended.

Recommendations for the Site include continuation of long-term monitoring including leachate analysis with groundwater sampling and basic site maintenance which includes replacement of locks on most of the Site's monitoring wells.

1.0 Site Overview

The periodic review process is used for determining if a remedy is properly managed, as set forth in site documents, and if the remedy is protective of human health and the environment. This Periodic Review Report (PRR) includes historical information and groundwater monitoring well data through November 2011.

This PRR has been prepared to evaluate the overall effectiveness of the remedies selected and their implementation at the site. AECOM Technical Services Northeast, Inc. (AECOM) monitors the Beaver Smelting Site (the "Site") for the New York State Department of Environmental Conservation (NYSDEC) under Work Assignment D004445-25.1 of the Superfund Standby Contract. The NYSDEC presently has classified the Site (NYSDEC Site No. 3-53-005) as a Class 4 site is defined having been properly closed but that requires continued site management, consisting of operation maintenance, and monitoring. The following remediation goals are expected to be achieved for the Site:

- Ambient groundwater and surface water quality standards.
- Eliminating, to the extent practicable, any potential for contaminated groundwater which does not meet NYSDOH Part 5 Drinking Water Quality Standards, to be used as a drinking water supply.

To eliminate or reduce to the extent practicable:

- The potential for exposure of the public, and on-site workers to Site wastes.
- The release or migration of contaminants from Site wastes into groundwater, surface water, and ambient air.

Monitoring wells are located immediately adjacent to this capped landfill and previous sampling has detected inorganic compounds. The most recent sampling results indicate iron, manganese, lead, and sodium frequently exceeds groundwater standards. Occasional exceedences of groundwater standards for antimony, arsenic, beryllium, cadmium, chromium, selenium, and magnesium were also observed.

In 2005, the NYSDEC retained AECOM to do groundwater monitoring for selected Superfund Sites under the NYSDEC Standby Contract, one of which was the Beaver Smelting Site. The monitoring wells were sampled twice during 2005 and once each during 2007, 2008, 2010 and 2011. Results from these monitoring events indicate that groundwater has been contaminated with parameters consistent with historical activities such as iron and manganese. Decreasing concentrations of chromium, lead, and arsenic were observed in several wells.

1.1 Geology and Soils

The site is underlain by rocks of the Hamilton Group that are of estuarine origin and consist mainly of greywacke sandstones, with variations of gray and red shales and coarse conglomerates. The thick, layered series of shales of the Hamilton Group are rich in clay. The Hamilton Group rocks are middle to late Devonian in age and were deposited as an extremely complex delta known as the Catskill Delta. This delta was spread out as a broad apron of sediments and formed along the western foothills of a newly created eastern highlands. These rocks later formed the region known as the Catskill Plateau, which was dissected and subsequently formed what is known today as the Catskill Mountains. These sandstones range from red to gray. The alternating shales, sandstones, and conglomerates lie almost horizontal, but dip in various directions, forming gentle folds that are most pronounced to the east and die out to the west.

Overlying the Hamilton Group are glacial tills and soils. Depths to bedrock in the vicinity range from 10 to 20 feet, although there are variations throughout the site and the region. The soil recovered from the borings drilled by Lawler, Matusky & Skelly Engineers (LMS) into the till exhibits unmistakable evidence of a fragipan, determined by the large number of blow counts, perched water table, and survey of area soils. This fragipan characteristically causes the low vertical permeability on the order of 0.03 – 0.1 ft/day. Overriding this fragipan surface are soils whose lateral permeability's ordinarily reach from 20 to 50 in./hr, depending on the soil texture. As a result, most of the precipitation runs off the surface of the site toward the brook.

1.2 Groundwater

Two distinct water tables underlie the site. The upper table is located in the soil and ranges from several inches to several feet in depth below grad, depending on precipitation. The water in the soil shows little vertical mobility, as indicated by the continued saturated condition of the soil, even on areas of moderate slopes. This type of groundwater condition is referred to as a perched water table and is believed to be cause by the occurrence of the dense subsurface layer of soil beneath the perched water table. No known groundwater wells in the area utilize this aquifer.

Based on the RI, a second water table lies under the surface at depths of over 300 ft. The on-site water supply well was drilled into this bedrock aquifer to a depth of over 350 ft. A water supply well to the west of the property was drilled into the bedrock to a depth of approximately 400 ft before the water table was reached. The bedrock wells showed an artesian condition, i.e., a confined aquifer pressure condition, since once the wells intersected the water bearing zone, the water rose within the well to within 100 ft of the ground surface . The higher water levels may be the result of the geologic structure of the rocks that underlie the site. These rocks dip gently to the west, with the dip gradually increasing toward the east, thus creating a situation in which pressures may exist below the confining beds that underlie the site. The recharge area is unknown, but the geologic structure of the region suggests that recharge may be from the higher elevations to the east.

1.3 Surface Water

The site drains to an unnamed stream (referred to in the FS as Beaver Smelting Stream), that flows west some 2000 feet to the Neversink River. This stream originates in the marshy area north of the landfill. The vertical fall of the brook from the site to its confluence with the Neversink River is approximately 140 feet.

1.4 Remedial History

Beaver Smelting and Refining was an aluminum recycling facility that operated for twenty five years. There were three large and numerous small piles of ash. The ash failed the EP Toxicity test for lead at 13.63 mg/L (ppm) and 200.45 mg/L. A remedial investigation/feasibility study (RI/FS) was conducted by the responsible party (RP) under a Consent Order (CO) with the Attorney General. The remedial investigation was conducted by LMS for the Beaver Smelting Company. The field investigation involved the following activities from the fall of 1986 through the fall of 1987:

- Construction of 11 shallow (12 to 20 ft deep) groundwater monitoring wells in the sediment adjacent to the three ash fills;
- Drilling of five additional borings in the ash and sediment to depths 2 to17 ft below grade;
- Collection of 11 water samples from the groundwater monitoring wells, eight from the seeps at the bases of the fills, and five from the brook;
- Collection of three sediment samples from the site pond;
- Laboratory analyses of all water and pond sediment samples for heavy metals and some groundwater samples for volatile organic compounds (VOCs);

- Laboratory analyses of soil samples for cation exchange capacity (CEC);
- Resampling of ground and surface waters for heavy metals;
- Aerial photography and photogrametric mapping of the site and surveying of well;
- Drilling of 10 borings in each of the three fills and the collection of ash samples and,
- Bench scale chemical treatability study.

The RI/FS was approved in March 1989. Results of the RI showed groundwater standards being exceeded for lead, cadmium, selenium, and pH. The RI/FS investigation revealed that the overburden consisted to 10 to 20 ft of dense glacial till with large amounts of sit, clays and fragipan,. Due to the very high turbidity of the ground water in those wells caused by suspended silts and clays, both filtered and unfiltered samples were collected, with greater emphasis placed on the results of the filtered (dissolved) results which are more representative of the groundwater chemistry. July 1989 results indicated concentrations ranged from 15 to 48 parts per billion (ppb) for lead and 18 to 120 ppb for selenium. However the selenium exceeded the standards in the upgradient wells and does not appear to be related to site contamination. No volatile organic compounds were detected in the groundwater samples.

A CO was signed for remediation of the site in March 1989. The NYSDEC's CO for the Site includes the following remedial components:

- Consolidation of nearly 9,000 cubic yards of smelter ash;
- Installation of an engineered cap and cover system;
- Installation of a groundwater collection trench;
- Institutional controls and restrictions on the use of the property and future use of groundwater; and,
- Monitoring of remaining groundwater contamination to monitor the short term and long term effectiveness of the remedy.

In October 1991, approximately 9000 cubic yards of smelter ash waste was consolidated, stabilized and capped to prevent direct contact with the waste material and reduce leaching of the contaminants to groundwater. A lime stabilization process was utilized to minimize the potential for contaminant leaching. A groundwater interceptor trench was constructed upgradient of the landfilled waste to minimize infiltration. Due to the high clay content of the soil, migration of contaminants into the groundwater was deemed unlikely. Site management began in January 1992 as part of the CO. In accordance with the CO, the last round of sampling performed by the RP was conducted in October 1994. The State then assumed the responsibility to sample and analyze selected monitoring wells.

The private drinking water supply wells serving homes near this site were sampled in 1988, 1993, 1995 and 2009. Site-related contaminants were not detected in any of the wells sampled. An on-site drinking water supply well was sampled in the spring of 2001. No site-related contaminants were detected. **Table 1** presents the results of the available analysis for the off-site wells sampled in the past.

1.4.1 Groundwater Monitoring

Groundwater monitoring at the Beaver Smelting Site presently includes sampling of 10 on-site wells for Target Analyte Metals (TAL) metals, to monitor the effectiveness of the remedial action and groundwater quality at the Site. A total of 10 wells are used for long-term groundwater monitoring as identified in **Table 2** and shown in **Figure 2**.

Table 2: Monitoring Well Network Details

Well Identification	Well Diameter (all PVC)	Measured Depth of Well (ft.)	Depth to Water (ft.)	Condition of Well
MW-3	2"	20.50	6.96	Fair; Blockage in well past ~4', bailer used
MW-4	2"	17.90	4.94	Fair
MW-5	2"	16.00	7.81	Fair
MW-6	2"	14.00	5.73	Fair
MW-7	2"	15.00	5.55	Fair
MW-9	2"	15.00	5.52	Fair
MW-10	2”	12.00	5.30	Fair
MW-11	2”	22.00	NA	NA
MW-12	2"	16.45	6.43	Fair
MW-13	2"	17.00	4.98	Fair

The monitoring wells were sampled twice during 2005 and once each during 2007, 2008, 2010 and 2011. A summary of all groundwater analytical data collected between 2005 and 2011 can be found in **Table 3**. MW-11 could not be located during the last two sampling events and was therefore not sampled.

Groundwater was sampled from each monitoring well using a disposable dedicated bailer. Prior to purging each well, a depth to water measurement was recorded using a Little Dipper electronic water level meter which was decontaminated with a liquinox bath and rinsed with distilled water between each use. Each monitoring well was then purged of three well volumes of water, where possible, using the well dedicated bottom loading bailer. Purge water was disposed on the ground in the immediate vicinity of each well as per NYSDEC directive. After purging, temperature, conductivity, pH, turbidity, color and odor of the groundwater were recorded on the monitoring well purging/sampling logs. In addition, the presence of any non-aqueous phase liquids (NAPL) were noted. Field parameters were taken using a Hanna Hand Held Combo-meter. Each piece of equipment was calibrated each day prior to use by the Consultants geologist.

All groundwater samples were collected in bottles provided by the laboratory and were packed on ice. The coolers were packaged and shipped overnight via commercial delivery service to Chemtech Inc., Mountainside, New Jersey under standard chain-of-custody procedures. The samples were submitted for analysis for ICP-TAL Metals by Method 200.7 and Mercury by Method 245.1.

As part of the review of historical data for the Site, analytical results from past sampling events prior to 2005 were obtained and reviewed. These data are presented in the cumulative data tables in **Appendix A** and were used for the comparative data review in Section 2.

1.4.2 Surface Water Monitoring

Water samples were collected from Beaver Smelting Stream at five sampling stations in November 1986 and eight stations in July 1987. The Neversink River was sampled in July 1987. Lead and zinc concentrations increased as the brook flows past the site. Further downstream the concentrations were lower, suggesting that there were no additional lead load and that inter basin flow provides some dilution, or that the metals settle with the solids in quiescent zones in the stream bed. No elevated metals were detected in the Neversink River.

2.0 Evaluate Remedy Performance, Effectiveness and Protectiveness

2.1 IC/EC Report

The Beaver Smelting Site is located n the Town of Woodbourne, Sullivan County, New York and consists of approximately 13 acres (**Figure 1**). The property, which consists of a small landfill and wooded area with several large site storage buildings on-site, is presently owned by the Woodbourne Mining, Smelting and Refining Company.

During the reporting period, the Site property was not sold, subdivided, merged, did not undergo a tax map amendment, and was not issued any federal, state, and/or local permits.

The institutional controls (ICs) reported by the NYSDEC and included in this PRR are:

- Groundwater Use Restriction in the form of a Deed Restriction (pending).

The engineering controls (ECs) reported by the NYSDEC and included in this PRR are:

- Site Access Controls – The existing metal gate will be maintained;
- Signage – "Posted" signs should be placed on the perimeter fence to notify the community that the Site has restricted access and that no trespassing is allowed; and,
- Monitoring Well Network – 10 monitoring wells have been installed at the Site to monitor the effectiveness of the remedial program on the groundwater at the Site.

2.2 Monitoring Plan Compliance Report

2.2.1 Confirm Compliance with Monitoring Plan

Activity	Required Frequency (X)			Compliance Dates
	Quarter	Semi-Annual	Every five quarters	
Groundwater Sampling		X		2005
			X	2007 - 2011

2.2.2 Confirm that Performance Standards are Being Met

Groundwater Elevations

The most recent groundwater sampling event occurred in November 2011. Depth to water measurements were recorded for 9 monitoring wells (one well could not be located), however, groundwater contour maps cannot be constructed until the Site property is surveyed and measuring point elevations determined. The overall direction of groundwater flow beneath the Site, based on data from the Feasibility Study, is to the south-southwest.

Groundwater Analytical Results

Analytical results for the groundwater sampling conducted at the site since 2005 are presented in Table 2. To complete the PRR, all available Site records were obtained from the NYSDEC and through a Freedom of Information Law (FOIL) request to the New York State Department of Health (NYSDOH). Review of Site records was completed to determine and understand the remedial actions that were taken at the Site and to obtain any detailed information pertaining to Site soils, groundwater, and leachate. Groundwater results were obtained dating back to 1986. All analytical data for metals have been compiled in the cumulative data tables presented in Appendix A. These tables were used in the following discussion. It is noted that several years of data in the first sampling sets were from filtered metal samples, as compared to unfiltered samples for most of the analysis past 1990. Most of the samples collected from overburden wells were highly turbid, and it is likely that the metal concentrations reported in unfiltered samples represented metals associated with the silts in the water and not dissolved metals that would be mobile in the soils. In the process of this data review, it became evident that monitoring wells, MW-9A and MW-AA have been mislabeled in recent years and are MW-10 and MW-11, respectively. This has been corrected on site maps and data tables. Monitoring MW-1 was destroyed and no data is available for this well past November 2002. In addition, MW-2 was destroyed sometime after the October 2005 sampling event and MW-8 was never located and therefore these wells were not sampled.

Based on the laboratory results for 2005 through 2011 which are presented on **Table 3** and the cumulative data from the onset of groundwater sampling presented in **Appendix A**, concentrations of metals are, for the most part, consistent with historical sample results. The following trends or observations were noted for specific compounds (**refer to Figures 3 through 9**):

- Manganese, lead and iron continue to be widely distributed across the site at concentrations exceeding the New York State Ambient Water Quality Standards (AWQS).

- Sodium concentrations exceeding AWQS standards are present in the monitoring well network in the southwest portion of the site, though the sodium concentrations in these wells are decreasing over time.

- Selenium shows an overall decreasing trend in monitoring wells MW-3, MW-4, and MW-5, adjacent and south southwest to the main landfill and in MW-12 and MW-13 located west of the landfill area.

- In the 2011 sampling event, Beryllium is present in MW-4 at a concentration (5.81 µg/L) exceeding the AWQS guidance value, but is not present in concentrations greater than the reporting limit in other monitoring wells, and then only at estimated values.

- Chromium showed overall decreases in concentrations in most wells during the past two monitoring events as compared to historical chromium concentrations, as did aluminum, iron, lead, magnesium, vanadium and zinc.

- MW-4, located within the landfill perimeter, continued to show the most contaminants with exceedences of AWQS and GVs with the following metals; arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, sodium, and thallium.

- Thallium was detected in all the sampled wells during the November 2011 sampling event, all results at levels above the AWQS for thallium and all at estimated values. For most of these wells it was the first time this compound was detected. Future sampling events will determine if this is an anomaly or a trend.

Trends noted based on Figures 3 through Figures 9:

- As seen in Figures 3 through 9, there was an overall jump in metals concentrations between 2002 and 2005, especially iron, aluminum and selenium in most of the Site's monitoring wells. In most cases, these concentrations subsequently decreased steadily since the 2008 sampling event. No explanation for this jump in concentrations is evident, but overall, the November 2011 results show lower values in line with historical concentrations.

Well MW-11 (MW-AA) was not located for the past two sampling events (February 2010 and November 2011), and therefore was not sampled. Efforts will be made in future sampling events to locate or determine the fate of this well.

Leachate Analysis

Leachate analysis for the two onsite seeps located at the southwest end of the landfill are presented in Table 4. Review of past data and field notes indicate that the first four samples analysis were from the leachate seep located on the southwest side of the landfill. The analysis conducted in 2009 is from the smaller seep located at the base of the landfill as seen on Figure 2. No anomalous values were noted in the leachate samples for either location, though elevated levels of iron and lead were noted in some samples.

2.3 Engineering Evaluation

A Site Inspection was conducted at the Beaver Smelting Site on January 19, 2012, to evaluate the landfill cap and determine if any additional remedial or repair work is needed. Attendees included three AECOM engineers/geologists and two NYSDEC project managers.

Results of the site inspection showed the landfill cap area appearing to be in good condition with no visable damage. The landfill surface was smooth with uniform slopes to promote drainage. There was no evidence of significant erosion or depressions that could potentially collect water. The western side of the landfill showed recent signs of extensive brush cutting. It was noted that a stand of small trees that had started to take hold near the northern end of the landfill had been cut down. The brush had not been removed from the landfill cap but was laying directly on it, in the rip-rap area. The eastern side and top were mowed.

One of the primary concerns at the Beaver Smelting Site was a leachate seep observed in 2010 and 2011 on the southern end of the landfill, near the landfill toe. This small leachate seep was observed during the walkover and though frozen, it did look active. This seep drains into a culvert located approximately 10 feet from the seep. The culvert then drains into what is believed to be the site interceptor trench which runs along the northwest/westerly side of the landfill area. While the seep showed signs of being active, it was not deemed to be a significant concern. The seepage rate appeared minor and the seep did not appear to cause erosion or sloughing of the cover soils. On the western side of the landfill another, somewhat larger seep was noted, also near the landfill toe. This seep also showed signs of being active and also drained into the interceptor trench at the base of the slope. Again, there was no evidence of erosion or sloughing of the cover soils. Review of an aerial photo from 2010 shows evidence of both seeps being active at that time.

At the northern end of the landfill area, a trench area of standing water was observed within a row of trees. This is possibly the northern edge of the interceptor trench that is described in historical documents.

The eastern edge of the landfill area appeared to be in good condition, with no leachate seeps being noted.

The area around and behind the site building was noticeably disturbed. Many piles of soil were located behind the building. These piles contained small pieces of debris and metal, and appeared to have been recently worked. Several piles emitted an odor that smelled of fuel. What appeared to be a salvage/recycling operation was set up adjacent to the soil piles.

Overall, the monitoring wells at the site appear to be in good condition, but most need new locks. The site's buildings appear to be utilized for storage at the present time. There is a lot of refuse around the site, much near the soil piles in the back of the site.

As discussed with the NYSDEC representatives, several action items were decided on during the site inspection and are included in the recommendations in section 4.2.

3.0 Evaluate Costs

3.1 Summary of Costs

Based on yearly average costs incurred between 2007 and 2011, total annual costs for completing the required activities associated with groundwater monitoring and evaluation of ECs have been approximately $16,000 during years when groundwater monitoring takes place. Major cost components are allocated as follows:

Description	Average Annual Cost*
Evaluation of Engineering Controls	
Labor	$1,000
Reporting	$3,000
Subtotal #1:	**$4,000**
Long-Term Groundwater Monitoring	
Labor	$5,000
Laboratory Fees	$ 2,400
Reporting	$4,600
Subtotal #2:	**$12,000**
Grand Total (Items 1-2):	**$16,000**

* During years when a groundwater monitoring event takes place (2007, 2008 to 2010 and 2011).

The figures above include all costs associated with the completion of each individual task.

4.0 Conclusions and Recommendations

The periodic review process is used for determining if the selected remedy continues to be properly managed (as set forth in the ROD), and if the remedy continues to be protective of human health and the environment.

4.1 Conclusions

The following conclusions discuss the effectiveness of the Site remedy in comparison to the applicable Site remedial goals derived from the ROD:

1. **Consolidation of nearly 9,000 cubic yards of smelter ash**.

   This was completed and the landfill cap put in place.

2. **Installation of an engineered cap and cover system.**

   The landfill cap was completed and from present site inspections appear to be intact and maintained. The cap area has recently been mowed and brush growing on the top has been pruned down to the cap.

3. **Installation of a groundwater collection trench.**

   From the Site Inspection and a review of aerial photographs it appears the trench was installed and is intact.

4. **Institutional controls and restrictions on the use of the property and future use of groundwater.**

   These controls are still pending.

5. **A long term monitoring program, which includes sampling every five quarters of the groundwater monitoring well network (10 wells) for the next five years until they achieve groundwater standards for site-specific contaminants.**

   Historical groundwater sampling results through November 2011 indicate that, in general, metal concentrations in groundwater in the shallow water bearing zones of the Site are decreasing. However, AWQS and GV for metals have not been achieved at all wells (refer to Table 3).

4.2 Recommendations

The following recommendations are made for the Site:

1. Continue with periodic site inspections to check on cap integrity, cap maintenance, leachate seeps, and prepare a field report including photos, documenting the inspection.

2. Groundwater monitoring should continue to be performed at the interval established in the site-specific SMP or as directed by the NYSDEC until adequate attenuation of contamination has been achieved at the Site. The sampling should include wells MW-3, MW-4, MW-5, MW-6, MW-7, MW-9, MW-10, MW-11 (if found intact), MW-12, and MW-13 for TAL metals.

Groundwater samples should be analyzed for turbidity, and should be run as filtered and unfiltered samples consistent with NYS DER-10 Section 2.1 (g) in order to assess the impact of the visible silts in the samples on the metals analysis. In addition, the one or more of the wells of the nearest homes should be sampled for dissolved metals, if accessible. If the mobile home located on site is again occupied, this well should also be included in the sampling schedule.

3. Samples should be collected in "Beaver Smelting Stream" above and below the seep area and sampled for metals.

Based on the Engineering Evaluation the following additional recommendations were determined:

4. The all leachate seeps from the periodic site inspections and these should be sampled during each sampling event. In addition, the northern trench area with standing water in it should be sampled at least once.

5. There are not an acceptable amount of signs are displayed at the Site. Signs should be posted in the near future.

6. Review site management with the property owner during future inspections and discuss any additional measures that might needed and implemented (determination of the nature of the piles behind the buildings at the site and the nature of the salvage operation at the site).

7. The next PRR will be submitted in 3 years, in 2015.

Tables

Table 1
Historical Analysis for Off-site Residential Wells
Beaver Smelting Site

		Dozier	Cameron & Andrews	Robinson	Beaver Smelting				Hopkins **	Jonas, Michigan Rd.	Chaiet, Michigan Rd.	
		Private Well	Private Water	Public Water	PW-1	PW-1 *	PW-1	PW-1	Private Well	Private Well	Private Well	Private Well
		10/28/1988	11/12/1988	11/14/1988	11/1/1986	9/28/1987	7/1/1987	5/26/2009	4/12/2001	7/6/1993	5/23/1995	5/26/2009
Analyte	***AWQS + GV***	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	(adjacent to site)	µg/L	µg/L	µg/L
Aluminum	*NS*	U	U	U	NA	U	NA	U	U	U	U	U
Antimony	*3 (GV)*	U	U	U	NA	U	NA	U	U	U	U	U
Arsenic	*25*	U	U	U	U	U	NA	U	U	U	U	U
Barium	*1000*	243	218	96	180	162	NA	142	158	228	105	U
Beryllium	*3 (GV)*	U	U	U	NA	U	U	U	U	U	U	U
Cadmium	*5*	U	U	U	U	U	U	U	U	U	U	U
Calcium	*NS*	NA	NA	NA	NA	NA	NA	17700	18000	15900	8300	5170
Chromium	*50*	U	U	U	U	U	U	U	U	U	U	U
Cobalt	*NS*	U	U	U	NA	U	NA	U	U	U	U	U
Copper	*200*	22	18	19	NA	139	NA	33.5	24	13	123	869
Iron	*300*	11	15	60	NA	474	NA	341	15	U	U	U
Lead	*25*	U	U	U	U	U	U	U	U	U	U	U
Magnesium	*35,000 (GV)*	NA	NA	NA	NA	NA	NA	4910	5000	2100	1300	1100
Manganese	*300*	U	U	U	NA	44	NA	U	U	U	U	U
Mercury	*0.7*	U	U	U	U	U	NA	U	U	U	U	U
Molybdenum	NS	U	U	U	NA	U	NA	NA	U	U	U	NA
Nickel	*100*	U	U	U	U	U	NA	U	U	U	U	U
Potassium	*NS*	NA	NA	NA	NA	NA	NA	1210	1000	1200	800	U
Selenium	*10*	U	U	U	NA	U	U	U	U	U	U	U
Silver	*50*	U	U	U	NA	U	NA	U	U	U	U	U
Sodium	*20,000*	NA	NA	NA	NA	NA	NA	7910	8000	5000	5000	2780
Strontium	NS	1020	2440	162	NA	144	NA	NA	143	634	265	NA
Thallium	*0.5*	U	U	U	NA	U	NA	U	U	U	U	U
Tin	*NS*	U	U	U	NA	U	NA	NA	U	U	U	NA
Titanium	*NS*	U	U	U	NA	U	NA	NA	U	U	U	NA
Vanadium	*NS*	U	U	U	NA	U	NA	U	U	U	U	U
Zinc	*2,000 (GV)*	U	12	13	30	81	NA	159	7	U	U	U

* Beaver Smelting company, employees sink sampled 9/28/1987 = All non-detect
(Organochlorine Pesticides, Volatile Halogenated Indicators EPA method 502.1, Semivolatiles PCB's and Ketones)

NS = no standard
Concentrations in µg/L.
NA = Not Analyzed
U = not detected
B = Also detected in Method Blank

** Hopkins - Sampled 4/25/2001 Also sampled for VOCs EPA 502.2 - all non-detect

Table 3
Analytical Results
Beaver Smelting
Woodbourne, New York
Contaminants of Concern
May 2005 to November 2011

Analyte		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
AWQS + GV		*NA*	*3 (GV)*	*25*	*1000*	*3 (GV)*	*5*	*NA*	*50*	*NA*	*200*	*300*	*25*	*35,000 (GV)*	*300*	*0.7*	*100*	*NA*	*10*	*50*	*20,000*	*0.5*	*NA*	*2,000 (GV)*
MW-2	May-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oct-05	55,700	**39.5J**	**42.9**	555	**4.5J**	U	15,000	**92**	70.3	**417**	**96,700**	**542**	**47,900**	**3,980**	0.27	**126**	31,500	**57.9**	5.3J	5,610	U	29.2J	468
	Sep-08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Feb-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	May-05	46,800	U	16.2	680	**3.96J**	U	34,000	**62.2**	52.9	**535**	**68,300**	**87.8**	30,800	**2,710**	0.56	**115**	13,900	**29.9**	U	**22,800**	U	42.1J	674
	Oct-05	17,000	U	12.9	252	1.3J	U	30,200	12.2	15.7J	162	**30,400**	**69.2**	17,600	**1,640**	0.15J	42.9	10,300	**20.2**	2.8J	**20,600**	**5.5J**	U	200
	Sep-08	2,130	U	U	61.5	U	U	19,900	2.97J	U	17.7	**4,070**	4.55J	9,320	**793**	U	11J	8,360	**35.8**	U	**20,800**	U	U	52.9
	Feb-10	3,520		U	54.1	U	U	19,200	3.28J	J	11.9	**4,640**	5.92J	9,730	**804**	0.07J	12.3J	7,390	**32.2**		18,000		4.48J	53
	Nov-11	855	**6.95 J**	4.55 J	41.5 J	U	U	22,800	U	U	13.6	**1,980**	2.39 J	10,300	**894**	U	12.4 J	7,990	**29.3**	2.01 J	**21,000**	**6.33 J**	U	46.3
MW-4	May-05	43,000	U	**146**	420	**4.52J**	**7.4**	9,270	**108**	55.9	**465**	**57,600**	**584**	16,200	**2,810**	0.45	90.1	221,000	U	U	**68,100**	U	68.7	397
	Oct-05	44,500	**35.4J**	**270**	442	**5.7**	3.1J	10,500	**65.8**	63.9	**500**	**67,900**	**696**	16,200	**3,130**	0.41	91.9	NA	5.7J	5.0J	**62,900**	U	66	468
	Sep-08	39,700	U	**122**	343	**4.16**	**8.44**	6,770	**64.1**	40.5	**390**	**53,100**	**484**	12,300	**2,390**	0.27	69.9	132000	**14.2**	U	**38,000**	U	63.4	291
	Feb-10	31,200	U	**92.3**	297	**3.65**	**5.39**	6,800	**55**	37	**288**	**49,500**	**387**	11,600	**2,190**	0.1J	68	97,700	**15.2**	U	**27,000**	U	49.9	265
	Nov-11	30,700	U	**113.0**	443	**5.81**	**7.65**	5,410	**54.5**	41.9	**421**	**41,200**	**585**	9,080	**3,080**	0.3 J	64	103,000	**5.87 J**	U	**25,400**	**5.65 J**	48.8	281
MW-5	May-05	34,400	U	**25.5**	577	2.92J	U	27,100	**70.6**	44.4J	93.1	**55,500**	**55.6**	26,600	**3,410**	0.13J	88.5	12,400	8.5J	U	11,400	U	31.7J	283
	Oct-05	37,500	**28.6J**	**25.5**	631	**3.4J**	U	31,100	**69.2**	47.8J	104	**68,900**	**78.3**	29,400	**3,600**	U	88.5	13,800	8.4J	3.7J	14,800	**5.5J**	16.1J	260
	Sep-08	6,100	U	U	159	0.48J	U	15,000	9.58J	7.48J	19.8	**9,520**	10.5	10,200	**1,410**	U	15.8J	12,600	**11**	U	8,190	U	5.98J	54
	Feb-10	2,700	U	U	111	U	U	14,700	3.37J	U	10	**3,630**	4.32J	9,420	**999**	0.12J	7.25J	10,700	6.59J	U	6,740	U	U	31.2
	Nov-11	7,570	U	7.19 J	279	1.47 J	U	15,900	13.2	13.8 J	35.5	**11,300**	**27.8**	9,380	**1,720**	U	21.9	10,000	7.63 J	1.49 J	7,110	**6.46 J**	5.68 J	92.8
MW-6	May-05	90,200	U	**134**	**2,520**	**12.7**	1.76J	13,500	**160**	100	**270**	**183,000**	**1,320**	**37,800**	**3,510**	0.29	**175**	11,100	U	U	4,710J	U	120	1,190
	Oct-05	61,700	**33.5J**	**74.6**	**1,350**	**8.6**	U	11,500	**117**	72.5	195	**136,000**	**827**	26,100	**2,510**	0.16J	**121**	8,360	**11.6**	8.1J	3,770J	**6.9J**	61	753
	Sep-08	29,100	U	13.5	470	**3.56**	1.58J	3,810	44.8	29.5	93.4	**53,100**	**331**	11,000	**1,040**	U	55.6	6,690	8.05J	U	3,330	U	33.2	375
	Feb-10	19,800	U	16.9	301	2.44J	U	2,460	30	18.8	44.5	**35,100**	**163**	7,510	**665**	0.09J	37	5,300	6.57J	U	2,920	U	24.2	291
	Nov-11	4,770	U	12.2	188	1.33 J	0.47 J	1,860	10.6	8.39 J	31.6	**10,000**	**89.2**	2,070	235	U	22.5	1,810	U	2.07 J	3,550	**6.09 J**	6.5 J	207
MW-7	May-05	11,500	U	U	249	1.27J	U	4,340J	12.8	13.1J	56.7	**18,600**	**35.2**	4,820J	**771**	0.09J	31.1J	2,320J	U	U	991J	U	11.2J	770
	Oct-05	11,000	U	11.3	351	1.6J	2.0J	5,540	1.2J	12.5J	82.8	**19,900**	**84.2**	4,690J	**770**	U	38.2J	3,250J	U	U	682J	U	U	1,020
	Sep-08	4,610	U	U	190	0.95J	3.27	2,950	7.03J	9.46J	60.8	**5,980**	19.1	2330	**374**	U	29.5	3,650	U	U	1,330	U	U	887
	Feb-10	13,300	U	4.34J	215	1.24J	1.93J	2,390	16.4	12J	51.7	**16,900**	**29.9**	4,400	**582**	0.12J	30	6,080	U	U	1,350	U	14.5J	645
	Nov-11	2,480	U	6.63 J	193	0.88 J	2.26 J	2,510	4.2 J	7.33 J	43.0	**4,360**	13.8	1,520	**326**	U	21.3	2,310	U	2.57 J	2,480	**5.75 J**	U	624
MW-9	May-05	5,840	U	U	197J	0.43J	U	5,960	4.74J	8.19J	65.8	**10,200**	17	3,830J	**700**	0.12J	11.9J	U	U	U	2,090J	U	7.46J	51.7
	Oct-05	12,700	**9.3J**	**43**	353	1.6J	0.77J	7,550	19.5	15.1J	167	**31,000**	**140**	6,760	**755**	0.05J	22.3J	2,890J	U	2.5J	2,210J	U	1.7J	69.9
	Sep-08	4,020	U	U	155	U	U	3,630	4.79J	4.32J	26.6	**7,240**	16	2,180	**586**	U	7.46J	1,850	U	U	2,240	U	6.95J	37.1
	Feb-10	1,650	U	U	81.2	U	U	3,040	U	U	6.41J	**4,590**	3.23J	1,450	**410**	0.13J	U	1,060	U	U	2,310	U	U	18J
	Nov-11	1,040	U	11.6	112.0	U	U	4,270	U	U	16.6	**3,680**	5.19 J	1,730	**516**	U	6.61 J	845 J	U	2.35 J	3,610	**7.18 J**	U	24.6
MW-10 (MW-9A)	May-05	78,500	U	**49.2**	862	**6.62**	**6.18**	24,700	**89.8**	95.7	**265**	**122,000**	**192**	**49,400**	**8,720**	0.45	**158**	42,300	**30.6**	8.42J	2,760J	U	69	514
	Oct-05	154,000	**9.4J**	**100**	**1,610**	**13.4**	U	39,600	**166**	193	**582**	**284,000**	**502**	**77,600**	**20,100**	0.58	**335**	56,800	**157**	14.4	3,210J	**10.1**	111	1,060
	Sep-08	45,500	U	**27.4**	458	**3.48**	4.31	15,100	40.5	57	144	**82,600**	**110**	26,100	**3,980**	U	88.2	34,500	**31**	U	2,970	U	38.4	282
	Feb-10	13,800	U	8.44J	151	0.81J	U	10,200	10.9	7.89J	27.1	**17,700**	**28.8**	14,600	**607**	0.12J	16.6J	26,000	**27.9**	U	2,630	U	14.6J	69.9
	Nov-11	2,000	U	9.4 J	75.2	0.37 J	U	8,230	2.77 J	5.11 J	14.5	**4,410**	13.5	7,690	**651**	U	8.39 J	23,300	**17.6**	2.18 J	3,490	**5.62 J**	U	33.4
MW-11	May-05	171,000	U	**34.5**	**2,550**	**15.8**	0.57J	21,900	**391**	184	**270**	**285,000**	**207**	**83,700**	**10,000**	0.68	**320**	42,100	**44.6**	U	1,830J	U	142	1,180
	Oct-05	258,000	**6.6J**	**52.4**	**3,580**	**22.9**	U	23,700	**569**	285	**436**	**497,000**	**442**	**118,000**	**19,800**	**0.83**	**510**	56,400	**69**	24.2	3,500J	U	190	1,710
	Sep-08	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
	Feb-10	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
	Nov-11	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
MW-12	May-05	1,150	U	U	71.6J	0.145J	U	30,900	2.78J	8.12J	9.26J	**1,350**	3.66J	13,700	**2,210**	0.12J	13.5J	5,740	U	U	**30,700**	U	2.77J	35.2
	Oct-05	521	U	5.6J	83.0J	U	0.78J	30,200	U	U	U	**522**	12.4	10,400	**1,490**	U	U	3,560J	U	U	**22,900**	U	U	26.5
	Sep-08	14,200	U	U	204	0.71J	0.74J	43,100	15.6	14.7	41.9	**16,900**	**33.2**	21,300	**1,910**	0.2	31.4	6,480	U	U	**37,300**	U	10.3J	129.0
	Feb-10	602	U	U	68.7	0.31J	0.43J	5,780	U	6.23J	2.64J	**965**	2.72J	2,780	**793**	0.14J	5.82J	1,990	U	U	6,200	U	U	46
	Nov-11	330	U	15.2	111	U	1.01 J	5,780	U	9.34 J	6.31 J	**432**	3.36 J	2,490	**1,030**	U	12.4 J	2,690	U	2.32 J	6,640	**4.78 J**	U	53.2
MW-13	May-05	3,590	U	U	90.5J	U	U	25,800	5.87J	5.96J	12.9J	**5,670**	7.75	10,700	**1,440**	0.08J	15.2J	18,000	5	U	**43,400**	U	3.48J	40.3
	Oct-05	1,530	U	U	63.0J	0.22J	U	24,900	U	3.5J	8.0J	**2,660**	3.7J	9,020	**1,120**	0.08J	3.5J	18,000	U	U	**41,400**	U	U	U
	Sep-08	208J	U	U	48.2	U	U	19,300	U	U	4.87J	**451**	U	6,930	**984**	U	6.14J	16,600	U	U	**39,500**	U	U	25
	Feb-10	318	U	U	40J	U	U	17,400	U	U	3.45J	**489**	U	6,610	**923**	0.19J	6.55J	12,600	U	U	**32,100**	U	U	17.6J
	Nov-11	108	**5.61 J**	U	40.4 J	U	U	18,100	U	U	4.23 J	**326**	U	6,350	**956**	U	9.77 J	14,700	U	2.89 J	**33,700**	**5.99 J**	U	20.3

* - analyses conducted on filtered samples
All data presented in micrograms per liter (µg/L).
Metals analysis by US EPA method 6010, except mercury by US EPA method 7470.
B - Analyte found in associated method blank.
U - Compound not detected at or above the method detection limit (MDL).
J - Estimated concentration above the MDL but less than the reporting limit.

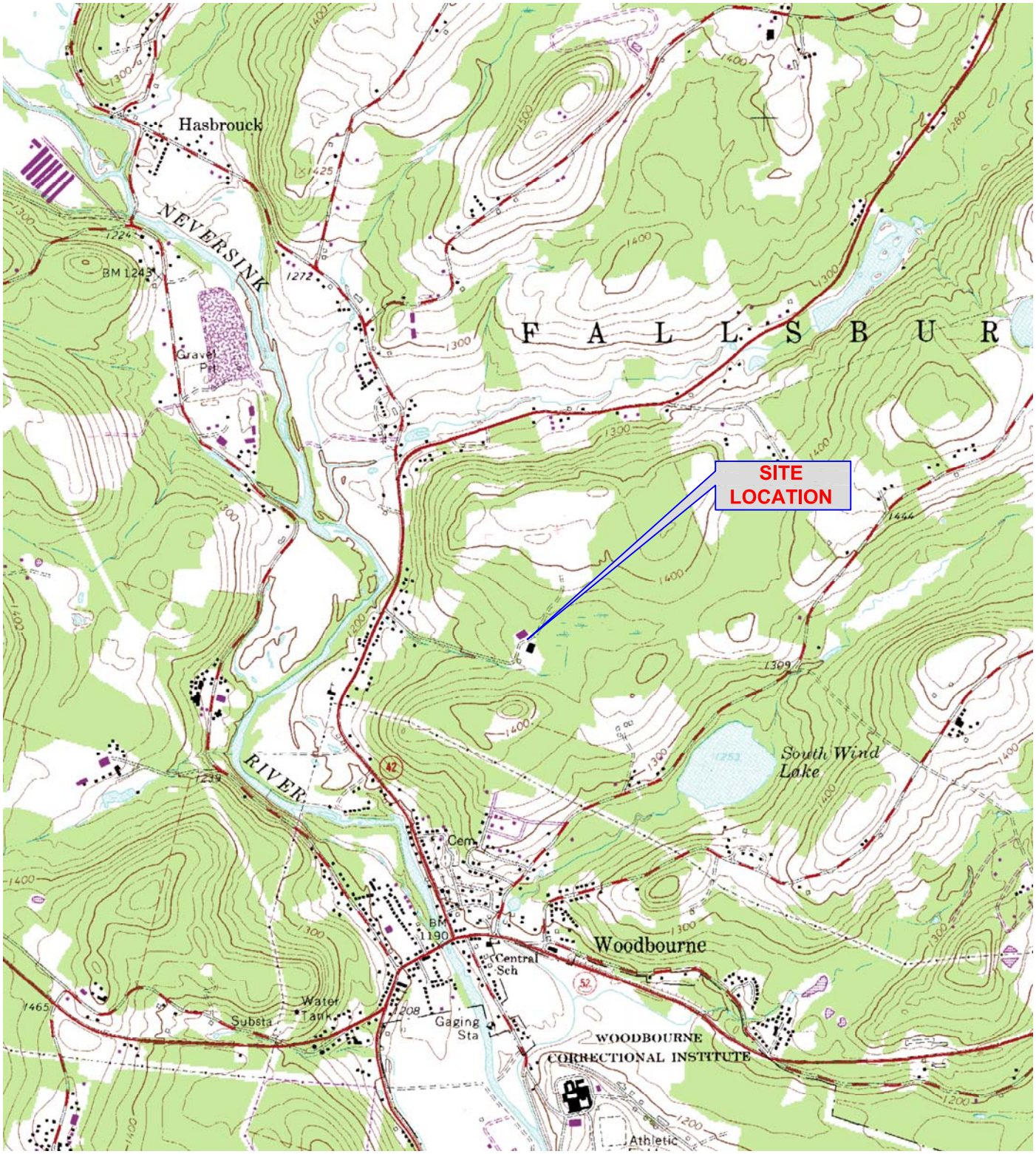
D - Results from a subsequent dilution of the original sample due to original sample results being outside the linear range.
* New York State Ambient Water Quality Standards (TOGs 1.1.1) GV - guidance value.
NA indicates 1) no standard or guidance value exists for the compound, or 2) sample was not analyzed for indicated compound.
xx - Well could not be located.
BOLD font in shaded cell indicates exceedances of AWQS+GV.

Table 4
Historical Leachate Sample Analysis
Beaver Smelting Site

Analyte	Leachate Sample 10/21/1981 Western Seep	Leachate Sample 11/19/1981 Western Seep	Leachate Sample 10/27/2000 Western Seep	Leachate Sample 4/17/2002 Western Seep	Leachate Sample 5/26/2009 Southern Seep
Aluminum	NA	NA	3820	3100	3490
Antimony	NA	NA	36	U	U
Arsenic	U	40	48	U	U
Barium	810	550	225	U	U
Beryllium	NA	NA	U	U	U
Cadmium	769	38	20	U	15.7
Calcium	NA	NA	17500	58000	9140
Chromium	25	36	4.8	U	U
Cobalt	NA	NA	20	U	U
Copper	NA	NA	690	5100	1130
Iron	NA	NA	35900	1300	6130
Lead	13.63	200.45	168	18	240
Magnesium	NA	NA	20900	810 B	5750
Manganese	NA	NA	3210	180	668
Mercury	0.9	0.9	0.2	U	U
Nickel	NA	NA	19.2	U	U
Potassium	NA	NA	19700	84000	80300
Selenium	U	U	16	66	U
Silver	U	U	U	U	U
Sodium	NA	NA	63100	24000	27400
Thallium	NA	NA	U	U	U
Vanadium	NA	NA	8.9	U	U
Zinc	NA	NA	569	16 B	492

Concentrations in µg/L.
NA = Not Analyzed
U = not detected
B = Also detected in Method Blank

Figures



MAPPING REFERENCE:
BACKGROUND IMAGERY FROM NEW YORK STATE GIS CLEARING HOUSE.

0' 1000' 2000' 400'

AECOM

FIGURE 1
SITE LOCATION MAP
BEAVER SMELTING SITE
NYSDEC SITE # 353005
TOWN OF FALLSBURG, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
	—	60133958	MO/YEAR	1

Plotted By: WhiteG1
Layout-Sheet Name: FIGURE 1
Plot File Date Created: Mar/23/2012 11:31 AM

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Plotted By: WhiteG1
Layout–Sheet Name: FIGURE 2
Plot File Date Created: Mar/23/2012 11:32 AM
Filename: L:\WORK\105989\CADD\BEAVER_SMELTING_IMAGE.DWG

MAPPING REFERENCE:
BACKGROUND IMAGERY FROM NEW YORK STATE GIS CLEARING HOUSE.

0’ 50’ 100’ 200’
APPROXIMATE

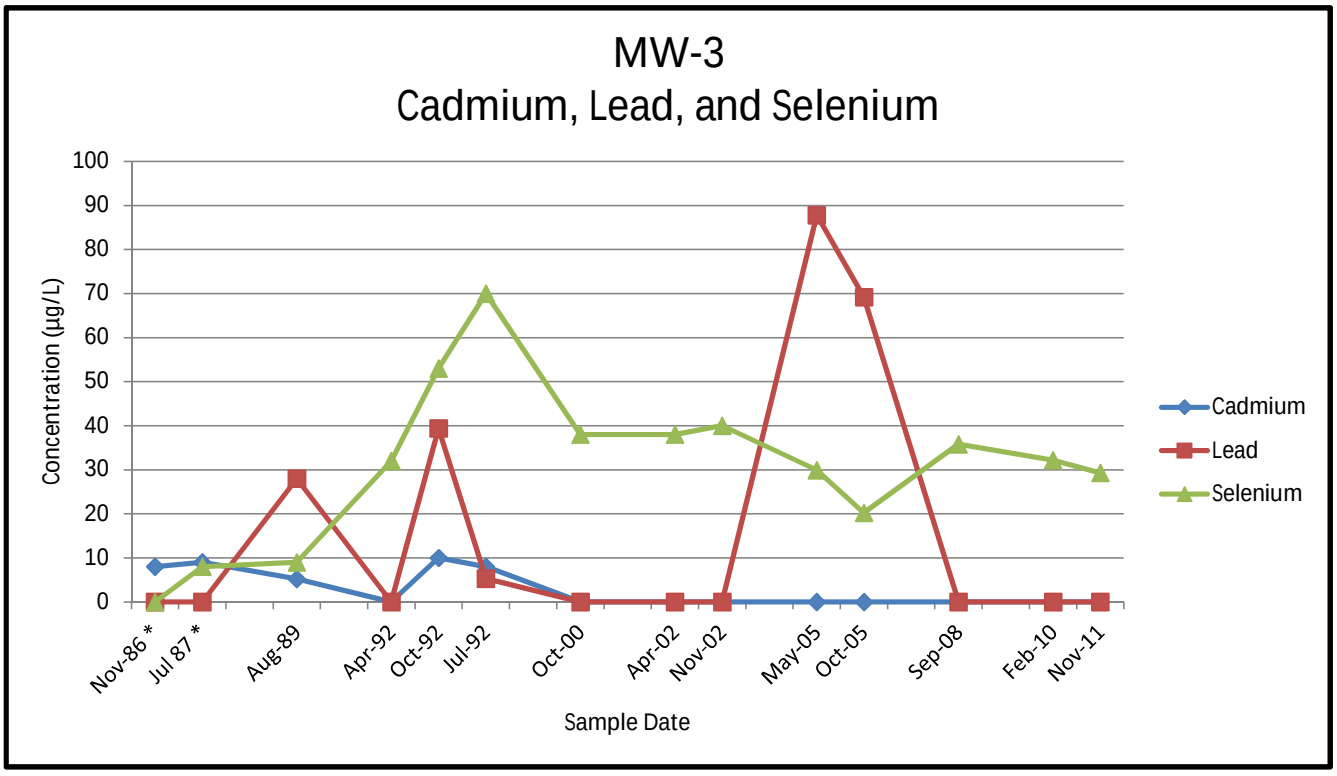
AECOM

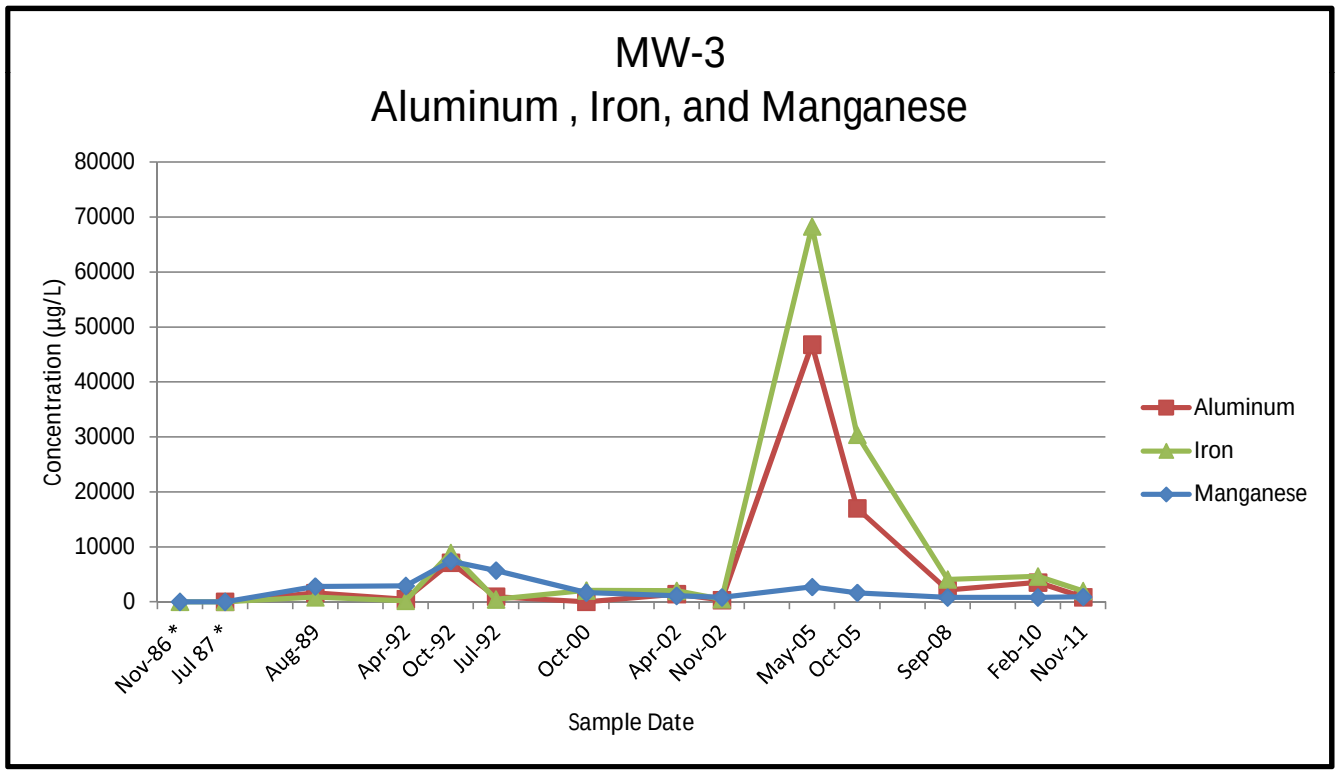
FIGURE 2
SITE MAP
BEAVER SMELTING SITE
NYSDEC SITE # 353005
TOWN OF FALLSBURG, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
	—	60133958	MO/YEAR	2

Figure 3
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-3

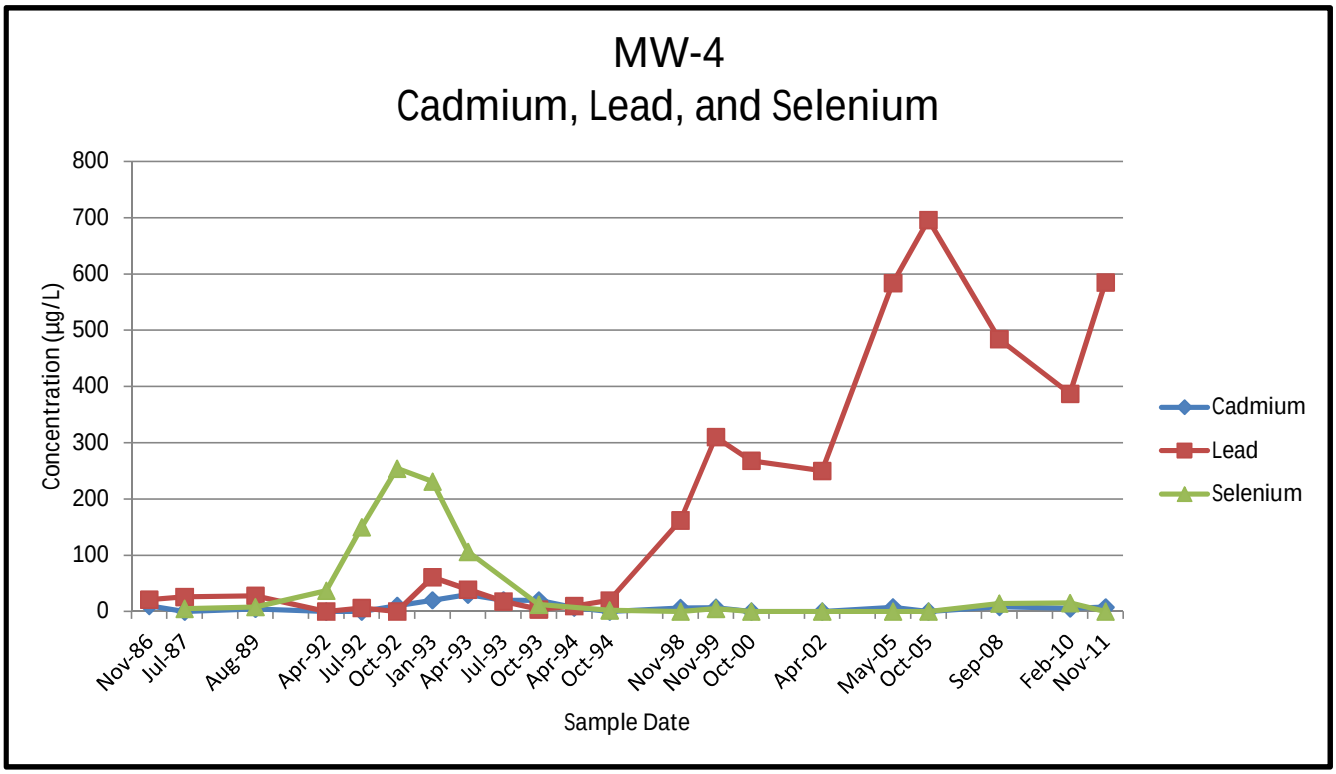


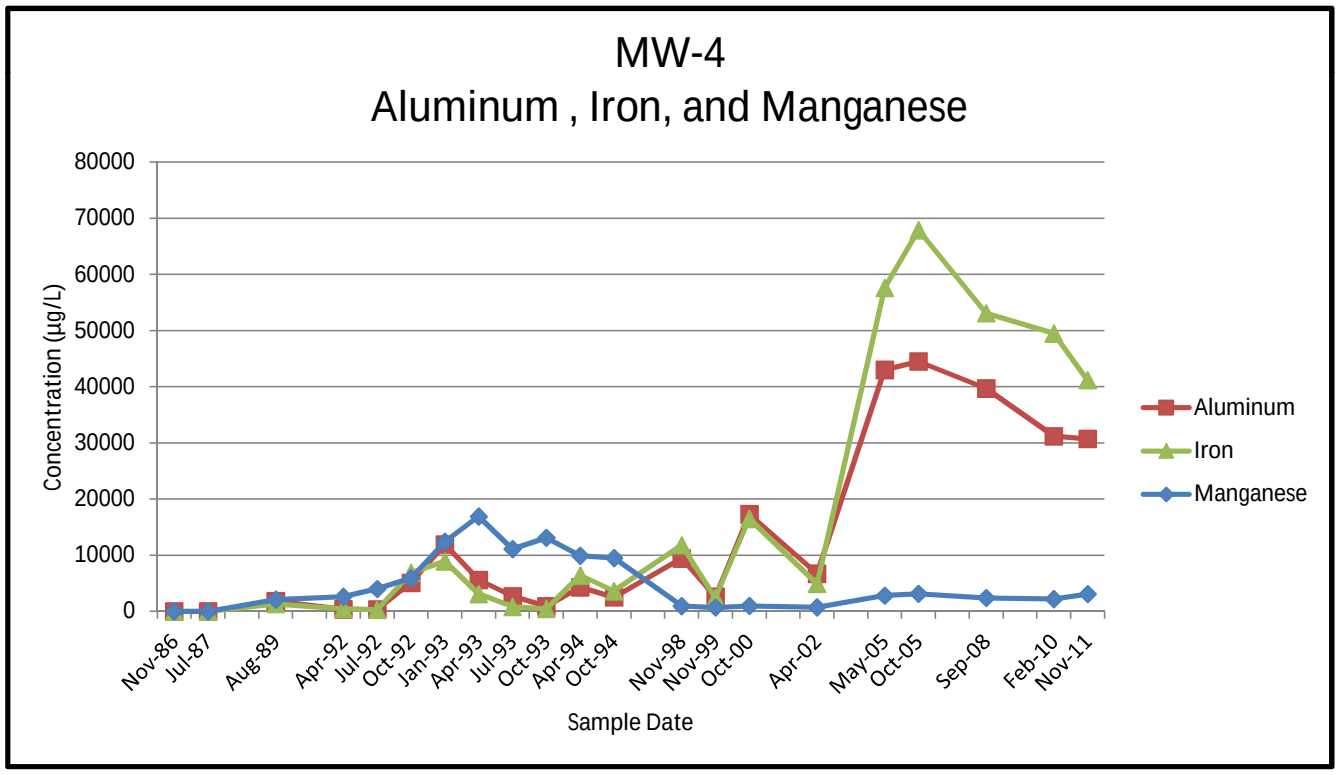


* - Analyses conducted on filtered samples.

Figure 4
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-5

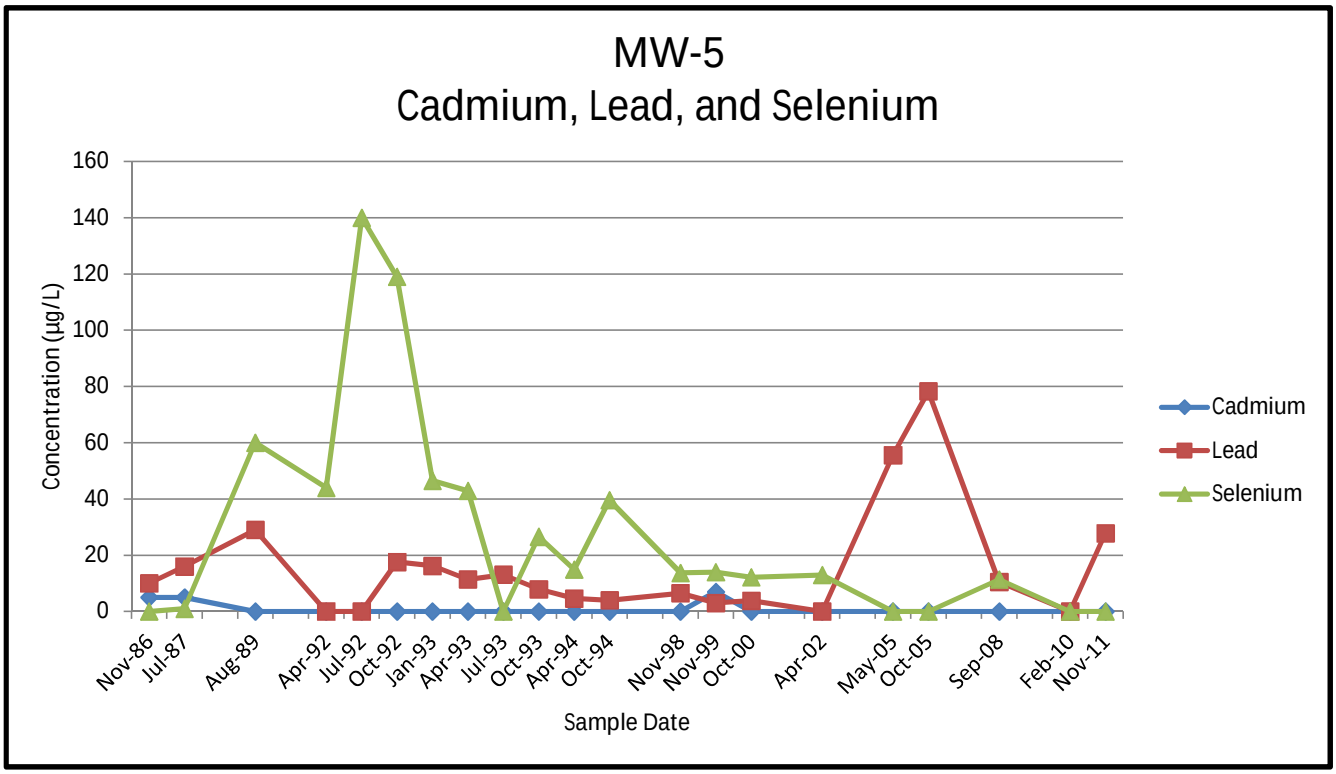


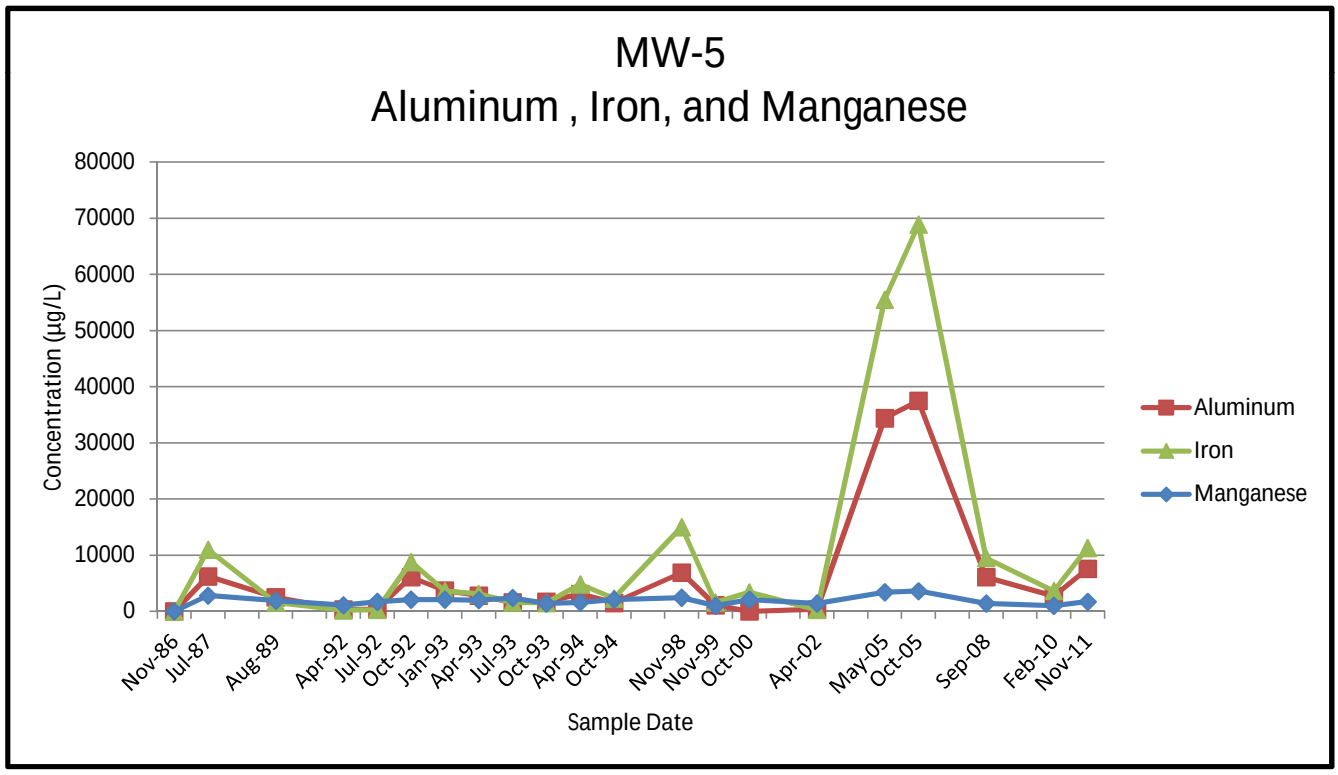


* - Analyses conducted on filtered samples.

Figure 5
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-5

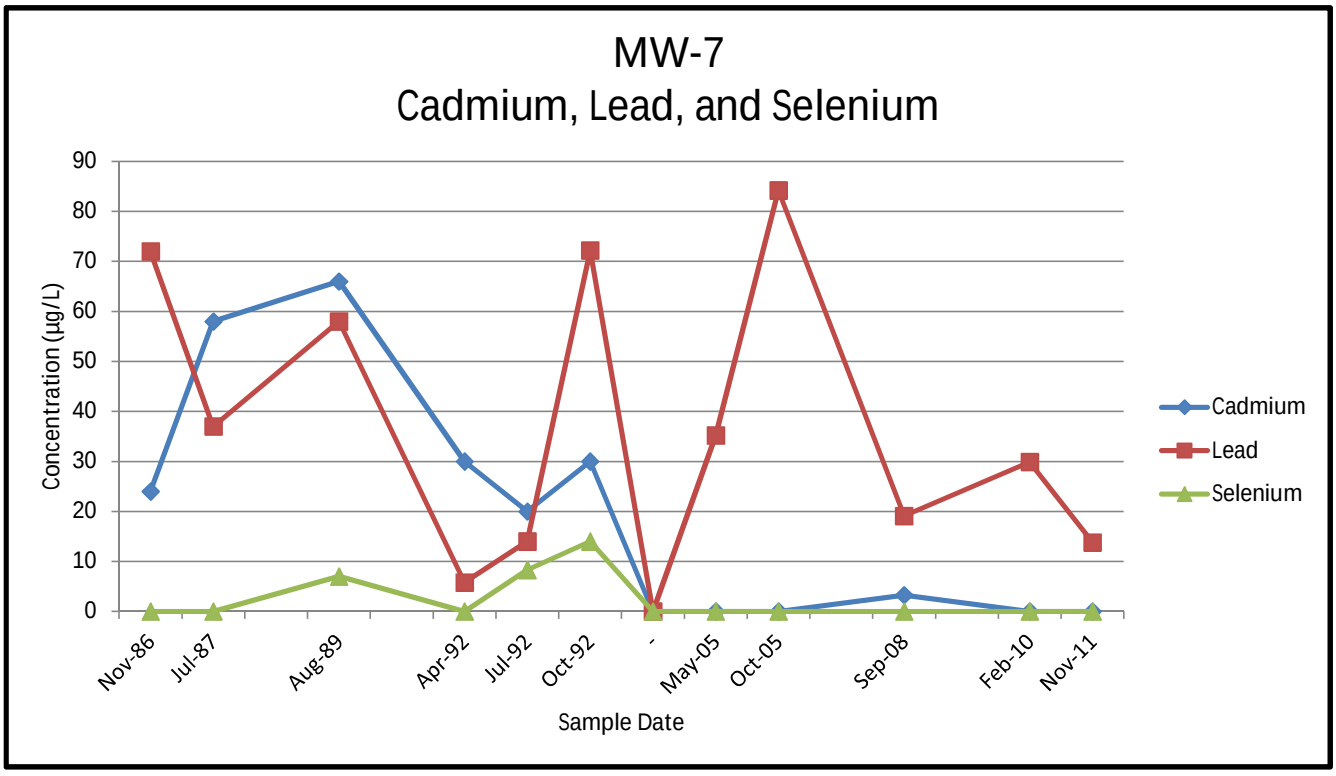


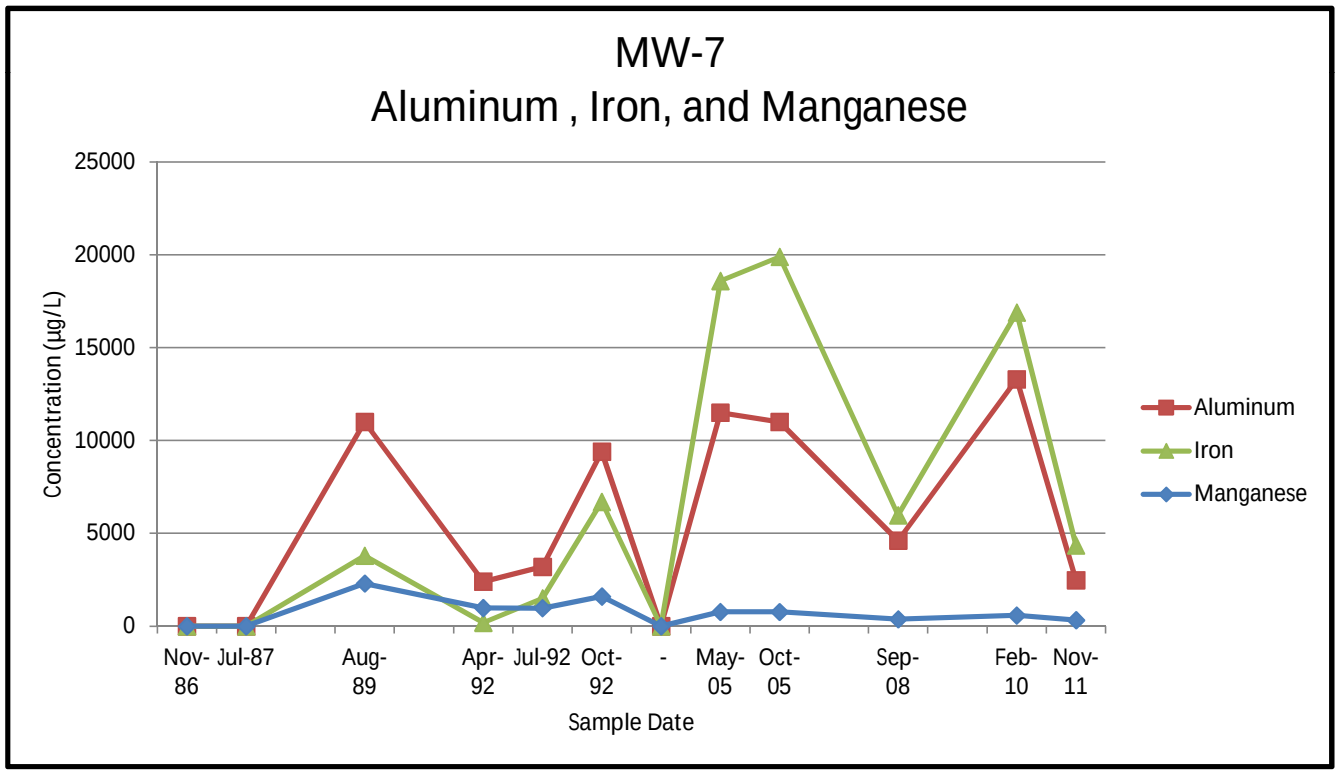


* - Analyses conducted on filtered samples.

Figure 6
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-7

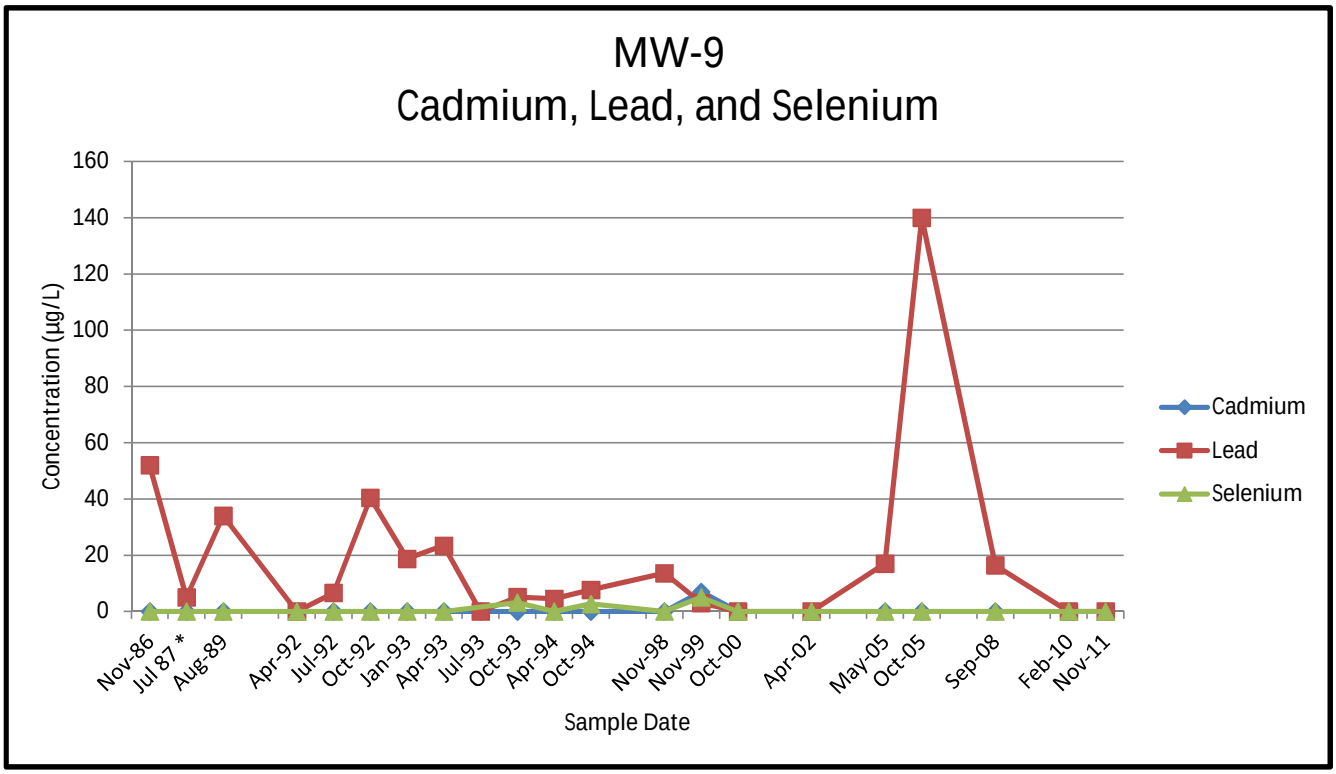


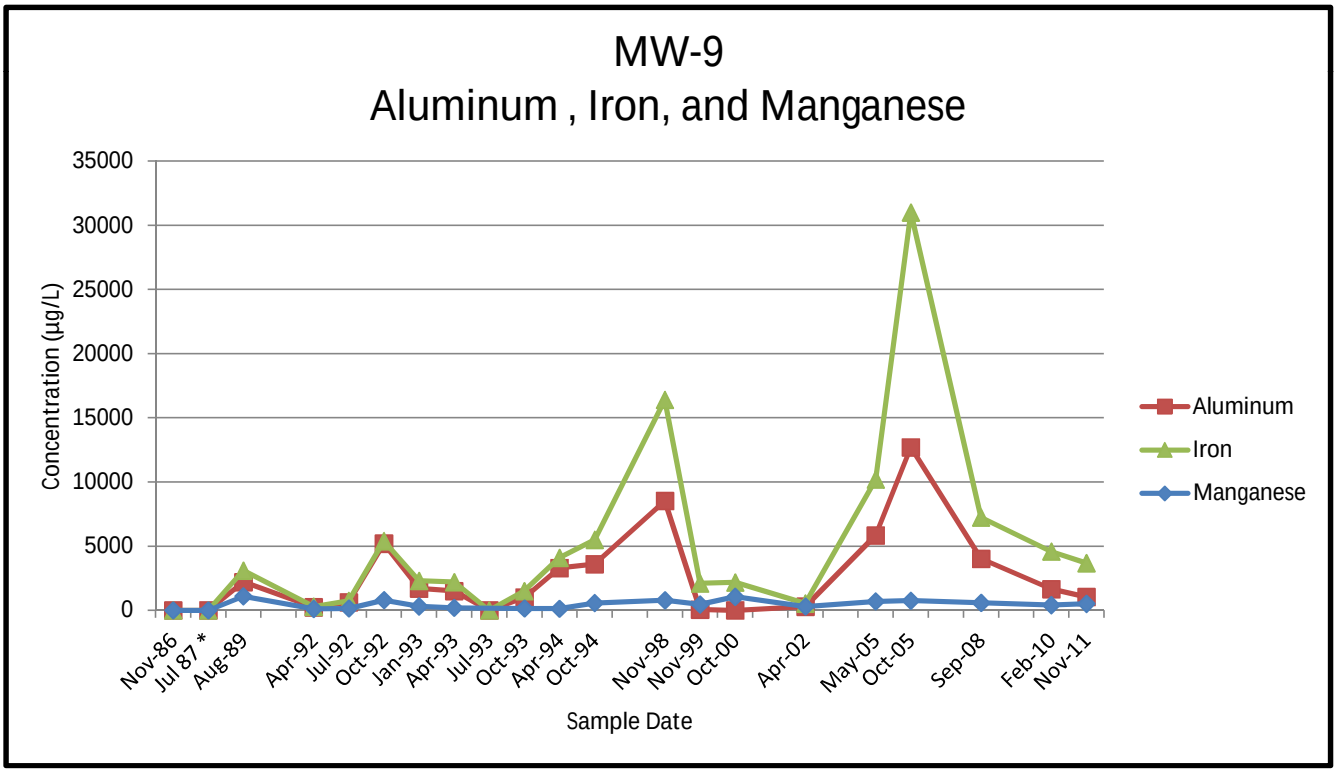


* - Analyses conducted on filtered samples.

Figure 7
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-9

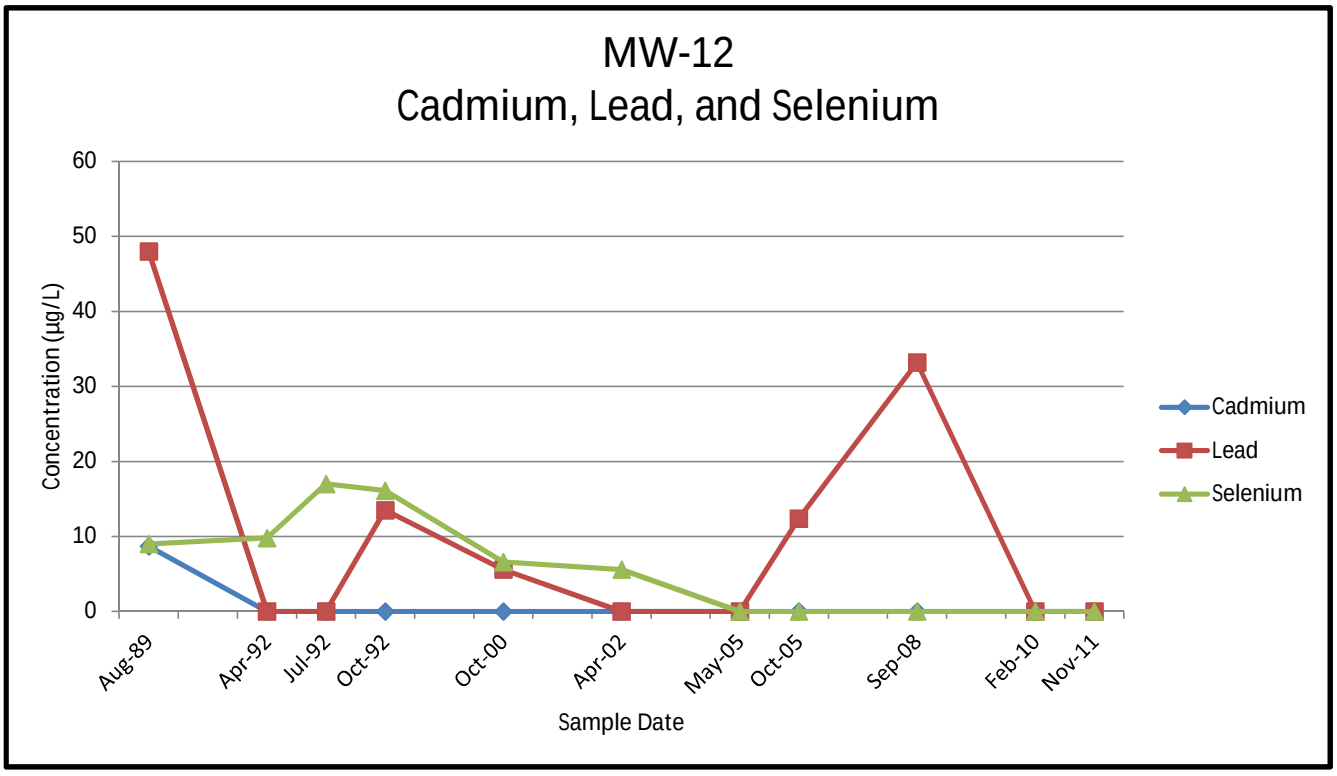


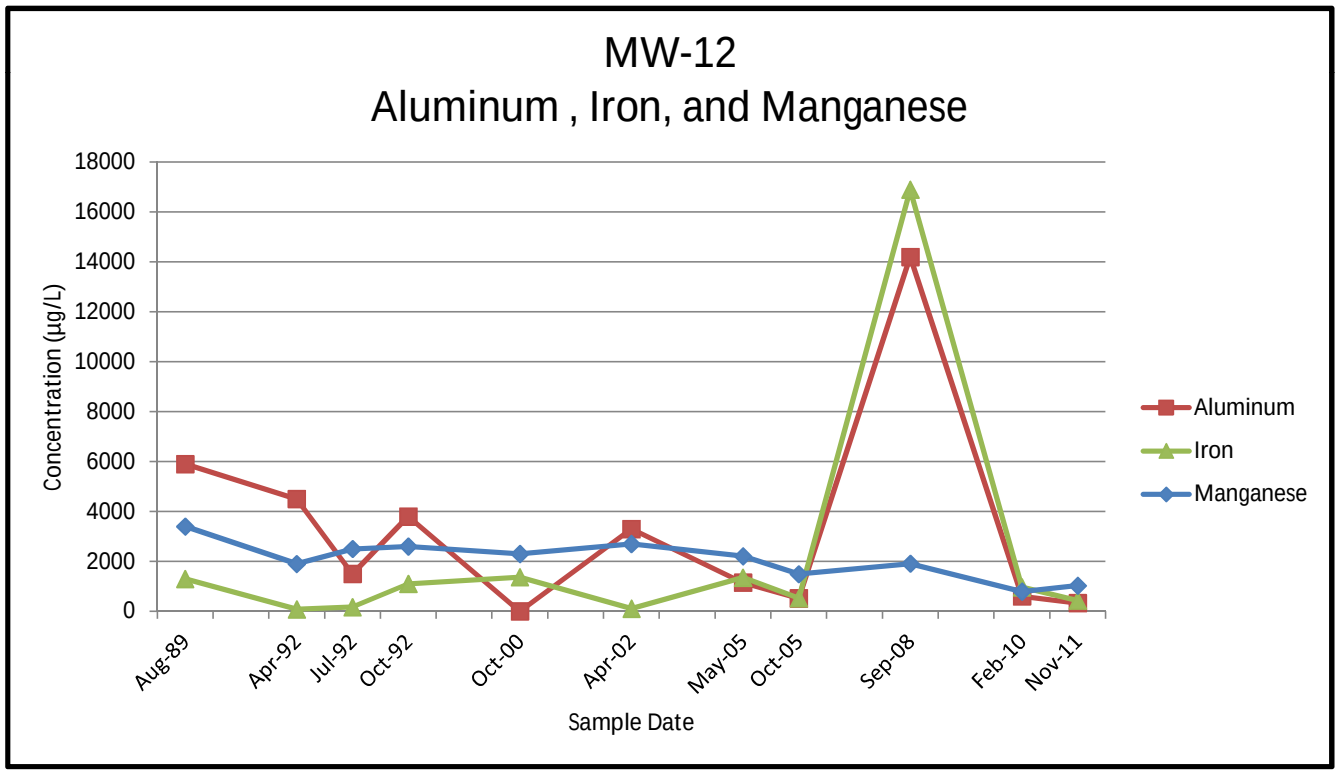


* - Analyses conducted on filtered samples.

Figure 8
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-12

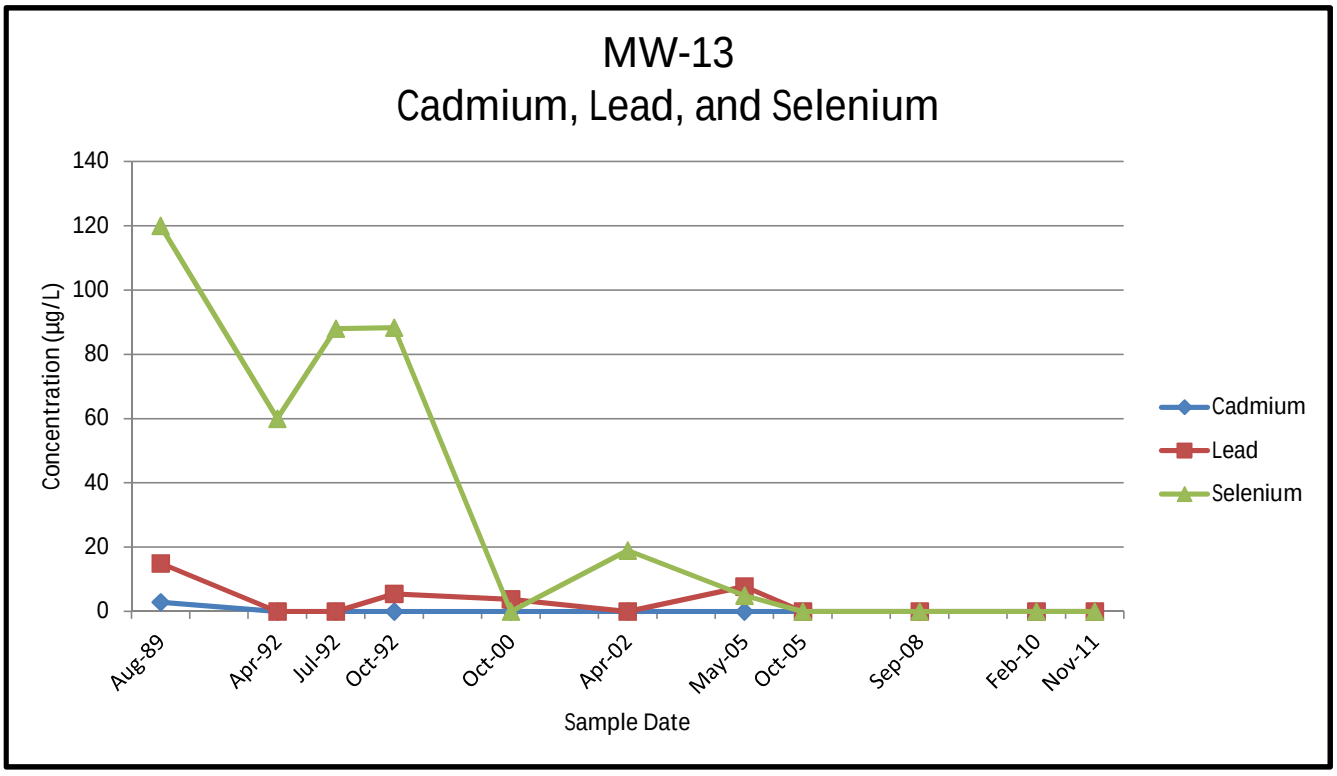


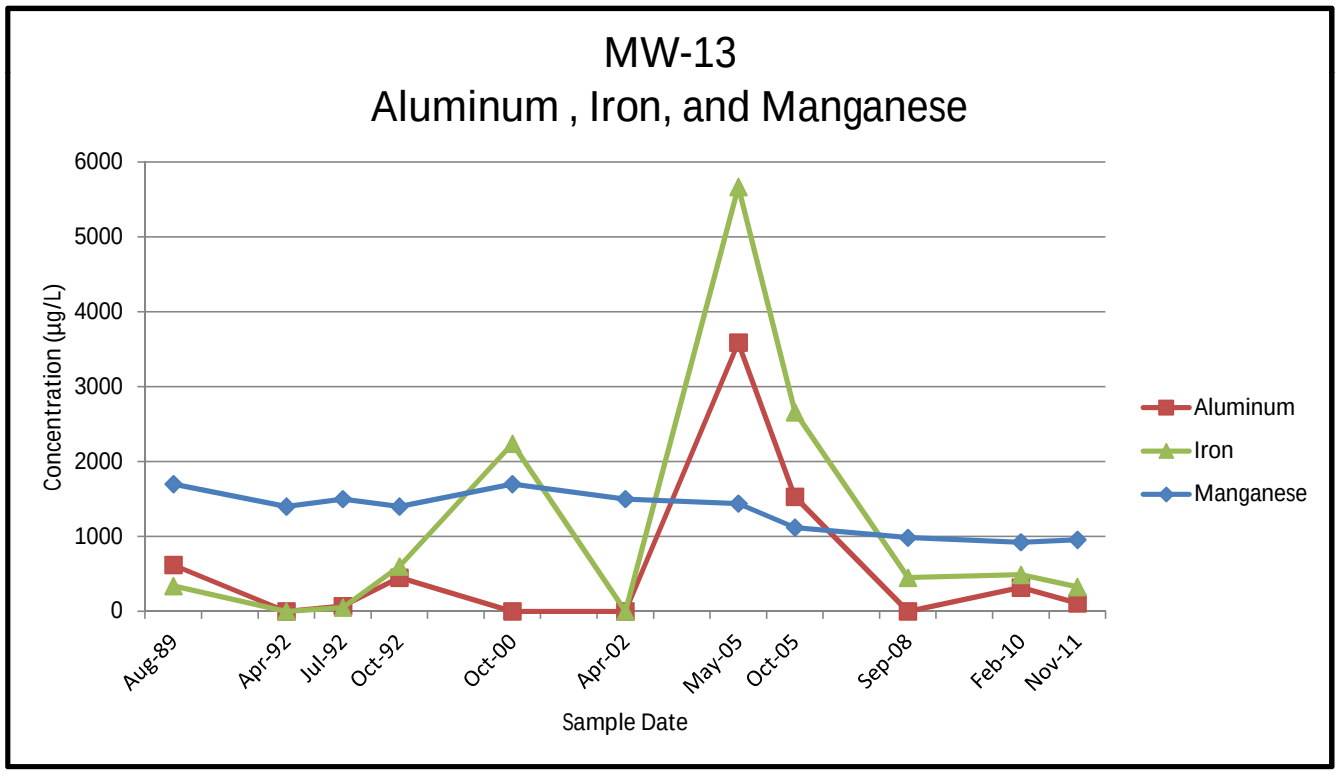


* - Analyses conducted on filtered samples.

Figure 9
Cumulative Groundwater Analytical Summary Graphs
Beaver Smelting Site

MW-13





* - Analyses conducted on filtered samples.

Appendix A

Cumulative Groundwater Data Tables

Cumulative Groundwater Analyitical Summary Tables
Beaver Smelting Site
Site No. 3-53-005

		MW-1							MW-3													
Analyte	***AWQS** + GV***	**Nov-86 ***	**Jul 87 ***	**Aug-89**	**Apr-92**	**Oct-92**	**Jul-92**	**Nov-02**	**Nov-86 ***	**Jul 87 ***	**Aug-89**	**Apr-92**	**Oct-92**	**Jul-92**	**Oct-00**	**Apr-02**	**Nov-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	-	-	2000	530	7100	790	1500		-	1600	470	7100	940	1720 E	1400	320	46,800	17,000	2,130	3,520	855
Antimony	*3 (GV)*	-	-	-	-	-	-	U	-	-	-	-	-	-	U	U	U	U	U	U	0	**6.95 J**
Arsenic	*25*	U	-	-	-	-	-	U	U	-	-	-	-	-	U	U	U	16.2	12.9	U	U	4.55 J
Barium	*1000*	80	-	-	-	-	-	U	130	-	-	-	-	-	39.6 B	U	U	680	252	61.5	54.1	41.5 J
Beryllium	*3 (GV)*	-	U	U	U	U	U	U	-	U	U	U	U	U	.26 B	U	U	**3.96J**	1.3J	U	U	U
Cadmium	*5*	U	U	U	U	**5**	U	**7.7**	**8**	**9**	**5.2**	U	**10**	**8**	U	U	U	U	U	U	0	U
Calcium	*NA*	-	-	-	-	-	-	4000 B	-	-	-	-	-	-	25900	30000	23000	34,000	30,200	19,900	19,200	22,800
Chromium	*50*	U	U	-	-	-	-	U	U	U	-	-	-	-	1.6 B	U	U	**62.2**	12.2	2.97J	3.28J	U
Cobalt	*NA*	-	-	-	-	-	-	U	-	-	-	-	-	-	2.8 B	U	U	52.9	15.7J	U	U	0
Copper	*200*	-	-	-	-	-	-	43	-	-	-	-	-	-	14.8 B	30	U	**535**	162	17.7	11.9	13.6
Iron	*300*	-	-	**10,000**	**2,500**	**24,000**	**9,200**	**1,500**	-	-	**840**	180	**8900**	**440**	**2070**	**2000**	**480**	**68,300**	**30,400**	**4,070**	**4,640**	**1,980**
Lead	*25*	9	U	**260**	**56**	**350**	**120**	U	U	U	**28**	U	**39.4**	5.3	2.1 B	U	U	**87.8**	**69.2**	4.55J	5.92J	2.39 J
Magnesium	*35,000 (GV)*	-	-	-	-	-	-	2100 B	-	-	-	-	-	-	12400	15000	11000	30,800	17,600	9,320	9,730	10,300
Manganese	*300*	-	-	**1700**	**910**	**1800**	**2100**	**360**	-	-	**2800**	**2900**	**7400**	**5700**	**1670**	**1100**	**810**	**2,710**	**1,640**	**793**	**804**	**894**
Mercury	*0.7*	U	-	-	-	-	-	U	U	-	-	-	-	-	U	U	U	0.56	0.15J	U	0.07J	U
Nickel	*100*	U	-	-	-	-	-	U	62	-	-	-	-	-	14.3 B	U	U	**115**	42.9	11J	12.3J	12.4 J
Potassium	*NA*	-	-	-	-	-	-	U	-	-	-	-	-	-	12200 E	9100	10000	13,900	10,300	8,360	7,390	7,990
Selenium	*10*	-	U	5	U	7.8	U	U	-	8	9	**32**	**53**	**70**	**38**	**38**	**40**	**29.9**	**20.2**	**35.8**	**32.2**	**29.3**
Silver	*50*	-	-	-	-	-	-	U	-	-	-	-	-	-	U	U	U	U	2.8J	U	0	2.01 J
Sodium	*20,000*	-	-	-	-	-	-	U	-	-	-	-	-	-	**26700**	**29000**	**27000**	**22,800**	**20,600**	**20,800**	18,000	**21,000**
Thallium	*0.5*	-	-	-	-	-	-	U	-	-	-	-	-	-	U	U	U	U	**5.5J**	U	0	**6.33 J**
Vanadium	*NA*	-	-	-	-	-	-	U	-	-	-	-	-	-	1.6 B	U	U	42.1J	U	U	4.48J	U
Zinc	*2,000 (GV)*	130	-	-	-	-	-	1500	80	-	-	-	-	-	68.9	77	26	674	200	52.9	53	46.3

		MW-2																				
Analyte	***AWQS + GV***	**Nov-86 ***	**Jul 87 ***	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Jan-93**	**Apr-93**	**Jul-93**	**Oct-93**	**Apr-94**	**Oct-94**	**Nov-98**	**Nov-99**	**Oct-00**	**Apr-02**	**Nov-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**
Aluminum	*NA*	-	-	7,400	5100	4300	14000	16600	9300	5700	4500	17200	15800	6640	780	38700 E	3800	3200	-	55,700	-	-
Antimony	*3 (GV)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	-	**39.5J**	-	-
Arsenic	*25*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	**40.7**	U	U	-	**42.9**	-	-
Barium	*1000*	130	-	-	-	-	-	-	-	-	-	-	-	-	-	382	U	U	-	555	-	-
Beryllium	*3 (GV)*	-	U	U	U	U	2	**3**	2	1	U	U	U	U	1	2.7B	U	U	-	**4.5J**	-	-
Cadmium	*5*	U	U	**6.3**	**5**	**6**	**10**	**10**	**8**	**8**	**6**	U	U	3.8B	**7**	U	U	U	-	U	-	-
Calcium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12800	12000	10000	-	15,000	-	-
Chromium	*50*	U	U	-	-	-	-	-	-	-	-	-	-	-	-	**68.4**	U	U	-	**92**	-	-
Cobalt	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.8 B	U	U	-	70.3	-	-
Copper	*200*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**286**	100	57	-	**417**	-	-
Iron	*300*	-	-	**5400**	**4500**	**4200**	**17000**	**11800**	**7200**	**6500**	**3100**	**25100**	**23500**	**11400**	**550**	**54,800**	**4,800**	**5,000**	-	**96,700**	-	-
Lead	*25*	U	U	**640**	**500**	**470**	**770**	**1400**	**1020**	**516**	**570**	**313**	**383**	**100**	**64**	**334**	**140**	**82**	-	**542**	-	-
Magnesium	*35,000 (GV)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**43400**	**45000**	**37000**	-	**47,900**	-	-
Manganese	*300*	-	-	**810**	**1000**	**950**	**2000**	**2000**	**1400**	**1000**	**800**	**1100**	**1100**	**506**	170	**2,220**	**530**	**540**	-	**3,980**	-	-
Mercury	*0.7*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	-	0.27	-	-
Nickel	*100*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	82.8	U	U	-	**126**	-	-
Potassium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38300 E	26000	28000	-	31,500	-	-
Selenium	*10*	-	**195**	**200**	**15**	**190**	**240**	**211**	**184**		**135**	**83.5**	**191**	**341**	**260**	**180**	**230**	**280**	-	**57.9**	-	-
Silver	*50*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1 B	U	U	-	5.3J	-	-
Sodium	*20,000*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2810 B	3800 B	3500 B	-	5,610	-	-
Thallium	*0.5*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	-	U	-	-
Vanadium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.8 B	U	U	-	29.2J	-	-
Zinc	*2,000 (GV)*	50	-	-	-	-	-	-	-	-	-	-	-	-	-	321	60	27	-	468	-	-

Notes
All data presented in micrograms per liter (µg/L).
Metals analysis by US EPA method 6010, except mercury by US EPA method 7470.
B - Analyte found in associated method blank.
U - Compound not detected at or above the method detection limit (MDL).
J - Estimated concentration above the MDL but less than the reporting limit.
D - Results from a subsequent dilution of the original sample due to original sample results being outside the linear range.

NA - Indicates 1) no standard or guidance value exists for the compound, or 2) sample was not analyzed for indicated compound.
xx - Well could not be located.
BOLD font in shaded cell indicates exceedances of AWQS+GV.
* Analyses conducted on filtered samples
* * New York State Ambient Water Quality Standards (TOGs 1.1.1) GV - guidance value.
- Not analyzed

Cumulative Groundwater Analyitical Summary Tables
Beaver Smelting Site
Site No. 3-53-005

		MW-4																				
Analyte	***AWQS + GV***	**Nov-86**	**Jul-87**	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Jan-93**	**Apr-93**	**Jul-93**	**Oct-93**	**Apr-94**	**Oct-94**	**Nov-98**	**Nov-99**	**Oct-00**	**Apr-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	-	-	1800	380	340	5100	11900	5600	2700	890	4300	2500	9420	2600	17300	6700	43,000	44,500	39,700	31,200	30,700
Antimony	*3 (GV)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	**35.4J**	U	U	U
Arsenic	*25*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	**312**	**120**	**146**	**270**	**122**	**92.3**	**113.0**
Barium	*1000*	390	-	-	-	-	-	-	-	-	-	-	-	-	-	140 B	U	420	442	343	297	443
Beryllium	*3 (GV)*	-	1	U	U	U	1	**4**	**3**	2	U	U	U	1.8B	1.1	2.1B	U	**4.52J**	**5.7**	**4.16**	**3.65**	**5.81**
Cadmium	*5*	**10**	U	4.7	U	U	**10**	**20**	**30**	**20**	**20**	**7**	U	**6.3**	**7**	4.1B	U	**7.4**	3.1J	**8.44**	**5.39**	**7.65**
Calcium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8900	7600	9,270	10,500	6,770	6,800	5,410
Chromium	*50*	**83**	U	-	-	-	-	-	-	-	-	-	-	-	-	20.9	U	**108**	**65.8**	**64.1**	**55**	**54.5**
Cobalt	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.8 B	U	55.9	63.9	40.5	37	41.9
Copper	*200*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	174	110	**465**	**500**	**390**	**288**	**421**
Iron	*300*	-	-	**1300**	**460**	270	**6900**	**8900**	**3100**	**830**	**450**	**6400**	**3600**	**11800**	**2400**	**16500**	**4900**	**57,600**	**67,900**	**53,100**	**49,500**	**41,200**
Lead	*25*	21	**26**	**28**	U	6.2	U	**61**	**39**	18	3.7	9.7	19.7	**162**	**310**	**268**	**250**	**584**	**696**	**484**	**387**	**585**
Magnesium	*35,000 (GV)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4580 B	2600 B	16,200	16,200	12,300	11,600	9,080
Manganese	*300*	-	-	**2100**	**2600**	**4000**	**5900**	**12400**	**16900**	**11100**	**13100**	**9900**	**9500**	**934**	**680**	**963**	**720**	**2,810**	**3,130**	**2,390**	**2,190**	**3,080**
Mercury	*0.7*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	0.45	0.41	0.27	0.1J	0.3 J
Nickel	*100*	91	-	-	-	-	-	-	-	-	-	-	-	-	-	31.1 B	U	90.1	91.9	69.9	68	64
Potassium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	329000 E	260000	221,000	NA	132000	97,700	103,000
Selenium	*10*	-	5	8	**37**	**150**	**254**	**231**	**106**	U	**12.2**	U	2.2	3.3B	5	U	U	U	5.7J	**14.2**	**15.2**	5.87 J
Silver	*50*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	5.0J	U	U	U
Sodium	*20,000*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**102,000**	**100,000**	**68,100**	**62,900**	**38,000**	**27,000**	**25,400**
Thallium	*0.5*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	U	U	U	**5.65 J**
Vanadium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.3	29 B	68.7	66	63.4	49.9	48.8
Zinc	*2,000 (GV)*	110	90	-	-	-	-	-	-	-	-	-	-	-	-	114	83	397	468	291	265	281

		MW-5																				
Analyte	***AWQS + GV***	**Nov-86**	**Jul-87**	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Jan-93**	**Apr-93**	**Jul-93**	**Oct-93**	**Apr-94**	**Oct-94**	**Nov-98**	**Nov-99**	**Oct-00**	**Apr-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	-	6240	2500	340	390	6100	3700	2800	1600	1700	3100	1500	6890	1100	2370 E	350	34,400	37,500	6,100	2,700	7,570
Antimony	*3 (GV)*	U	**32**	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	**28.6J**	U	U	U
Arsenic	*25*	U	U	-	-	-	-	-	-	-	-	-	-	-	-	1.8 B	U	**25.5**	**25.5**	U	U	7.19 J
Barium	*1000*	300	138	-	-	-	-	-	-	-	-	-	-	-	-	115 B	U	577	631	159	111	279
Beryllium	*3 (GV)*	U	-	U	U	U	1	U	U	U	U	U	U	U	U	0.3B	U	2.92J	**3.4J**	0.48J	U	1.47 J
Cadmium	*5*	**5**	**5**	U	U	U	U	U	U	U	U	U	U	3.8B	**7**	U	U	U	U	U	U	U
Calcium	*NA*	-	28000	-	-	-	-	-	-	-	-	-	-	-	-	22800	16000	27,100	31,100	15,000	14,700	15,900
Chromium	*50*	U	11	-	-	-	-	-	-	-	-	-	-	-	-	3.2 B	U	**70.6**	**69.2**	9.58J	3.37J	13.2
Cobalt	*NA*	-	13	-	-	-	-	-	-	-	-	-	-	-	-	5.0 B	U	44.4J	47.8J	7.48J	U	13.8 J
Copper	*200*	25	38	-	-	-	-	-	-	-	-	-	-	-	-	11.5 B	U	93.1	104	19.8	10	35.5
Iron	*300*	-	**11000**	**1600**	180	280	**8800**	**3600**	**3100**	**1600**	**1500**	**4800**	**2300**	**15000**	**1600**	**3380**	270	**55,500**	**68,900**	**9,520**	**3,630**	**11,300**
Lead	*25*	10	16	**29**	U	U	17.6	16.2	11.4	13.1	7.9	4.6	4	6.5	3	3.8	U	**55.6**	**78.3**	10.5	4.32J	**27.8**
Magnesium	*35,000 (GV)*	-	17000	-	-	-	-	-	-	-	-	-	-	-	-	13900	11000	26,600	29,400	10,200	9,420	9,380
Manganese	*300*	-	**2800**	**1900**	**1100**	**1700**	**2100**	**2100**	**2000**	**2400**	**1400**	**1600**	**2100**	**2440**	**1000**	**2090**	**1400**	**3,410**	**3,600**	**1,410**	**999**	**1,720**
Mercury	*0.7*	U	U	-	-	-	-	-	-	-	-	-	-	-	-	U	U	0.13J	U	U	0.12J	U
Nickel	*100*	46	22	-	-	-	-	-	-	-	-	-	-	-	-	13.8 B	U	88.5	88.5	15.8J	7.25J	21.9
Potassium	*NA*	-	17000	-	-	-	-	-	-	-	-	-	-	-	-	17100 E	9200	12,400	13,800	12,600	10,700	10,000
Selenium	*10*	U	1	**60**	**44**	**140**	**119**	**46.5**	**42.9**	U	**26.6**	**14.9**	**39.6**	**13.7**	**14**	**12.2**	**13**	8.5J	8.4J	**11**	6.59J	7.63 J
Silver	*50*	U	6	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	3.7J	U	U	1.49 J
Sodium	*20,000*	-	**29,000**	-	-	-	-	-	-	-	-	-	-	-	-	18500	16000	11,400	14,800	8,190	6,740	7,110
Thallium	*0.5*	U	U	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	**5.5J**	U	U	**6.46 J**
Vanadium	*NA*	-	6	-	-	-	-	-	-	-	-	-	-	-	-	1.9 B	U	31.7J	16.1J	5.98J	U	5.68 J
Zinc	*2,000 (GV)*	160	95	-	-	-	-	-	-	-	-	-	-	-	-	37.9	28	283	260	54	31.2	92.8

Notes
All data presented in micrograms per liter (µg/L).
Metals analysis by US EPA method 6010, except mercury by US EPA method 7470.
B - Analyte found in associated method blank.
U - Compound not detected at or above the method detection limit (MDL).
J - Estimated concentration above the MDL but less than the reporting limit.
D - Results from a subsequent dilution of the original sample due to original sample results being outside the linear range.

NA - Indicates 1) no standard or guidance value exists for the compound, or 2) sample was not analyzed for indicated compound.
xx - Well could not be located.
BOLD font in shaded cell indicates exceedances of AWQS+GV.
* Analyses conducted on filtered samples
* * New York State Ambient Water Quality Standards (TOGs 1.1.1) GV - guidance value.
- Not analyzed

Cumulative Groundwater Analyitical Summary Tables
Beaver Smelting Site
Site No. 3-53-005

		MW-6																				
Analyte	***AWQS + GV***	**Nov-86**	**Jul-87**	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Jan-93**	**Apr-93**	**Jul-93**	**Oct-93**	**Apr-94**	**Oct-94**	**Nov-98**	**Nov-99**	**Oct-00**	**Apr-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	-	24000	6900	1500	1700	10000	5500	4100	2000	1600	4100	3900	9760	-	-	2200	90,200	61,700	29,100	19,800	4,770
Antimony	*3 (GV)*	-	**62**	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	**33.5J**	U	U	U
Arsenic	*25*	U	14	-	-	-	-	-	-	-	-	-	-	-	-	-	U	**134**	**74.6**	13.5	16.9	12.2
Barium	*1000*	600	430	-	-	-	-	-	-	-	-	-	-	-	-	-	U	**2,520**	**1,350**	470	301	188
Beryllium	*3 (GV)*	-	**6**	U	U	0.2	**4**	2	2	1	1	U	U	1.7B	-	-	U	**12.7**	**8.6**	**3.56**	2.44J	1.33 J
Cadmium	*5*	**20**	**16**	**19**	**7**	**8**	**10**	**7**	**6**	**8**	U	U	U	4.3B	-	-	U	1.76J	U	1.58J	U	0.47 J
Calcium	*NA*	-	21000	-	-	-	-	-	-	-	-	-	-	-	-	-	4600 B	13,500	11,500	3,810	2,460	1,860
Chromium	*50*	30	43	-	-	-	-	-	-	-	-	-	-	-	-	-	U	**160**	**117**	44.8	30	10.6
Cobalt	*NA*	-	56	-	-	-	-	-	-	-	-	-	-	-	-	-	U	100	72.5	29.5	18.8	8.39 J
Copper	*200*	-	181	-	-	-	-	-	-	-	-	-	-	-	-	-	23 B	**270**	195	93.4	44.5	31.6
Iron	*300*	-	**33000**	**5500**	230	**1100**	**17000**	**8900**	**5700**	**3000**	**2100**	**5000**	**5000**	**13800**	-	-	**3800**	**183,000**	**136,000**	**53,100**	**35,100**	**10,000**
Lead	*25*	**380**	**202**	**160**	U	**36**	**180**	**170**	**89.7**	**60.4**	**36.6**	22.3	**38.5**	**67**	-	-	**45**	**1,320**	**827**	**331**	**163**	**89.2**
Magnesium	*35,000 (GV)*	-	18000	-	-	-	-	-	-	-	-	-	-	-	-	-	3600 B	**37,800**	26,100	11,000	7,510	2,070
Manganese	*300*	-	**17020**	**960**	**670**	**650**	**800**	**640**	**580**	**590**	**490**	**410**	**410**	**469**	-	-	410	**3,510**	**2,510**	**1,040**	**665**	235
Mercury	*0.7*	U	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	0.29	0.16J	U	0.09J	U
Nickel	*100*	91	**107**	-	-	-	-	-	-	-	-	-	-	-	-	-	U	**175**	**121**	55.6	37	22.5
Potassium	*NA*	-	5940	-	-	-	-	-	-	-	-	-	-	-	-	-	U	11,100	8,360	6,690	5,300	1,810
Selenium	*10*	-	1	U	U	U	6.7	4	5.5	U	5.5	2	7.4	U	-	-	U	U	**11.6**	8.05J	6.57J	U
Silver	*50*	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	8.1J	U	U	2.07 J
Sodium	*20,000*	-	16,000	-	-	-	-	-	-	-	-	-	-	-	-	-	4900 B	4,710J	3,770J	3,330	2,920	3,550
Thallium	*0.5*	-	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	**6.9J**	U	U	**6.09 J**
Vanadium	*NA*	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	U	120	61	33.2	24.2	6.5 J
Zinc	*2,000 (GV)*	**2150**	**2780**	-	-	-	-	-	-	-	-	-	-	-	-	-	360	1,190	753	375	291	207

		MW-7												MW-8				
Analyte	***AWQS + GV***	**Nov-86**	**Jul-87**	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**-**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**	**Jul-87**	**Aug-89**	**Apr-92**	**Oct-92**	**Jul-92**
Aluminum	*NA*	-	-	11000	2400	3200	9400	-	11,500	11,000	4,610	13,300	2,480	-	1500	870	8200	910
Antimony	*3 (GV)*	U	-	-	-	-	-	-	U	U	U	U	U	-	-	-	-	-
Arsenic	*25*	16	-	-	-	-	-	-	U	11.3	U	4.34J	6.63 J	-	-	-	-	-
Barium	*1000*	-	-	-	-	-	-	-	249	351	190	215	193	-	-	-	-	-
Beryllium	*3 (GV)*	**5.2**	**20**	0.007	U	U	**5**	-	1.27J	1.6J	0.95J	1.24J	0.88 J	U	U	U	2	U
Cadmium	*5*	**24**	**58**	**66**	**30**	**20**	**30**	-	U	2.0J	3.27	1.93J	2.26 J	U	U	U	**6**	U
Calcium	*NA*	-	-	-	-	-	-	-	4,340J	5,540	2,950	2,390	2,510	-	-	-	-	-
Chromium	*50*	20	U	-	-	-	-	-	12.8	1.2J	7.03J	16.4	4.2 J	U	-	-	-	-
Cobalt	*NA*	-	-	-	-	-	-	-	13.1J	12.5J	9.46J	12J	7.33 J	-	-	-	-	-
Copper	*200*	126	-	-	-	-	-	-	56.7	82.8	60.8	51.7	43.0	-	-	-	-	-
Iron	*300*	-	-	**3800**	190	**1500**	**6,700**	-	**18,600**	**19,900**	**5,980**	**16,900**	**4,360**	-	**840**	**1,200**	**8,800**	**990**
Lead	*25*	**72**	**37**	**58**	5.8	14	**72**	-	**35.2**	**84.2**	19.1	**29.9**	13.8	16	**61**	**330**	**410**	**330**
Magnesium	*35,000 (GV)*	-	-	-	-	-	-	-	4,820J	4,690J	2330	4,400	1,520	-	-	-	-	-
Manganese	*300*	-	-	**2300**	**980**	**970**	**1,600**	-	**771**	**770**	**374**	**582**	**326**	-	**570**	120	**1,100**	130
Mercury	*0.7*	U	-	-	-	-	-	-	0.09J	U	U	0.12J	U	-	-	-	-	-
Nickel	*100*	**180**	-	-	-	-	-	-	31.1J	38.2J	29.5	30	21.3	-	-	-	-	-
Potassium	*NA*	-	-	-	-	-	-	-	2,320J	3,250J	3,650	6,080	2,310	-	-	-	-	-
Selenium	*10*	U	U	7	U	8.3	**14**	-	U	U	U	U	U	U	U	U	U	U
Silver	*50*	U	-	-	-	-	-	-	U	U	U	U	2.57 J	-	-	-	-	-
Sodium	*20,000*	-	-	-	-	-	-	-	991J	682J	1,330	1,350	2,480	-	-	-	-	-
Thallium	*0.5*	U	-	-	-	-	-	-	U	U	U	U	**5.75 J**	-	-	-	-	-
Vanadium	*NA*	-	-	-	-	-	-	-	11.2J	U	U	14.5J	U	-	-	-	-	-
Zinc	*2,000 (GV)*	**4910**	**10500**	-	-	-	-	-	770	1,020	887	645	624	20	-	-	-	-

Notes
All data presented in micrograms per liter (µg/L).
Metals analysis by US EPA method 6010, except mercury by US EPA method 7470.
B - Analyte found in associated method blank.
U - Compound not detected at or above the method detection limit (MDL).
J - Estimated concentration above the MDL but less than the reporting limit.
D - Results from a subsequent dilution of the original sample due to original sample results being outside the linear range.

NA - Indicates 1) no standard or guidance value exists for the compound, or 2) sample was not analyzed for indicated compound.
xx - Well could not be located.
BOLD font in shaded cell indicates exceedances of AWQS+GV.
* Analyses conducted on filtered samples
* * New York State Ambient Water Quality Standards (TOGs 1.1.1) GV - guidance value.
- Not analyzed

Cumulative Groundwater Analyitical Summary Tables
Beaver Smelting Site
Site No. 3-53-005

		MW-9																			
Analyte	***AWQS + GV***	**Nov-86**	**Jul 87 ***	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Jan-93**	**Apr-93**	**Jul-93**	**Oct-93**	**Apr-94**	**Oct-94**	**Nov-98**	**Nov-99**	**Oct-00**	**Apr-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	-	-	2200	240	630	5200	1700	1500	-	1000	3300	3600	8520	62	1180 E	290	5,840	12,700	4,020	1,650	1,040
Antimony	*3 (GV)*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	**9.3J**	U	U	U
Arsenic	*25*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8 B	U	U	**43**	U	U	11.6
Barium	*1000*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.1 B	U	197J	353	155	81.2	112.0
Beryllium	*3 (GV)*	U	U	U	U	U	2	U	U	-	U	U	U	1.7B	1	U	U	0.43J	1.6J	U	U	U
Cadmium	*5*	U	U	U	U	U	U	U	U	-	U	U	U	3.8B	**7**	U	U	U	0.77J	U	U	U
Calcium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2780 B	3200 B	5,960	7,550	3,630	3,040	4,270
Chromium	*50*	5.3	U	-	-	-	-	-	-	-	-	-	-	-	-	U	U	4.74J	19.5	4.79J	U	U
Cobalt	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9 B	U	8.19J	15.1J	4.32J	U	U
Copper	*200*	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2 B	U	65.8	167	26.6	6.41J	16.6
Iron	*300*	-	-	**3,100**	290	**740**	**5,400**	**2,300**	**2,200**	-	**1,500**	**4,100**	**5,500**	**16,400**	**2,100**	**2,180**	**540**	**10,200**	**31,000**	**7,240**	**4,590**	**3,680**
Lead	*25*	**52**	5	**34**	U	6.6	**40.4**	18.7	23.4	-	5.1	4.5	7.7	13.6	3	2.8B	U	17	**140**	16	3.23J	5.19 J
Magnesium	*35,000 (GV)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1290 B	1300 B	3,830J	6,760	2,180	1,450	1,730
Manganese	*300*	-	-	**1100**	120	150	**800**	**310**	200		150	130	**570**	**786**	**460**	**1060**	**300**	**700**	**755**	**586**	**410**	**516**
Mercury	*0.7*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	0.12J	0.05J	U	0.13J	U
Nickel	*100*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3 B	U	11.9J	22.3J	7.46J	U	6.61 J
Potassium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	903 B	U	U	2,890J	1,850	1,060	845 J
Selenium	*10*	U	U	U	U	U	U	U	U		3.2	U	2.7	U	5	U	U	U	U	U	U	U
Silver	*50*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	2.5J	U	U	2.35 J
Sodium	*20,000*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1910 B	2800 B	2,090J	2,210J	2,240	2,310	3,610
Thallium	*0.5*	U	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	U	U	U	**7.18 J**
Vanadium	*NA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	7.46J	1.7J	6.95J	U	U
Zinc	*2,000 (GV)*	28	-	-	-	-	-	-	-	-	-	-	-	-	-	17.3 B	19 B	51.7	69.9	37.1	18J	24.6

		MW-10 (MW-9A)											MW-11									
Analyte	***AWQS + GV***	**Nov-86 ***	**Jul 87 ***	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**	**Nov-86**	**Jul-87**	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	-	-	10000	140	500	7100	78,500	154,000	45,500	13,800	2,000	-	25000	11000	1200	1100	9400	171,000	258,000	xx	xx	xx
Antimony	*3 (GV)*	-	-	-	-	-	-	U	**9.4J**	U	U	U	-	**72**	-	-	-	-	U	**6.6J**	xx	xx	xx
Arsenic	*25*	U	-	-	-	-	-	**49.2**	**100**	**27.4**	8.44J	9.4 J	U	U	-	-	-	-	**34.5**	**52.4**	xx	xx	xx
Barium	*1000*	-	-	-	-	-	-	862	**1,610**	458	151	75.2	520	330	-	-	-	-	**2,550**	**3,580**	xx	xx	xx
Beryllium	*3 (GV)*	-	U	U	U	U	2	**6.62**	**13.4**	**3.48**	0.81J	0.37 J	-	1	U	U	U	**3**	**15.8**	**22.9**	xx	xx	xx
Cadmium	*5*	**50**	U	**7**	U	U	**6**	**6.18**	U	4.31	U	U	U	U	3	U	U	**6**	0.57J	U	xx	xx	xx
Calcium	*NA*	-	-	-	-	-	-	24,700	39,600	15,100	10,200	8,230	-	6090	-	-	-	-	21,900	23,700	xx	xx	xx
Chromium	*50*	U	U	-	-	-	-	**89.8**	**166**	40.5	10.9	2.77 J	**95**	U	-	-	-	-	**391**	**569**	xx	xx	xx
Cobalt	*NA*	-	-	-	-	-	-	95.7	193	57	7.89J	5.11 J	-	25	-	-	-	-	184	285	xx	xx	xx
Copper	*200*	-	-	-	-	-	-	**265**	**582**	144	27.1	14.5	-	54	-	-	-	-	**270**	**436**	xx	xx	xx
Iron	*300*	-	-	**7,300**	180	**480**	**4,800**	**122,000**	**284,000**	**82,600**	**17,700**	**4,410**	-	**46000**	**12,000**	**1,600**	**1,400**	**1,100**	**285,000**	**497,000**	xx	xx	xx
Lead	*25*	U	U	**100**	U	6.6	**37**	**192**	**502**	**110**	**28.8**	13.5	14	20	**72.0**	U	5.6	**33.7**	**207**	**442**	xx	xx	xx
Magnesium	*35,000 (GV)*	-	-	-	-	-	-	**49,400**	**77,600**	26,100	14,600	7,690	-	18000	-	-	-	-	**83,700**	**118,000**	xx	xx	xx
Manganese	*300*	-	-	**470**	30	70	**420**	**8,720**	**20,100**	**3,980**	**607**	**651**	-	**1801**	**1,400**	170	200	**1,500**	**10,000**	**19,800**	xx	xx	xx
Mercury	*0.7*	U	-	-	-	-	-	0.45	0.58	U	0.12J	U	0.3	U	-	-	-	-	0.68	**0.83**	xx	xx	xx
Nickel	*100*	U	-	-	-	-	-	**158**	**335**	88.2	16.6J	8.39 J	**110**	49	-	-	-	-	**320**	**510**	xx	xx	xx
Potassium	*NA*	-	-	-	-	-	-	42,300	56,800	34,500	26,000	23,300	-	37000	-	-	-	-	42,100	56,400	xx	xx	xx
Selenium	*10*	-	**645**	**660**	**640**	**1,300**	**976**	**30.6**	**157**	**31**	**27.9**	**17.6**	-	**645**	**380**	**360**	**390**	**340**	**44.6**	**69**	xx	xx	xx
Silver	*50*	-	-	-	-	-	-	8.42J	14.4	U	U	2.18 J	-	6	-	-	-	-	U	24.2	xx	xx	xx
Sodium	*20,000*	-	-	-	-	-	-	2,760J	3,210J	2,970	2,630	3,490	-	19,000	-	-	-	-	1,830J	3,500J	xx	xx	xx
Thallium	*0.5*	-	-	-	-	-	-	U	**10.1**	U	U	**5.62 J**	-	U	-	-	-	-	U	U	xx	xx	xx
Vanadium	*NA*	-	-	-	-	-	-	69	111	38.4	14.6J	U	-	18	-	-	-	-	142	190	xx	xx	xx
Zinc	*2,000 (GV)*	25	-	-	-	-	-	514	1,060	282	69.9	33.4	170	1	-	-	-	-	1,180	1,710	xx	xx	xx

Notes
All data presented in micrograms per liter (µg/L).
Metals analysis by US EPA method 6010, except mercury by US EPA method 7470.
B - Analyte found in associated method blank.
U - Compound not detected at or above the method detection limit (MDL).
J - Estimated concentration above the MDL but less than the reporting limit.
D - Results from a subsequent dilution of the original sample due to original sample results being outside the linear range.

NA - Indicates 1) no standard or guidance value exists for the compound, or 2) sample was not analyzed for indicated compound.
xx - Well could not be located.
BOLD font in shaded cell indicates exceedances of AWQS+GV.
* Analyses conducted on filtered samples
* * New York State Ambient Water Quality Standards (TOGs 1.1.1) GV - guidance value.
- Not analyzed

Cumulative Groundwater Analyitical Summary Tables
Beaver Smelting Site
Site No. 3-53-005

		MW-12											MW-13										
Analyte	***AWQS + GV***	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Oct-00**	**Apr-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**	**Aug-89**	**Apr-92**	**Jul-92**	**Oct-92**	**Oct-00**	**Apr-02**	**May-05**	**Oct-05**	**Sep-08**	**Feb-10**	**Nov-11**
Aluminum	*NA*	5900	4500	1500	3800	1210 E	3300	1,150	521	14,200	602	330	620	U	70	450	1610 E	72 B	3,590	1,530	208J	318	108
Antimony	*3 (GV)*	-	-	-	-	U	U	U	U	U	U	U	-	-	-	-	U	U	U	U	U	U	**5.61 J**
Arsenic	*25*	-	-	-	-	2.6 B	U	U	5.6J	U	U	15.2	-	-	-	-	1.8 B	U	U	U	U	U	U
Barium	*1000*	-	-	-	-	106 B	U	71.6J	83.0J	204	68.7	111	-	-	-	-	65.7 B	U	90.5J	63.0J	48.2	40J	40.4 J
Beryllium	*3 (GV)*	U	U	U	1	.33 B	U	0.145J	U	0.71J	0.31J	U	U	U	U	U	0.2 B	U	U	0.22J	U	U	U
Cadmium	*5*	**9**	U	U	U	U	U	U	0.78J	0.74J	0.43J	1.01 J	2.9	U	U	U	U	U	U	U	U	U	U
Calcium	*NA*	-	-	-	-	54,400	27,000	30,900	30,200	43,100	5,780	5,780	-	-	-	-	24700	29000	25,800	24,900	19,300	17,400	18,100
Chromium	*50*	-	-	-	-	1.8 B	U	2.78J	U	15.6	U	U	-	-	-	-	2.2 B	U	5.87J	U	U	U	U
Cobalt	*NA*	-	-	-	-	9.6 B	U	8.12J	U	14.7	6.23J	9.34 J	-	-	-	-	4.8 B	U	5.96J	3.5J	U	U	U
Copper	*200*	-	-	-	-	8.6 B	U	9.26J	U	41.9	2.64J	6.31 J	-	-	-	-	9.0 B	U	12.9J	8.0J	4.87J	3.45J	4.23 J
Iron	*300*	**1,300**	80	170	**1,100**	**1,370**	110	**1,350**	**522**	**16,900**	**965**	**432**	**340**	U	50	**600**	**2,240**	62 B	**5,670**	**2,660**	**451**	**489**	**326**
Lead	*25*	**48.0**	U	U	13.5	5.6	U	3.66J	12.4	**33.2**	2.72J	3.36 J	15	U	U	5.5	3.8	U	7.75	3.7J	U	U	U
Magnesium	*35,000 (GV)*	-	-	-	-	24,000	14,000	13,700	10,400	21,300	2,780	2,490	-	-	-	-	9,780	11,000	10,700	9,020	6,930	6,610	6,350
Manganese	*300*	**3,400**	**1,900**	**2,500**	**2,600**	**2,300**	**2,700**	**2,210**	**1,490**	**1,910**	**793**	**1,030**	**1,700**	**1,400**	**1,500**	**1,400**	**1,700**	**1,500**	**1,440**	**1,120**	**984**	**923**	**956**
Mercury	*0.7*	-	-	-	-	U	U	0.12J	U	0.2	0.14J	U	-	-	-	-	U	U	0.08J	0.08J	U	0.19J	U
Nickel	*100*	-	-	-	-	24 B	U	13.5J	U	31.4	5.82J	12.4 J	-	-	-	-	13.9 B	U	15.2J	3.5J	6.14J	6.55J	9.77 J
Potassium	*NA*	-	-	-	-	9890 E	U	5,740	3,560J	6,480	1,990	2,690	-	-	-	-	23500 E	17000	18,000	18,000	16,600	12,600	14,700
Selenium	*10*	9.0	9.8	**17**	**16.1**	6.6	5.6	U	U	U	U	U	**120**	**60**	**88**	**88.3**	?	**19**	5	U	U	U	U
Silver	*50*	-	-	-	-	U	U	U	U	U	U	2.32 J	-	-	-	-	U	U	U	U	U	U	2.89 J
Sodium	*20,000*	-	-	-	-	**42,500**	**27,000**	**30,700**	**22,900**	**37,300**	6,200	6,640	-	-	-	-	**45,400**	**52,000**	**43,400**	**41,400**	**39,500**	**32,100**	**33,700**
Thallium	*0.5*	-	-	-	-	U	U	U	U	U	U	**4.78 J**	-	-	-	-	U	U	U	U	U	U	**5.99 J**
Vanadium	*NA*	-	-	-	-	U	U	2.77J	U	10.3J	U	U	-	-	-	-	1.9 B	U	3.48J	U	U	U	U
Zinc	*2,000 (GV)*	-	-	-	-	51.4	130.0	35.2	26.5	129.0	46	53.2	-	-	-	-	31.3	19 B	40.3	U	25	17.6J	20.3

Notes

All data presented in micrograms per liter (µg/L).
Metals analysis by US EPA method 6010, except mercury by US EPA method 7470.
B - Analyte found in associated method blank.
U - Compound not detected at or above the method detection limit (MDL).
J - Estimated concentration above the MDL but less than the reporting limit.
D - Results from a subsequent dilution of the original sample due to original sample results being outside the linear range.

NA - Indicates 1) no standard or guidance value exists for the compound, or 2) sample was not analyzed for indicated compound.
xx - Well could not be located.
BOLD font in shaded cell indicates exceedances of AWQS+GV.
* Analyses conducted on filtered samples
* * New York State Ambient Water Quality Standards (TOGs 1.1.1) GV - guidance value.
- Not analyzed