2009 Annual Report

Partners In Progress

FLAMBEAU MINING COMPANY

Rusk County, Wisconsin

February 2010

Flambeau Mining Company
N4100 Hwy 27
Ladysmith, WI 54848

Flambeau Mining Company
N4100 Hwy 27
Ladysmith, WI 54848
715-532-6690
715-532-6885 (Fax)

Flambeau Reclaimed
promises made, promises kept

February 5, 2010

Mr. Phil Fauble
Division of Air and Waste
Waste and Material Management
101 South Webster Street, GEF II
Madison, WI 53707

Dear Mr. Fauble:

The Flambeau Mining Company (Flambeau) is submitting one copy of the attached 2009 Annual Report pursuant to Part 1-8 of the Flambeau Mine Permit (Docket No. IH-89-14). An additional fourteen copies of the report will be submitted separately. This submittal also addresses other requirements of the Mining Permit and associated approvals.

Monitoring and evaluations conducted during 2009 continue to document that the Flambeau River remains fully protected and Flambeau remains in full compliance with its permit standards.

If you have any comments or questions regarding this submittal, please contact me at (715)532-6690 Ext. 2 or jana-murphy@clearwire.net.

Sincerely,

Jana E. Murphy

Jana E. Murphy
Environmental & Reclamation Manager

Distribution

No. of Copies	Sent to
15	Mr. Phil Fauble Division of Air and Waste Waste and Materials Management 101 South Webster Street, GEF II Madison, WI 53707
10	Jana E. Murphy Environmental & Reclamation Manager Flambeau Mining Company N4100 Hwy 27 Ladysmith, WI 54848
1	Randy Tatur, Chairperson Rusk County Board of Supervisors 311 East Miner Avenue Ladysmith, WI 54848
1	Tom Riegel, Chairperson Town of Grant N2937 Highway 27 Ladysmith, WI 54848
1	Al Christianson, Administrator City of Ladysmith P. O. Box 431 Ladysmith, WI 54848
1	CeCe Tesky Rusk County Zoning 311 East Miner Avenue Ladysmith, WI 54848
1	James B. Hutchison, P.E. Project Engineer Foth Infrastructure & Environment, LLC 2737 South Ridge Rd Ste 600 Green Bay, WI 54304

FLAMBEAU MINING COMPANY
2009 ANNUAL REPORT

Table of Contents

TABLES

FIGURES

APPENDICES

1 Purpose and Need

This report serves to document the work that was done at the Flambeau Mine site in 2009 and to satisfy the requirements of the Mining Permit (MP).

Mining Permit, Part 1, Condition 8:

> *In accordance with sec. 144.89, Stats., Flambeau shall submit a report annually to the Department summarizing the activities which took place on the mining site during the year and shall include other additional information specified in this permit and associated plan approvals.*

Mining Permit, Part 2, Condition 4:

> *The annual report required under sec. 144.89, Stats., shall include discussion of all modifications received during the previous year and shall include an inventory of all modifications received subsequent to permit issuance. The annual report shall also discuss deviations from the approved Mining Plan as a result of final engineering refinements of subsequent plan approvals if these deviations do not require modifications, under Part 2, Conditions 2 and 3.*

Mining Permit, Part 2, Condition 6:

> *Flambeau shall keep a log of all incidents, such as spills, pond overflows and embankment failure or leakage, reported to its environmental compliance staff. This log shall, at all reasonable times, be available for inspection by any duly authorized Department employee. A summary of incidents subject to various Department reporting requirements shall be included in the annual report required under sec. 144.89, Stats.*

Mining Permit, Part 2, Condition 7 (Excerpt):

> *The annual report required under sec. 144.89, Stats, shall include a summary of all exploration drilling activities conducted on the mining site during the previous year.*

Mining Permit, Part 4, Condition 9:

> *Monitoring data and results shall be submitted to the Department within 30 days after completion of the required analyses. The annual report required in this permit shall summarize the year's monitoring activities and any observed trends in the monitoring data.*

Water Withdrawal Approval, Condition 1 (Excerpt):

Flambeau Mining Company shall maintain records which document the withdrawal. At a minimum, such information shall include the dates and duration of withdrawal, approximate pumping rate and approximate volume of water withdrawn. Monthly summaries shall be submitted to the department for those months in which a withdrawal occurs. This information shall be available for department review in a separate file at the Flambeau Mining Company office and shall also be summarized in the annual report submitted as a condition of the mining permit.

The primary location of the information which fulfills the requirements of the above conditions is referenced in Table 1-1.

TABLE 1-1

Location Information Key

Condition No.	Location of Information
MP, Part 1-8	Section 2 and 3
WWA, Condition 1	Section 2.6.2
MP, Part 2-4	Section 2.8
MP, Part 2-6	Section 2.10
MP, Part 2-7	Section 2.11
MP, Part 4-9	Section 4 and Appendix A, B and C

2 2009 Summary

2.1 Introduction

On January 14, 1991, after an exhaustive permitting process including extensive opportunity for public input, the Flambeau Mining Company (Flambeau), wholly owned by Kennecott Minerals Company, received from the Wisconsin Department of Natural Resources (Department) eleven permits to operate an open pit copper mine in Rusk County, Wisconsin. Over the life of the mine (1993 – 1997), 181,000 tons of copper, 3.3 million ounces of silver, and 334,000 ounces of gold were mined.

Backfilling of the open pit began in earnest in early 1997. Waste rock and soils were replaced to their approximate original location in the open pit. Over 30,000 tons of limestone was added to the sulfide-bearing waste rock to neutralize and buffer the groundwater as it resaturated the backfilled materials.

In 1998, the surface reclamation of the mine site began by returning the land surface to its approximate original contour. Stockpiled topsoil was spread across the site where grasslands and woodlands were created. Hydric (wetland) soils had been stockpiled as well and were used to create over ten acres of wetlands. Reclamation activities since 1998 have included seeding, plug planting, tree planting, erosion control, mowing, invasive species control, trail construction, and prescribed burning. During 2001, Flambeau completed the planting plan and submitted the Notice of Completion (NOC) to the Department. Concurrent with the submittal of the NOC, the reclaimed Flambeau Mine nature trails were opened to the public for non-motorized recreational activities. The City of Ladysmith had partnered with Flambeau to develop the four-mile nature trail system.

During 2006, monitoring of the reclaimed mine site documented the continued development of high quality native grassland, woodland and wetland communities. Ecological monitoring has documented that 272 native plant species are established on the site. Fifty-two bird species were found to be using the reclaimed mine site and 33 bird species were recorded as nesting on the site.

During 2007 Flambeau petitioned the Department for Certificate of Completion (COC). The COC process included a preconference hearing, public hearing and contested case hearing. At the contested case hearing, the parties negotiated an agreement and entered into a stipulation which was subsequently accepted by the administrative law judge and resulted in a signed order. The order granted a COC to Flambeau for 149 acres of the Flambeau Mine site that includes the backfilled pit and not including the 32-acre Industrial Outlot. Among the other aspects of the stipulation included in the Order was an agreement by Flambeau to withdraw the COC petition for the Industrial Outlot and that it would not apply for a COC for the Industrial Outlot for at least three years, a reduction of the reclamation bond to 20 percent of the $11 million bond on file with the Department at that time (maximum reduction allowed by Wisconsin law), and a commitment by Flambeau to conduct further environmental monitoring.

During 2008 and 2009 Flambeau completed extensive monitoring as required by the 2007 COC stipulation and also supplemental monitoring on a voluntary basis. The monitoring completed during 2008 and 2009 documents that the Flambeau River remains fully protected and Flambeau maintains compliance with its permits.

Throughout each phase of the project, samples have been collected from the Flambeau River and include water quality, sediments, fish, and macroinvertebrates. Continued protection of the Flambeau River, located 140 feet from the backfilled pit, has been documented throughout the Flambeau project by extensive monitoring.

2.2 Groundwater Quality Assessments

Assessments of the backfill groundwater quality have been routinely performed with the most recent being completed in January 2010. The assessments show that the regional groundwater flow, including backfill water, is flowing toward the Flambeau River as was predicted during permitting; stable conditions have been reached at depth within the backfill; manganese concentrations appear to have stabilized or are decreasing over the last three years; any acidity that had been present in the backfill has been neutralized by the limestone; sulfate concentrations in the majority of the backfill are now controlled by gypsum precipitation and dissolution; and concentrations of solutes in the backfill are stable and should not significantly increase in the future and, in fact, many are showing a decreasing trend. Further detail on groundwater quality can be found in Section 4 of this report.

2.3 Notice of Completion/Certificate of Completion

Data obtained during monitoring of the reclaimed vegetation during 2000 documented that Flambeau met the vegetative performance standards for NOC.

During September 2001, Flambeau submitted the NOC to the Department. In a letter dated March 8, 2002, the Department accepted Flambeau's NOC. The four-year monitoring period prior to COC began November 19, 2001. For Flambeau to receive the COC, the performance standards were met during the final year of the 4-year monitoring period. The final year of the 4-year monitoring period was 2005. All performance standards were met in 2005 and again in 2006 even during extreme regional climatic conditions such as the regional drought experienced in 2005 and 2006. On January 9, 2007, Flambeau Mining Company petitioned the Department for COC.

The COC process included a preconference hearing in April, public hearing in mid-May and contested case hearing in late May 2007. The contested case portion of the process had just started when the parties began negotiating an agreement. At the hearing, the parties entered into a stipulation which was subsequently accepted by the administrative law judge and incorporated into an order. The order was signed by the judge granting a COC to Flambeau for 149 acres of the Flambeau Mine site that includes the backfilled pit and not including the 32-acre Industrial Outlot. Among the other aspects of the Stipulation included in the Order was an agreement by Flambeau to withdraw the COC petition for the Industrial Outlot and that it would not apply for a COC for the Industrial Outlot for at least three years, a reduction of the reclamation bond to

20 percent of the $11 million bond on file with the Department at that time (maximum reduction allowed by Wisconsin law), and a commitment by Flambeau to conduct further environmental monitoring.

2.4 Industrial Outlot

2.4.1 Reuse of Industrial Outlot Facilities

On January 8, 1998 Flambeau submitted a request for modification of the Mining Permit and Reclamation Plan. The requested modifications included modification of the final land use for 32 acres of the mining site to allow for alternative use of the on-site buildings and related ancillary facilities, railroad spur and a portion of the former Type II waste rock stockpile area by the Ladysmith Community Industrial Development Corporation (LCIDC).

On July 30, 1998 the Department approved the request for modification of the final land use for the 32 acre industrial outlot with the following condition: "If the portion of the site covered by the lease agreement with the LCIDC has not been put to an acceptable alternative use by the end of 2004, the site shall be reclaimed in a manner consistent with reclamation of the remainder of the mining site. Any demolition waste resulting from such reclamation shall be disposed of in a properly licensed solid waste facility."

A long-term lease agreement exists between Flambeau and the LCIDC, where the LCIDC leases a 32-acre portion of the former mine site referred as the industrial outlot. The 32-acre area includes the former administration building now occupied by the Ladysmith Department of Natural Resources Service Center; the former Water Treatment Plant (WTP) building now occupied by Xcel Energy and the Department; the railspur for which the LCIDC has installed major improvements and purchased adjacent property outside of the mine project area; an approximate eight-acre area north of the railspur in the former Type II stockpile area; and a 0.9-acre biofilter constructed in 1998 to reduce suspended solids and other contaminants resulting from precipitation runoff from the industrial outlot.

During 2000, the LCIDC completed renovations on the administration building, now serving as the Department's Ladysmith Service Center, and the WTP building, now housing Xcel Energy's line maintenance shop and the Department's equipment storage area. In addition, the LCIDC constructed another building for the Department between the Service Center and the former WTP to house additional Department equipment. The Department and Xcel Energy continue to occupy the former mine buildings.

During 2003, the LCIDC submitted a request to the Department for the retention of the rail spur located east of Highway 27 as part of the communities' on-going efforts to increase industrial development. The LCIDC had committed to remove and reclaim about 200 feet of the rail spur east of Highway 27. In a letter dated June 12, 2003, the Department stated that it "...is satisfied that the portion of the rail spur east of the highway is being used for alternate purposes. Therefore, the rail spur east of Highway 27 will not need to be removed and revegetated..."

During early 2004, the Flambeau Riders, Inc. (Flambeau Riders) approached Flambeau about the possibility of developing non-motorized trails on property owned by Flambeau south of the Industrial Outlot and east and south of the Flambeau River. In addition, the Flambeau Riders inquired about using a portion of the Industrial Outlot as driveway access and as an equestrian trailhead. In documents dated May 19 and 28, 2004, Flambeau proposed to the Department an alternate use plan for Flambeau's former rail spur area west of Highway 27 and the eight-acre area north of the west rail spur area within the Industrial Outlot as a driveway and equestrian trailhead.

During 2004, a Community Advisory Group was formed to advise Kennecott Minerals on development of a land use management plan for the 2177 acres owned by Flambeau as of year end 2004. The Advisory Group is represented by Rusk County, City of Ladysmith, Town of Grant, Ladysmith Area Trails Association, Flambeau Riders, LCIDC and the Department's Northern Rivers Initiative. During a late December 2004 meeting, the Advisory Group agreed that the expansion of trails south of the reclaimed mine site and using a portion of the Industrial Outlot as an equestrian trailhead were acceptable and beneficial uses of the property. It was agreed to formalize the agreement with 1) a Trail Easement & License between Flambeau and the City of Ladysmith and 2) a Sublease between the LCIDC and the City of Ladysmith. Fully executed documents, Trail Easement & License and Sublease, dated January 1, 2005 are in place.

In a letter to the Department dated December 30, 2004, Flambeau provided notice that the 32 acre industrial outlot has met the condition of "acceptable alternative use."

The Department responded in a letter dated February 18, 2005 that the only portion of the industrial outlot for which an acceptable alternate use had not been designated was the section lying north of the railspur in the area of the former Type II waste rock stockpile. The Department conceptually found the proposed use as an equestrian trail head acceptable, but required further details to review and approve the proposed construction plans.

In submittals dated March 1 and July 21, 2005, Flambeau provided to the Department drawings and detail regarding the proposed equestrian trailhead and access via Copper Park Lane. The Department provided approval for the project in a letter dated July 28, 2005.

The construction of the equestrian trailhead initiated on August 11, 2005 and was complete by September 8, 2005. Trail and trailhead improvements have continued by the Flambeau Riders on an annual basis through 2009.

2.4.2 Rail Spur Reclamation

During Spring 2003, Flambeau and the LCIDC agreed that the Wisconsin Department of Transportation should remove the rail crossing as part of the renovation of Highway 27 during 2004. In addition, storm water sampling had measured copper concentrations entering the 0.9-acre biofilter that may have been associated with the west rail spur area.

During Fall 2003 the top two feet of ballast and gravel were excavated from the rail spur area west of Highway 27. Reclamation of the west rail spur area and 200 feet east of Highway 27 was completed during Spring 2004.

A submittal, Rail Spur Reclamation Documentation, dated November 10, 2004 was made to the Department and included a topographic drawing showing the east and west reclaimed rail spur areas and details regarding the reclamation of the rail spur areas.

2.4.3 Intermittent Stream C

The Flambeau Mine remains committed to the protection of water quality in the Flambeau River. Since final reclamation in 1999, Flambeau has continued its monitoring of water quality in the Flambeau River as well as surface runoff into the Flambeau River. This monitoring indicates that the water quality of the Flambeau River remains fully protected.

Copper and zinc concentrations have been measured in offsite background storm water runoff and in runoff from the Industrial Outlot located on the reclaimed mine site. The non-point sources of runoff from the Industrial Outlot are being passively treated by the 0.9-acre biofilter that substantially reduces the concentrations of metals before flowing into Intermittent Stream C that eventually discharges to the Flambeau River. The biofilter itself supports populations of aquatic biota, including fish and frogs.

An expanded surface runoff monitoring program including bioassessment of the intermittent stream was conducted during 2004 and 2005. The work plan evaluated 1) the biological conditions within Stream C, 2) areas of the Stream C watershed that contribute to the water in Stream C, 3) aspects of the industrial outlot bio-filter that may influence copper levels that are discharged from the bio-filter to Stream C; and 4) the hydrology and water quality within Stream .

In a submittal dated January 20, 2005, Flambeau provided a memorandum prepared by Foth & Van Dyke that summarized and assessed the data that was collected in 2004.

In summary, Stream C is an intermittent stream with poor aquatic habitat that lacks aquatic vegetation and aquatic macroinvertebrates. As a result of the poor habitat and very limited food source, no fish were observed in the stream during the 2004 biological assessment. Stream C does not possess the types of characteristics that are needed for it to support any type of fishery. The sediment sampling of the biofilter indicates that it is functioning as designed. This is supported by the fish and amphibians that have been observed in the biofilter. The surface water sampling that has been completed within the watershed of Stream C suggests that some areas, particularly those affected by highway runoff, may naturally exhibit elevated copper levels in the water. In addition, the 2004 sampling indicated that there appeared to be localized areas at the Industrial Outlot that were contributing elevated copper levels to storm water that flowed to the biofilter. Based on this last point, Foth and Van Dyke advised that Flambeau consider implementing measures to minimize storm water contacting the localized areas that appeared to be contributing to the elevated copper levels.

In a document dated October 24, 2005, Flambeau submitted to the Department the results of the 2005 surface runoff monitoring program. The 2005 results were consistent with the 2004 results.

Monitoring of the surface water at the site since the completion of reclamation has indicated that the Industrial Outlot biofilter is working well in lowering copper levels of surface water runoff flowing from the Outlot area. During 2003 and 2004 the former rail spur was reclaimed in an effort to reduce the concentration of copper in surface water runoff.

During 2006, Flambeau further reduced sources of copper from the Outlot area to the Biofilter. Foth & Van Dyke oversaw the design and implementation of the work plan. The work plan was implemented starting May 18, 2006 and complete by June 21, 2006. The work consisted of excavation of approximately 900 linear feet of the existing drainage ditch collecting storm water runoff from the area around the Copper Park buildings and replacement of the cobbled drainage way with limestone cobbles. Approximately 2.2 acres of gravel parking lot was excavated to a minimum depth of four inches. Soil sampling was conducted following completion of excavation. The average copper concentration of the exposed subgrade after removal was approximately 38 mg/kg (ppm). A non-woven geotextile fabric was placed on the exposed subgrade of all excavated areas within the area of asphalt and the drainage ditch prior to backfilling. Crushed limestone gravel was placed on the non-woven geotextile fabric as subgrade material and the parking lot was paved with three inches of bituminous concrete (asphalt). All excavated material (2300 cubic yards) was appropriately disposed at the licensed Timberline Trail Landfill.

Storm water samples collected during 2006, 2007, 2008 and 2009 indicate a marked reduction in copper concentrations in storm water reaching the biofilter.

A report prepared by Foth & Van Dyke titled Construction Documentation Report – Flambeau Industrial Outlot was submitted to the Department on September 12, 2006. Included with the report were results of soil sampling following excavation. The report provides further detail on the completion of the work plan.

On January 12, 2007, the Biofilter Management Plan was submitted to the Department. The report presents surface water data collected during 2006 and post 2006 construction which documents a dramatic reduction in copper loading to the biofilter. The report also presents a biofilter management plan including monitoring of the biofilter.

In a document dated October 14, 2008 Foth Infrastructure & Environment, LLC, on behalf of Flambeau Mining Company, provided a summary of stipulation and supplemental monitoring results. The voluntary supplemental monitoring Flambeau conducted included stormwater and soils within the Industrial Outlot in the vicinity of the Copper Park Lane. Based upon elevated copper concentrations within the stormwater and soils, Foth proposed a work plan in the vicinity of Copper Park Lane that included removal of surficial soils and replacement with clean fill and topsoil. The work plan was proposed to eliminate any possibility that this area could be considered a potential source of copper to Stream C.

Following review and concurrence by the Department, the work along the Copper Park Lane was completed November 5 – 7, 2008. A total of 303.85 tons of surficial soils were excavated and disposed as special non-hazardous waste at the Timberline Trail landfill. Analyses of the sub-base soils indicate that materials of concern were removed. Gravel covered with topsoil was used as clean fill materials in the area of excavation. Seeding and placement of a net free erosion control blanket completed the work. A January 23, 2009 documentation report provided to the Department contains further detail on the Copper Park Lane work.

Additional samples were collected October 27, 2008 and results submitted December 9, 2008. These include samples that were collected just prior to the completion of the work described in the work plan.

During 2009 monitoring of storm water and surface water was conducted. Consistent with previous years' results, the 2009 monitoring results document that the Flambeau River remains protected.

2.5 Community Involvement

Flambeau's involvement with the surrounding communities has included promotion of community activities, partnering with the communities, economic development, promoting tourism, enhancing communication, restoration projects, and maintaining an open door policy.

The major achievements for 2009 are set forth below:

- The Flambeau Community Advisory Group formed during 2004 continued to advise Flambeau Mining on the development of a land use management plan related to the over 2000 acres owned by Flambeau. During 2009 the Ladysmith Development Corporation took the lead in partnering with Flambeau Mining to conduct a biodiversity assessment on the entire Flambeau Mining owned property as part of the development of the land management plan.

- Flambeau's partnership with the City of Ladysmith and Flambeau Riders, Inc. continued with improvement of the non-motorized multi-use recreational trails south of the reclaimed mine site. These trails, the Copper Park Equestrian Trails and Trailhead, were opened to the public in September 2005. The Flambeau Riders work during 2009 included installing two bridge crossings and hitching tie lines, widening/stabilizing trails, and additional work.

- The Reclaimed Flambeau Mine nature recreation trails were open to the public for the eighth year. In addition, through a cooperative effort, the Department's Ladysmith Service Center and Flambeau held wildlife workshops and nature hikes during February and June 2009 on the reclaimed mine site.

- During 2009 Flambeau partnered with Rusk County Tourism to sponsor a countywide geocache contest that included locations on Flambeau Mining property. Geocache sites can be searched out along the Reclaimed Flambeau Mine Nature Trails, Copper Park Equestrian Trails and Sisters Farm Trails. Details on geocache sites can be found at www.geocaching.com.

- The Ladysmith Community Safety & Wellness Coalition's Healthy Lifestyles for Rusk County held their fourth annual community walk on the Reclaimed Flambeau Mine Nature Trails in September 2009.

- During late September 2009, as part of the Leaf it to Rusk Fall Festival, Flambeau and the Flambeau Riders partnered to host trail rides and horse drawn wagon rides on the Copper Park Equestrian Trails. Over 100 community members turned out for the event.

- Flambeau continued its open door policy and upon request conducted tours of the mine site. Included were Ladysmith and Flambeau grade school children taking spring and fall hikes on the reclaimed mine site to learn about natural resources, as well as, UW-Eau Claire students.

- Flambeau partnered with the Rusk Area Arts Alliance to produce the 2010 Reclaimed Flambeau Mine calendar featuring local artists. The artists provided artwork of varying media depicting their interpretation of the natural beauty of the reclaimed mine site.

2.6 Water Management

2.6.1 Precipitation Runoff

Since 2000, the reclaimed mine site surface remains stabilized by vegetative growth and there is minimal evidence of erosion. Aerial photographs (color and infrared) taken during August 2006 document surface stabilization of the reclaimed mine site.

Flambeau River water quality samples were collected upstream and downstream from the reclaimed mine site during 2009. Comparing analytical results, there was no notable difference between downstream and upstream samples and this further confirms that the reclaimed site is stable and functioning as designed. A summary of Flambeau River water quality results is found in Appendix B and Appendix C.

2.6.2 River Water Withdrawal

On May 5, 1998 the Department approved Flambeau's application to withdraw water from the Flambeau River for use on site. The Department's approval requires submittal of monthly summaries for months during which a withdrawal occurs. When the irrigation pump system operates it is powered with a portable generator since electrical supply had been removed during 2001. During 2009 no water was withdrawn from the Flambeau River.

Wetland 1 is located immediately west of the reclaimed mine site. With the backfilling of the open pit being complete in 1997, the groundwater table has recovered significantly and Wetland 1 has been documented to be notably moister with groundwater seeps again flowing.

During 2009, Flambeau continued to monitor the staff gauge within Wetland 1 and maintain the ability to add mitigation water to the wetland. A regional drought during recent years has resulted in lowering of water levels of wetlands located in the region including Wetland 1. During 2009 inconsistent precipitation patterns did not allow a recovery from lowered ground water table, surface water levels and drought conditions. Since Wetland 1's condition resulted from natural causes and regional climatic conditions, mitigation water was not added during 2009 as was also the case between 2002 and 2008.

2.7 2009 Milestones

The following is a summary of significant milestones throughout the year:

Table 2-1. 2009 Milestones

	Month
Tenth Year Prescribed Burn Complete	April
Flambeau Partnered with the Community to Host Several Events on the Reclaimed Mine Site	Summer/Fall

2.8 Modifications & Deviations

Condition 2-4 in the Mine Permit requires an inventory of deviations and modifications to the Permit received subsequent to permit issuance. Activities during 2009 were consistent with permits, approved plans, and modifications received subsequent to permit issuance. During 2009 there were no modifications or deviations to the Permit.

2.9 Construction Reports

There were no activities requiring the preparation of construction reports during 2009.

2.10 Incident Log

Mine Permit Condition 2-6 requires a log of all incidents such as spills, pond overflow, embankment failure or leakage. This log is maintained on-site and is available for inspection. Spills are reported in accordance with Wis. Adm. Code ch. NR 706, CERCLA Reportable Quantities and SARA Section 302 Extremely Hazardous Substances Reportable Quantities.

During 2009 there were no reportable or recordable incidents that occurred on the reclaimed Flambeau Mine site.

2.11 Drill Holes

Mine Permit Condition 2-7 requires a summary of all exploration drilling activities conducted on the mine site during the previous year. No exploration drilling activities were conducted on the reclaimed mine site during 2009.

3 Reclamation Activities

As required by the Mine Permit Section 3, reports on progress of reclamation activities are prepared throughout the year. An annual report is required by Condition 3-26(d). The 2009 Annual Reclamation Report dated November 15, 2009 was submitted to the Department and is incorporated by reference. Other reclamation updates submitted on January 30, November 14, and November 18, 2009 are incorporated by reference.

Upon receipt of the COC on May 31, 2007 for the 149 acre Reclaimed Flambeau Mine Nature Area, Flambeau has met the requirements for reclamation within the nature area. Reporting of reclamation activities within the Copper Park Business & Recreation Area will continue until Flambeau receives the COC for this area as well.

During 2009 the Copper Park Business & Recreation Area (also known as the 32-acre Industrial Outlot) did not require any activities related to reclamation. The buildings are occupied by the Department's Ladysmith Service Center and Xcel Energy. The Copper Park Equestrian Trailhead continues to be used by horseback riders to park horse trailers and ride out to the Copper Park Equestrian Trails. The 32-acre area is resistant to erosion and the vegetation remains successfully established.

3.1 Other Activities

Improvements were made to the Copper Park Business & Recreation Area that were not related to reclamation and include:

- The Flambeau Riders planted tree saplings and seedlings within the trailhead area. They also installed horse tie lines next to the horse trailer parking spurs.

- The Flambeau Riders widened and rerouted sections of the Copper Park Equestrian Trails. Two small bridges were installed crossing unnamed drainages.

Also reported are post-COC management activities during 2009 within the Reclaimed Flambeau Mine Nature area that included removal of invasive species, mowing firebreaks and grass trails, removal of fencing from around the woodland exclosure and completion of the tenth year of the 10-year prescribed burn period.

4 Site Monitoring

Environmental monitoring at the reclaimed Flambeau Mine during 2009 included assessing the quality of groundwater and backfill pore water. Together with data obtained as part of the project monitoring plan, the Annual Report is also presenting the data obtained during 2009 monitoring completed in accordance with the May 31, 2007 Stipulation which includes fish and crayfish collection. All data obtained during environmental monitoring continues to show that Flambeau remains in compliance with all permit standards and the Flambeau River remains fully protected.

4.1 Groundwater Quality Sampling and Analysis

Quarterly groundwater monitoring was performed in accordance with descriptions provided in the Updated Monitoring Plan (July 1991), the Revised Mining Permit Quality Assurance/Quality Control Document (August 1991) and the Local Agreement. As a result of regulatory changes with respect to arsenic in groundwater, the Department requested that Flambeau consider analyzing groundwater samples for arsenic on a quarterly basis. In a letter dated August 5, 2004, Flambeau notified the Department that arsenic will be included in the quarterly monitoring program. Results of the 2009 monitoring were submitted to the Department Mine Reclamation Unit March 31, June 30, November 25, and January 27, 2010. Those reports are incorporated by reference.

Groundwater quality data from 2009 was generally consistent with recent past years' data with the exception of the fourth quarter iron and manganese results from MW1004P, an intervention boundary well. Upon review of the fourth quarter monitoring results it was recognized that the reported MW1004P iron result was higher than MW1004P's Alternate Concentration Limit (ACL) established for iron. Re-analysis of the same sample indicates a value well below the ACL. Manganese, while elevated, was not greater than the Mine Permit standard for Shallow Precambrian. MW1004P was resampled on December 30, 2009. The results from the December 30 resampling were notably decreased as compared to the initial MW1004P reported iron result and indicated high variation in the iron results within the short term time period. The initial results as well as the resample results were submitted to the Department Mine Reclamation Unit on January 20, 2010. This report is incorporated by reference. Flambeau intends to continue monitoring MW1004P on a quarterly basis with continued data review.

4.1.1 Backfilled Pit Water Quality Assessment

As part of the permitting effort for the Flambeau project, assessments were completed to determine if the reclaimed site would comply with the permitted groundwater quality standards at the compliance boundary and protect surface water quality in the Flambeau River. The original assessment relied on predicted post-mining hydrologic conditions to conclude that the Flambeau River would act as a hydrologic boundary for the pore water migrating from the pit backfill and that backfill pore water would not migrate to the downgradient compliance boundary. In addition, the original analysis showed that the flux of backfill pore water into the river would be so small relative to the flow in the river that surface water quality would not experience a measurable change.

In a document dated August 27, 1999, Flambeau provided to the Department an evaluation of water quality data with respect to compliance with groundwater quality permit standards and the protection of water quality in the Flambeau River. The August 1999 evaluation confirmed that Flambeau remains in full compliance with groundwater quality permit conditions, that in the future, groundwater quality will not be affected at the permitted compliance boundary, and that water quality in the Flambeau River will be protected.

In a document dated October 17, 2000, Flambeau submitted to the Department another assessment of the backfilled pit water quality that was prepared by SRK Consulting and Foth & Van Dyke. The memorandum evaluated data obtained since the pit was backfilled to assess the performance of the reclaimed mine site with respect to compliance with groundwater quality permit standards and the protection of water quality in the Flambeau River. The 2000 assessment was appended to the 2000 Annual Report.

This 2000 assessment reported that neutralization of the acidity in the backfill pore water was complete, concentrations of solutes in the backfill pore water are stable, the pit backfill was not affecting water quality in the Flambeau River, and the flux of pore water from the backfill will be negligible with respect to its potential impact on water quality in the Flambeau River.

SRK Consulting performed annual assessments reviewing results from the 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009 monitoring of pore water quality. The monitoring results and assessments confirm the findings presented in the year 2000 monitoring results assessment.

An annual assessment was again performed by SRK Consulting reviewing the results from the 2009 monitoring of pore water quality. The February 2010 memorandum, Flambeau Project – Backfilled Pit 2009 Monitoring Results is found in Appendix A. The results from the 2009 monitoring period generally are in agreement with the results from previous years and support the conclusions previously identified. In general the results indicate that the objectives of the lime amendment program had been met and that any acidity that had been present in the waste rock has been neutralized. The results further indicate that concentrations of major ions in the pore water are stable. For most of the backfill porewater, sulfate concentrations are controlled by gypsum dissolution/precipitation. However, isolated zones are developing where backfill gypsum equilibrium conditions do not exist (e.g. around well MW-1014C). The results provide ample evidence that the porewater in these areas is being displaced by inflowing groundwater. For example, concentrations of sulfate and other solutes are decreasing around Well MW-1014C without any evidence that precipitation reactions are causing the decrease.

Other observations can be summarized as follows:

- Redox conditions are approximately stable in some wells (e.g. wells MW-1013C and MW- 1014C) but continue to fluctuate in others (e.g. wells MW-1013B, MW-1014A and MW-1014B).

- Manganese concentrations in MW-1013B continue to fluctuate (within a narrow range), however, they are nearly constant or slightly decreasing in the remaining wells since 2007.
- While iron concentrations in well MW-1013C appear to be stabilizing, they are very low and stable in other wells, with the exception of MW-1013.
- Equilibrium modeling also suggest that iron oxy-hydroxides precipitates are converting to more stable phases, such as goethite or hematite, and therefore that soluble iron concentrations are unlikely to increase in the future for these wells.

4.1.2 Trend Analysis

Groundwater and Flambeau River surface water sample results collected for the 2009 monitoring program were added to the analytical monitoring historical database as in previous years. These results were statistically tested and graphically displayed to determine whether any significant increasing or decreasing trends are occurring in the groundwater or surface water chemistry. Groundwater quality results, trend graphs and statistical test results are included as Attachment 1 of Appendix B for the quarterly monitoring parameters and Attachment 2 of Appendix B for the annual monitoring parameters. Surface water quality results, trend graphs and statistical test results are included as Attachment 3 of Appendix B. Hydrographs are included as Attachment 4 of Appendix B. Note that the references to these Attachments need reference to the memo to which they are attached. Otherwise, the reader is going to be searching for Attachments to this annual report.

Intervention boundary wells included in the trend analyses are MW-1000PR, MW-1002, MW-1002G, MW-1004P, MW-1004S, MW-1005, MW-1005P, MW-1005S, and MW-1010P. The in-pit wells included in the trend analyses are MW-1013, MW-1013A, MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B and MW-1014C. Wells MW-1015A and MW-1015B (also included in the analyses) were constructed in January 2001 approximately 1000 ft. northwest of the backfilled pit and adjacent to the compliance boundary.

Many of the concentration trends noted from the statistical trend tests reflected small but consecutive changes in actual concentration. The more significant trends occurred mainly with the quarterly monitoring parameters in the intervention boundary wells MW-1000PR, MW-1004P, MW-1005 and MW1015B, and the in-pit wells MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B and MW-1014C. Of the trend results listed above, the following are the main conclusions:

<u>Intervention Boundary Wells</u>

- Several parameters in MW-1000PR (alkalinity, hardness, iron, manganese, sulfate, TDS and conductivity) exhibited an immediate increase in concentrations at the beginning of the post-mining period. Of these, hardness, manganese, sulfate, TDS and conductivity quickly began to again decrease, and long-term statistically decreasing trends continue to be indicated for these parameters. A statistically increasing long-term trend is indicated for alkalinity, however, the rate of increase slowed considerably following 2002 and no current statistically significant trend is indicated for the short-term results.

- A long-term statistically increasing trend is indicated for iron and manganese in MW-1004P with concentration increases beginning generally around 2002. This followed a longer period of decreased concentrations which initiated in 1993. No statistically significant short-term (5-year) trend is indicated since the results between January of 2005 and June of 2009 fluctuate randomly (at concentrations near or below pre-1993 levels). The latest two sampling events of October and December of 2009 show increased concentrations of these two parameters; however re-testing results indicate large variation within the results of even the same sampling event.

- Alkalinity continues a moderately decreasing trend in MW-1005.

- Statistically increasing trends are indicated for redox and conductivity in MW-1015B. Redox has generally increased from 2004 through 2009. Conductivity on the other hand increased in January of 2007, with levels remaining relatively consistent both prior to and following that date. A statistically decreasing short-term trend is indicated for manganese, with concentrations continuing to decrease after an increase observed during 2003.

In-Pit Wells

- A long-term statistically increasing trend is denoted for copper in MW-1013B, which had increasing concentrations from 2002 through 2008. No short-term trend is indicated, however, since copper decreased in concentration during 2009.

- Long-term and 5-year increasing trends are observed for iron in MW-1013C. The 2009 iron concentrations, however, appear to have stabilized.

- MW-1014 has had moderate decreasing trends of manganese and pH.

- Long-term decreasing trends were noted for iron and manganese in MW-1014A. Prior to 2002 iron was observed at concentrations over 1 mg/L, but has generally been at non-detectable levels or slightly over since 2004. From 2000 to 2009 manganese concentrations reduced by over a factor of 10, currently at less than 400 μg/l.

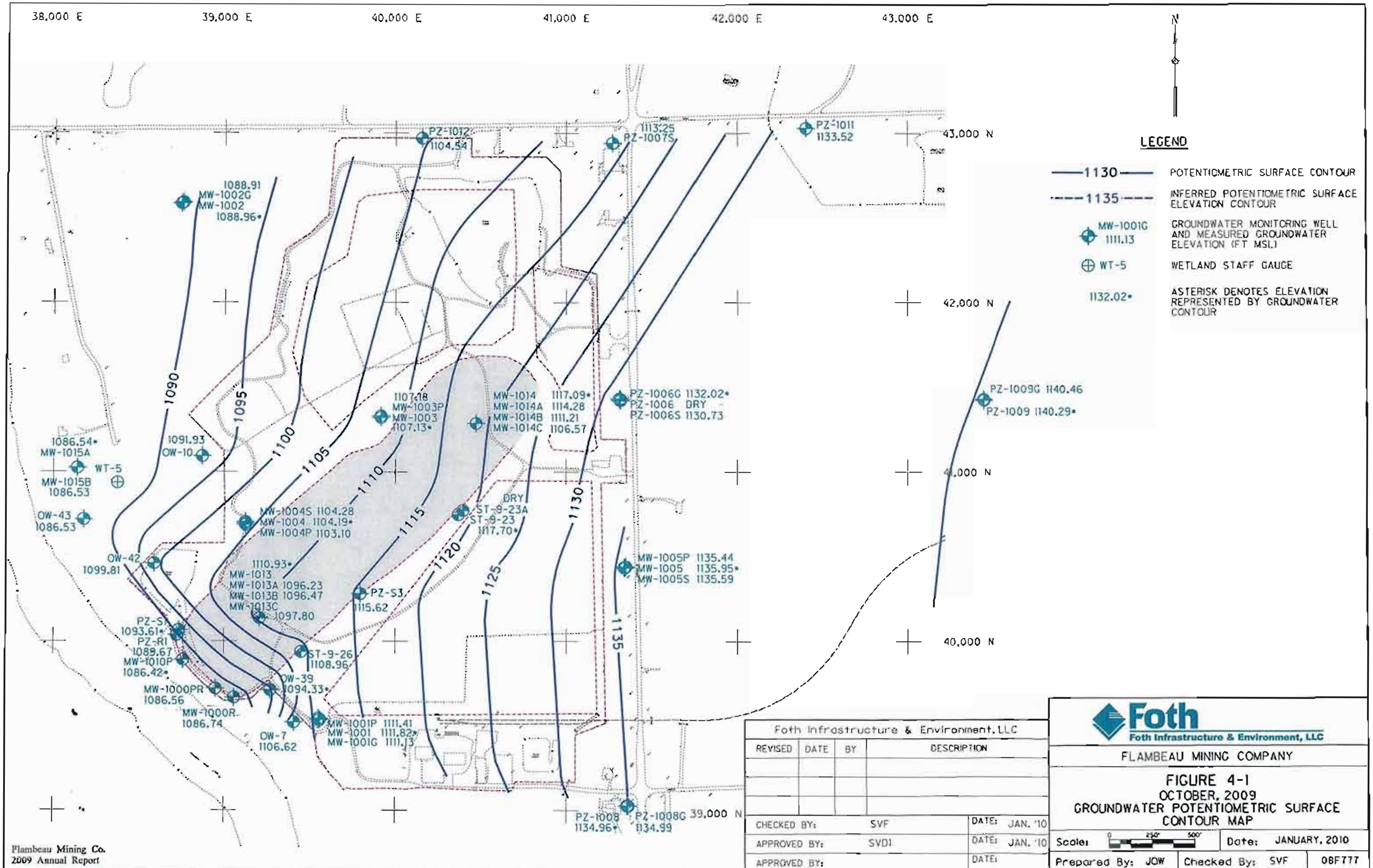
- Moderate long-term decreasing trends were observed for hardness, manganese and TDS and conductivity in MW-1014B. A decreasing trend was also noted for redox in the short-term results.

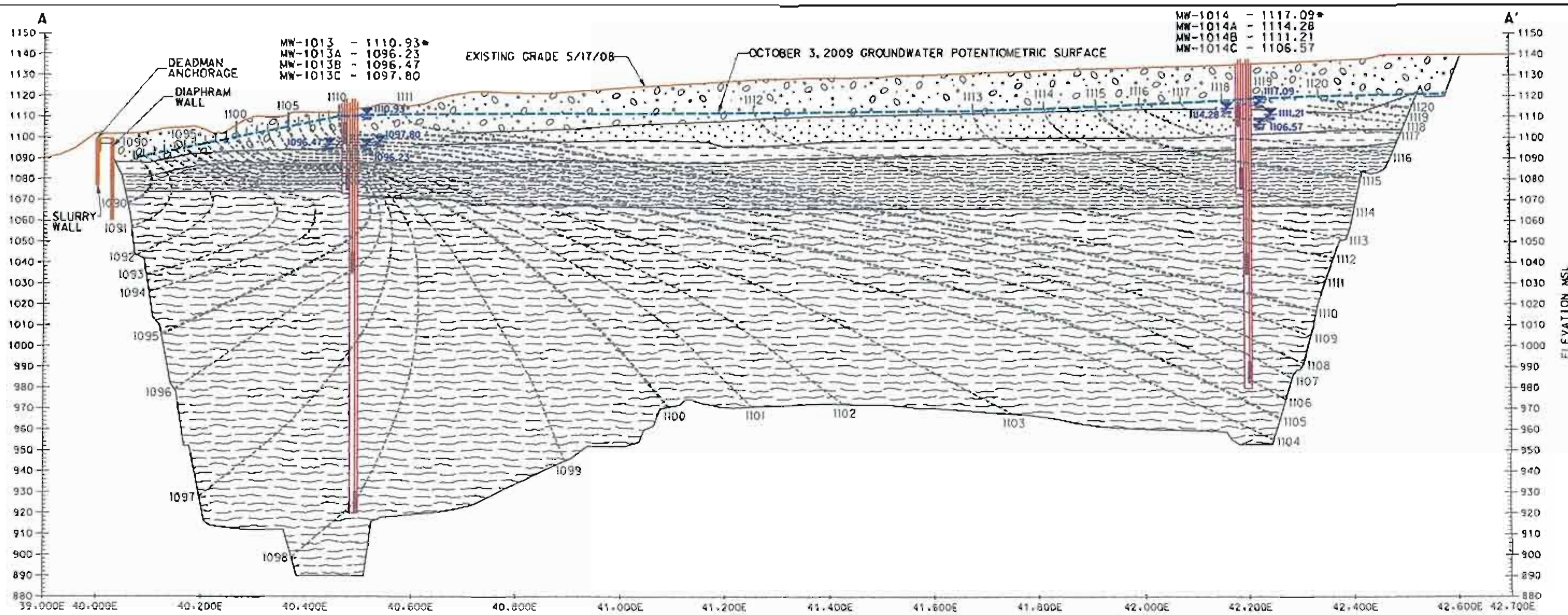
- Decreasing trends continue in MW-1014C for hardness, iron, manganese, sulfate, TDS and conductivity.

Few significant trends were noted for the annual groundwater parameters of barium, cadmium, calcium, chloride, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium, and zinc. Of the somewhat moderate trends, MW-1000PR has had a decreasing trend of calcium, magnesium and zinc, MW-1013A has had a decreasing trend for barium, and MW-1014B and MW-1014C have had decreasing trends of zinc.

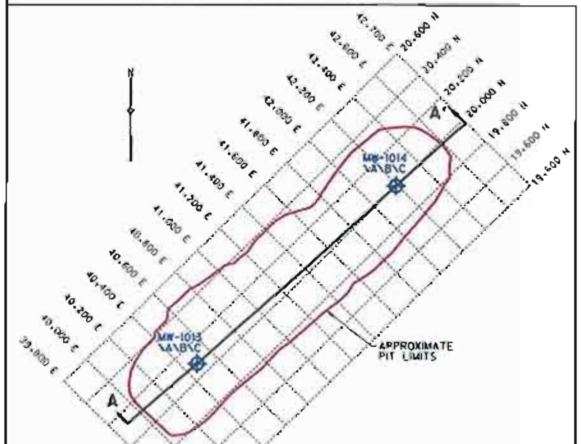
No statistically significant trends were observed in the surface water monitoring results, with the exception of a statistically increasing trend of sulfate for SW-2. This trend, however, reflects relatively smaller consecutive changes in actual concentration, currently only a little above the detection limit.

Figure 4-1 (Groundwater Potentiometric Surface Contour Map) shows the groundwater potentiometric surface using data obtained during October 2009. Figure 4-2 (Mine Pit Cross section A-A') shows a profile of hydraulic head along the cross section through the pit backfill. The Potentiometric Surface Contour Map shows that the horizontal direction of groundwater flow is consistent with historical data, i.e., westward towards the Flambeau River. The hydraulic cross section displayed in Figure 4-2 continues to show a predominant pattern of downward groundwater movement at the pit backfill wells with convergent flow toward the Flambeau River.

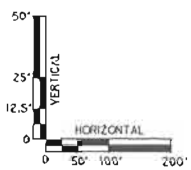

38,000 E
39,000 E
40,000 E
41,000 E
42,000 E
43,000 E
43,000 N
42,000 N
40,000 N
39,000 N
N
LEGEND
1130 POTENTIOMETRIC SURFACE CONTOUR
1135 INFERRED POTENTIOMETRIC SURFACE ELEVATION CONTOUR
MW-1001G 1111.13 GROUNDWATER MONITORING WELL AND MEASURED GROUNDWATER ELEVATION (FT MSL)
WT-5 WETLAND STAFF GAUGE
1132.02• ASTERISK DENOTES ELEVATION REPRESENTED BY GROUNDWATER CONTOUR
PZ-1012 1104.54
1113.25 PZ-1007S
PZ-1011 1133.52
1088.91 MW-1002G
MW-1002 1088.96•
1107.18 MW-1003P
MW-1003 1107.13•
MW-1014 1117.09•
MW-1014A 1114.28
MW-1014B 1111.21
MW-1014C 1106.57
PZ-1006G 1132.02•
PZ-1006 DRY
PZ-1006S 1130.73
PZ-1009G 1140.46
PZ-1009 1140.29•
1086.54• MW-1015A
WT-5
MW-1015B 1086.53
1091.93 OW-10
OW-43 1086.53
MW-1004S 1104.28
MW-1004 1104.19•
MW-1004P 1103.10
DRY ST-9-23A
ST-9-23 1117.70•
OW-42 1099.81
1110.93• MW-1013
MW-1013A 1096.23
MW-1013B 1096.47
MW-1013C 1097.80
PZ-S3 1115.62
MW-1005P 1135.44
MW-1005 1135.95•
MW-1005S 1135.59
PZ-S1 1093.61•
PZ-R1 1089.67
MW-1010P 1086.42•
ST-9-26 1108.96
OW-39 1094.33•
MW-1000PR 1086.56
MW-1000R 1086.74
OW-7 1106.62
MW-1001P 1111.41
MW-1001 1111.82•
MW-1001G 1111.13
PZ-1008 1134.96•
PZ-1008G 1134.99
1090
1095
1100
1105
1110
1115
1120
1125
1130
1135
Flambeau Mining Co.
2009 Annual Report
Foth Infrastructure & Environment, LLC
REVISED DATE BY DESCRIPTION
CHECKED BY: SVF DATE: JAN. '10
APPROVED BY: SVD1 DATE: JAN. '10
APPROVED BY: DATE:
Foth
Foth Infrastructure & Environment, LLC
FLAMBEAU MINING COMPANY
FIGURE 4-1
OCTOBER, 2009
GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR MAP
Scale: 0 250' 500'
Date: JANUARY, 2010
Prepared By: JOW
Checked By: SVF
08F777



MINE PIT COORDINATES
SECTION A - A'



CROSS SECTION LOCATION MAP
SCALE: 1" = 600'



SCALE

LEGEND

- TILL
- SANDSTONE
- SAPROLITE
- TYPE I MATERIAL
- TYPE II MATERIAL
- 1111.19* ASTERISK INDICATES LEVEL WAS USED TO DEVELOP OCTOBER 3, 2009 GROUNDWATER POTENTIOMETRIC SURFACE
- ---------- LINE OF EQUIPOTENTIAL

Foth Infrastructure & Environment, LLC			
REVISED	DATE	BY	DESCRIPTION
CHECKED BY:	SVF	DATE:	JAN. '10
APPROVED BY:	SVDI	DATE:	JAN. '10
APPROVED BY:		DATE:	

Foth
Foth Infrastructure & Environment, LLC

FLAMBEAU MINING COMPANY

FIGURE 4-2
MINE PIT CROSS SECTION A - A'
WITH IN-PIT GROUNDWATER
MONITORING WELLS

Scale: SEE BAR SCALE		Date: JANUARY, 2010	
Prepared By: JOW	Checked By: SVF		08F777

X:\08\E\2008\08F777\cad\09_mon_rpt\09_mon_rpt_Fig4-2.dgn
2/4/2010 blwl

4.2 Wetland Monitoring and Biofilter Management

During 2009 Flambeau monitored wetland surface flows and industrial outlot 0.9-acre biofilter stormwater.

In accordance with Section 3.1.4.3 of the Updated Monitoring Plan, Flambeau continues to monitor water level measurements at least three times per year (spring, summer, and autumn) in Wetland 1. Wetland surface flows will be monitored in Wetland 1 until the Department approves a future request from Flambeau to discontinue monitoring.

Stormwater monitoring associated with the 0.9-acre biofilter was completed in accordance with the Biofilter Management Plan submitted to the Department on January 12, 2007. As stated in the Biofilter Management Plan, stormwater monitoring will continue for at least three years.

4.2.1 Wetland Surface Flows

In May 2001, Flambeau submitted a Wetland Area Hydrographic Assessment prepared by Foth & Van Dyke evaluating the wetland water elevations and recommending cessation of monitoring of wetland surface water elevations, with the exception of Wetland 1, in accordance with the Updated Monitoring Plan. Based upon the Wetland Area Hydrographic Assessment, Flambeau requested the Department's approval of cessation of monitoring wetland surface water elevations for Wetlands 5C, 6C, 7 and 10A. During April 2002, the Department concurred with Flambeau's request to decrease the extent of wetland water level monitoring.

In accordance with Section 3.1.4.3 of the Updated Monitoring Plan, Flambeau monitors water level measurements at least three times per year (spring, summer, and autumn). Water levels in Wetland 1 (Staff Gauge WT-5) were measured three times during 2009, spring, summer and fall. Standing water was observed during the spring. During 2009 inconsistent precipitation patterns did not allow a recovery from lowered ground water tables and drought conditions. Since Wetland 1's condition resulted from natural causes and regional climatic conditions, mitigation water was not added during 2009 as was also the case between 2002 and 2008.

Measurements from Wetland 1 were provided to the Department on January 26, 2010; the report is incorporated by reference. Figure 4-1 shows the staff gauge location.

4.2.2 Biofilter Management

The Biofilter Management Plan requires monitoring stormwater during two events annually for at least three years. Parameters monitored are copper, zinc, conductivity, hardness and pH. During 2009 stormwater samples were collected during April and October. Results were submitted to the Department on July 3, 2009 and December 29, 2009, respectively. The 2009 average biofilter inflow copper concentration was 38.5 µg/l and the average outflow copper concentration was 16.5 µg/l. During 2009 the 0.9-acre biofilter continued to effectively reduce the concentrations of copper leaving the biofilter.

4.3 Surface Subsidence

Pursuant to Section 3.1.7 of the Updated Monitoring Plan (July 1991), with 2008 being the tenth year after reclamation activities were performed in the area of the pit, a review of the surface topography in the area of the pit was performed in 2008.

The results of the 2008 subsidence analysis indicated a general increase of 0.6 feet these results were consistent with the results of the review of the surface topography in the area of the pit completed in 2001 when the general subsidence across the site was less than a half a foot which is within the accuracy of the mapping technique and the largest settlement observed in isolated areas by mapping was 1.5 feet.

Subsequent subsidence surveys are to occur in the twentieth (2018) and fortieth (2038) year after reclamation activities in the area of the pit are completed.

<u>Aerial Photography (Color and Infrared)</u>

In accordance with Section 3.1.6 of the Updated Monitoring Plan (July 1991), aerial and color infrared photography was completed in the late summer for four consecutive years following completion of closure and will continue every five years throughout the long-term care and maintenance period to monitor success of revegetation. Year 2005 was the fourth year of the four consecutive years for aerial and color infrared photography since the submittal of the NOC in 2001. Aerial and color infrared photography was completed on August 3, 2006 for a fifth additional year and results were presented in the 2006 Annual Reclamation Report.

In the November 7, 2002 submittal of the 2002 Aerial and Color Infrared Photography, Flambeau requested a reduction of the area of coverage for the photography based upon the substantial rebound of groundwater around the reclaimed mine site. Flambeau proposed that the photography cover the reclaimed mine site and 500 feet beyond the site's perimeter including the area of Wetland 1. In a letter dated July 9, 2003, the Department authorized Flambeau to reduce the breadth of the aerial and color infrared photography as requested.

With the long-term care phase of the Flambeau project beginning with the May 2007 COC, aerial and color infrared photography will be conducted every five years – occurring during 2012, 2017, 2022, 2027, 2032, 2037, 2042 and 2047.

4.4 Other Activities

Other site monitoring was performed during 2009 including monitoring set forth as part of the Stipulation agreement of May 31, 2007.

The Stipulation Monitoring Work Plan and associated Quality Assurance Project Plan were submitted on December 7, 2007. Stipulation monitoring during 2009 included surface water quality and biota sampling in the Flambeau River. The data from these monitoring events was submitted to the agreement parties on February 2, 2010. This submittal is included in Appendix C of this report.

REFERENCES

2000 Annual Report	January 2001
2005 Annual Report	January 2006
2006 Annual Report	January 2007
2007 Annual Report	January 2008
2008 Annual Report	January 2009
2001 Annual Reclamation Report	November 2001
2004 Annual Reclamation Report	November 2004
2005 Annual Reclamation Report	November 2005
2006 Annual Reclamation Report	November 2006
2007 Annual Reclamation Report	November 2007
2008 Annual Reclamation Report	November 2008
2009 Annual Reclamation Report	November 2009
2008 Monitoring Results and Copper Park Lane Work Plan	October 2008
Biofilter Management Plan	January 2007
Construction Documentation Report – Flambeau Industrial Outlot	September 2006
COC Stipulation Monitoring Work Plan	December 2007
Local Agreement	August 1988
Mine Permit Application	December 1989
Mining Permit	January 1991
Revised Mining Permit Quality Assurance/Quality Control Plan	August 1991
Stipulation and Order	May 2007
Stipulation Monitoring Work Plan QAPP for the Flambeau Mine	December 2007
Updated Monitoring Plan	July 1991

SUBMITTALS

DOCUMENT	DATE	SUBMITTEE
Section 2.0 Operating Activities		
2008 Annual Report	January 2009	Phil Fauble (1)
Stormwater Runoff, Copper Park Lane	July 2009	Phil Fauble (1)
Section 3.0 Reclamation Activities		
List of Anticipated 2009 Reclamation Activities	January 2009	Phil Fauble (1)
Prescribed Burning on Reclaimed Flambeau Mine	April 2009	Tom Portle (1)
Mid-Summer Progress Report, 2009	November 2009	Phil Fauble (1)
2009 Annual Reclamation Report	November 2009	Phil Fauble (1)
Addendum to 2009 Annual Reclamation Report	November 2009	Phil Fauble (1)

SUBMITTALS (CONT'D)

DOCUMENT	DATE	SUBMITTEE
Section 4.0 Site Monitoring		
Environmental Monitoring (First Quarter 2009), Groundwater	March 2009	Phil Fauble (1)
Environmental Monitoring (Second Quarter 2009), Groundwater	June 2009	Phil Fauble (1)
Surface Water Monitoring – Stream C & 0.9 acre Biofilter	July 2009	Phil Fauble (1)
Spring 2009 Surface Water Analytical Report	July 2009	Stipulation Parties (2)
Environmental Monitoring (Third Quarter 2009), Groundwater	November 2009	Phil Fauble (1)
Surface Water Monitoring – Stream C & 0.9 acre Biofilter	December 2009	Phil Fauble (1)
Biota & Fall 2009 Surface Water Analytical Reports	December 2009	Stipulation Parties (2)
Environmental Monitoring (Third Quarter 2009), Groundwater – Resubmittal	January 2010	Phil Fauble (1)
Environmental Monitoring (Fourth Quarter 2009), Groundwater	January 2010	Phil Fauble (1)
Report on MW1004P Iron Results	January 2010	Phil Fauble (1)
2009 Wetland 1 Water Level Elevations	January 2010	Phil Fauble (1)

1 Wisconsin Department of Natural Resources
Division of Air & Waste
Waste & Materials Management

2 Laura Furtman, Al Gedicks, Lac Courte Oreilles Band of Lake Superior Chippewa Indians, Northern Thunder, Rusk County Citizens Actions Group, Sierra Club, Wisconsin Department of Natural Resources, Wisconsin Resources Protection Council

Appendix A

Backfilled Pit Water Quality Assessment

SRK Consulting
Engineers and Scientists

Steffen, Robertson and Kirsten (Canada) Inc.
Suite 2200 – 1066 West Hastings Street
Vancouver, B.C. V6E 3X2
Canada

vancouver@srk.com
www.srk.com

Tel: 604.681.4196
Fax: 604.687.5532

Memorandum

To:	Jim Hutchison Foth, Green Bay	**Date:**	February 3, 2010
cc:		**From:**	John Chapman Daryl Hockley
Subject:	FLAMBEAU PROJECT Backfilled Pit 2009 Monitoring Results	**Project #:**	SRKNAC031

1 Introduction

1.1 Terms of Reference

The porewater chemistry of the limestone amended backfill placed in the mined out Flambeau pit has been monitored since February 1999. SRK has been reviewing the results annually to assess geochemical interactions between the groundwater and the backfill.

This memorandum provides the outcomes from a review of monitoring results for 2009. The review format established for previous reviews has been retained.

1.2 Summary of Previous Results

As reported in the SRK Memorandum dated January 28, 2009, the water quality monitoring results through the end of 2008 in general were consistent with previous years and indicated that:

- Complete neutralization of acidity has occurred.
- Concentrations of major ions in the pore water are stable.
- While for most of the backfill porewater the concentration of sulfate is controlled gypsum dissolution/precipitation, isolated zones exist where the backfill gypsum equilibrium conditions do not exist (e.g. around well MW-1014C).
- Concentrations of sulfate and other solutes are decreasing around Well MW-1014C due groundwater inflow leading to displacement of the porewater.
- Redox conditions are approximately stable in some wells (e.g. wells MW-1013C and MW-1014C) but continue to fluctuate in others (e.g. wells MW-1013B, MW-1014A and MW-1014B).
- While manganese concentrations in MW-1013B continue to fluctuate (within a narrow range), they are nearly constant or slightly decreasing in the remaining wells since 2007.
- While iron concentrations in well MW-1013C appear to be stabilizing, they are very low and stable in other wells, with the exception of MW-1013 which shows concentration fluctuations similar to that observed for up-gradient well MW-1005. Equilibrium modeling also suggest that iron oxy-hydroxides precipitates are converting to more stable phases, such as goethite or hematite, and therefore that soluble iron concentrations are unlikely to increase in the future for these wells

2 Summary of Data Collected In 2009

Well locations, and sampling procedures and analytical methods were previously presented in the SRK memorandum dated January 15, 2001 and are not repeated herein. All the monitoring wells located in the backfill (MW-1013, MW-1013A MW-1013B, MW-1013C; MW-1014, MW-1014A, MW-1014B, and MW-1014C) were sampled during 2009, as was well MW-1005P located up-gradient of the backfill (which is used as a reference well).

The routine monitoring program for the backfill is shown in Table 1; the annual program was completed on June 22, 2009 and the quarterly sampling events occurred on January 31, April 12 and October 4, 2009 respectively. No variances from the routine monitoring program occurred with the exception that arsenic was included in the quarterly parameter suite as in previous years.

The complete data sets for all the wells located in the backfill, as well as the up-gradient well, are provided in Attachment 1.

3 Results and Discussion

3.1 Alkalinity

The time series plots provided in Figures 1 and 2 indicate that the alkalinity results for 2009 were within the concentration ranges observed for each of the wells in the preceding years. In particular the alkalinity for MW-1013B has rebounded from the apparently anomalous result for October 2008 to remain within the range for previous years.

Figure 1 shows that alkalinity concentrations in MW-1013 during 2009 remained relatively elevated above background levels (when compared to well MW-1005P). The pH in this well (at about 6.1 during 2009) is below the value measured in the background well MW-1005P. As noted in the 2008 assessment the well is screened within till (which would not have been amended with limestone) and is the shallowest (lowest head) of the series. When considered in combination, it would suggest that gaseous (CO_2) flux from below, and to a lesser degree porewater flux, may be the cause of these observations.

The alkalinity concentrations in MW-1013A, located within Type I waste rock backfill, continue to oscillate similar to the other wells at this location.

As shown in Figure 2, the alkalinity in well MW-1014 (screened within sandstone backfill) remains slightly below the background level, which is consistent with expectation for sandstone backfill as it has little to no carbonate mineralization. As noted for previous years, even though the results remain within the range of results for previous years, the alkalinity concentrations for Well MW-1014B continue to be more variable than in the remaining wells.

Generally, as discussed in previous assessments, sampling, sample handling and sample storage prior to analysis may contribute to the observed variability in alkalinity results for samples with elevated dissolved carbon dioxide contents.

3.2 Estimation of Carbon Dioxide Partial Pressure

As discussed in previous assessments, the entrapment of carbon dioxide generated from limestone reacting with the acidity contained in the backfill led to lower than predicted pH conditions and higher than expected alkalinity results. The entrapment is believed to have been caused by the rapid inundation of the backfill together with low gaseous permeability of the saturated and close to saturated backfill and soils. The carbon dioxide partial pressure was measured and found to support this conclusion.

As discussed previously (see SRK memorandum, dated, January 2002), the dissolved carbon dioxide concentrations in the backfill pore water and the corresponding carbon dioxide concentrations in a gas in equilibrium with the dissolved carbon dioxide can be estimated from the alkalinity measurements.

The estimated carbon dioxide results for the June 2009 samples together with the results from previous years are summarised in Table 2. Corresponding time series plots for carbon dioxide concentrations are shown in Figures 3 and 4 for the wells located in the backfill the results for the up-gradient well, WM-1005P, for comparison.

As noted in previous assessments, care should be taken when evaluating these results because the carbon dioxide concentrations are back-calculated from the alkalinity results. Because the samples are taken at depth below the water table (i.e. at a pressure above atmospheric conditions) and brought to surface, the change in pressure can result in the loss of some carbon dioxide to the atmosphere before the sample is analyzed for pH and alkalinity. The loss of carbon dioxide affects the back calculated estimate of the *in situ* carbon dioxide concentration.

Whereas the estimates for MW-1013 and MW-1013B have decreased, the results for MW-1013C and MW-1013A have increased. The reason for the reversal in trend for the increasing wells is not known. While the results for all of the MW-1014 wells show an increase from the 2008 estimates, the changes are not as marked as those observed for the MW-1013 series, and the estimated concentrations remained close to historic results.

3.3 Major Ions

Ion balance and total dissolved solids calculations were completed to check the internal consistency for each of the June 2009 data sets. Total alkalinity was entered as $CaCO_3$ eq. and the pH was fixed at the measured (laboratory) value. The calculations showed that the ion balances of only five of the nine samples were within 4.9 %. Samples that exhibited larger ion imbalances (ranging between 8.9 % and 8.8%; all cation deficient) were wells MW-1013B, MW-1014, MW-1014A and MW-1014C. Although the ionic imbalances are larger than observed historically, by convention, they are considered within an acceptable range (< 10%).

Consistent with historic results, the sample from MW-1005P up-gradient of the backfill classifies as Ca-Mg-CO_3 water, as does the sample from MW-1013. The samples from MW-1013A and MW-1014 classify as Ca-Mg-CO_3-SO_4 water. However, the sample from MW-1014C (as in 2007 and 2008) classifies as Ca-Mg-CO_3-SO_4 whereas in previous years it had been classified as Ca-Mg-SO_4-CO_3 water. This reclassification is indicative of groundwater inflow into this area of the backfill. The remainder of the backfill pore water samples continue to classify as Ca-Mg-SO_4-CO_3 waters.

Following the previously established protocol, the geochemical equilibrium model PHREEQ-C was used to compare the solution compositions from the June 2009 samples and to estimate solubility limits for expected mineral phases. All runs were completed using the laboratory measured alkalinity and pH data and the field measured temperature and redox potential conditions. Complete results are included in Attachment 2.

The calculated saturation indices of key secondary mineral phases are provided in Table 3. (A saturation index greater than zero indicates super-saturation; below zero indicates under-saturation, and an index near zero indicates the water chemistry is at or near equilibrium with the mineral phase.) The saturation index does not indicate the abundance of the mineral nor does it account for any kinetic constraints that may prevent the mineral from forming or dissolving. Time series plots of the saturation indices presented in Table 3 are shown in Figures 5 through 13.

Table 3 indicates that the June 2009 saturation indices for calcite/aragonite in all the backfill porewater samples continue to be reasonably consistent with that for the background well MW-1005P. The calcite saturation index for MW-1013C has again decreased to be fractionally below zero. The calcite saturation index for MW-1013 has since 2006 remained below equilibrium, which supports a conclusion that the elevated dissolved carbon dioxide estimate is likely the result of gaseous flux and to a lesser degree porewater flux from the underlying backfill rather than due to incidental limestone amendment of the till.

The saturation indices continue to indicate that the samples from MW-1013B, MW-1013C, MW-1014A and MW-1014B are in equilibrium with gypsum, whereas the remainder of the wells are below saturation (i.e. gypsum precipitation had not occurred during the neutralization process). As noted for 2007, the saturation index for MW-1014C continuous to show a decreasing trend over time; i.e. sulphate is being flushed away. This is clear evidence that the porewater is being displaced by background groundwater flow. (See Figure 20 for the observed change in the sulfate concentration over time – note that the result for April 2007 is considered erroneous and should be disregarded).

As noted in previous assessments, conditions in equilibrium with calcite (or aragonite) and gypsum indicate that acidity that had previously been present in the backfill has been neutralized. Near-equilibrium conditions with calcite are also consistent with the quantity of limestone that was used to amend the backfill.

3.4 Redox Potential, Iron and Manganese

Measured redox potentials as a function of time are illustrated in Figures 14 and 15 for well nests MW-1013 and MW-1014 respectively, together with the results for the up-gradient well for comparison.

The redox potential in the up-gradient well (MW-1005P) remains stabilized at about 0 mV; the variability is considered to be within the expected analytical variance for field measurement of redox potential.

Similarly, the redox potentials in wells MW-1013C and MW-1014C continue to vary within the region of 50 mV and appear to have stabilized.

While the redox potential in well MW-1013B appeared to have increased during 2006 from the initial steady range of about 200 to about 300 mV, the results for 2007 to 2009 confirm that it has returned to previous levels. The limited results to date for MW-1013 and MW-1013A suggest that the redox values are variable ranging from about 50 mV to 100 mV, which is not dissimilar to that observed for MW-1013C.

Wells MW-1014A and MW-1014B showed increasing redox values during 2005. Since then, however, the redox values have decreased to levels similar to those observed prior to the increase. The results to date for MW-1014 continue to replicate the results for wells MW-1014A and MW-1014B.

Time series plots of dissolved manganese concentrations are shown in Figures 16 and 17. The results are also presented in Table 4 as average annual concentrations.

The manganese results for Well MW-1013B continue to vary with time, but within a narrower range when compared to the period from 2005 to 2008, as shown in Figure 16. Consequently, the average annual concentration for 2009 has decreased well below that observed for 2007 and 2008, as shown in Table 4. The manganese concentration in well MW-1013C appears to have stabilized since about 2005, with no significant changes in the annual average concentration between 2005 and 2008. In the remaining wells located within the backfill manganese concentrations continue to decrease or remain stable.

The manganese concentration in the background well MW-1005P continues to fluctuate between about 40 and 80 µg/L, but remains within the range of historic values.

Calculated saturation indices (SI) for rhodochrosite ($MnCO_3$) are presented in Table 3, and time series plots for the saturation indices are illustrated in Figures 5 to 13. The results indicate that wells MW-1014 and MW-1014A (and the up gradient well MW-1005P) are below saturation with respect to this mineral phase; the remainder of the wells remain in equilibrium or are supersaturated with respect to rhodochrosite (i.e. positive or near zero SI). In wells where the manganese concentration in the pore water is decreasing, slow rhodochrosite formation remains a possible explanation. However as noted in previous assessments, the decreasing manganese concentrations in well MW-1014C is occurring at the same rate as sulfate is decreasing and is consistent with pore water displacement by groundwater flow rather than rhodochrosite formation (see Figure 17).

Dissolved iron concentrations are shown in Figures 18 and 19 for well nests MW-1013 and MW-1014, respectively, and annual average concentrations are summarized in Table 4.

Iron concentrations in the shallower wells in the backfill with the exception of MW-1013, i.e. wells MW-1013A, and MW-1013B, and MW-1014, MW-1014A and MW-1014B continue to be at or below the analytical method detection limit. Although the method detection limit for these samples were higher than that of the background well, the concentrations are likely within the range of concentrations detected in the up-gradient well, well MW-1005P. It is noted that these wells all have sample elevations at or above the up-gradient sample elevation, and, comparatively, their redox potentials are elevated. (Note that saturation indices were calculated assuming concentrations at the detection limit where they were below detection.)

The calculated siderite ($FeCO_3$) saturation indices indicate that only wells MW-1013, MW-1013A, MW-1013B and MW-1014A were at equilibrium or supersaturated with respect to this mineral phase based on the 2009 results.

While the iron concentrations in Well MW-1013 continue to show significant variation over time, the dissolved iron concentration in Well MW-1013C appears to be stabilising as shown in Figure 18. The average annual concentration for 2009 at 10.5 mg/L was however slightly higher than the 9.5 mg/L recorded in 2008 and the 9.9 mg/L recorded in 2007.

In contrast the iron concentration in well MW-1014C continues to decrease. The annual average concentration has decreased from about 6.8 mg/L in 2005 to about 4.8 mg/L in 2009. Figure 21 suggests that the rate of decrease in the iron concentration continues to track with that of sulphate. Since the saturation indices for iron phases have decreased to below zero, it appears that iron precipitation no longer is a factor in the decreasing iron concentration. Rather, porewater displacement is now likely the only mechanism contributing to the decreasing concentration.

4 Summary

The results from the 2009 monitoring period generally are in agreement with the results from previous years and support the conclusions previously identified. In general the results indicate that the objectives of the lime amendment program had been met and that any acidity that had been present in the waste rock has been neutralised. The results further indicate that concentrations of major ions in the pore water are stable.

For most of the backfill porewater, sulfate concentrations are controlled by gypsum dissolution/precipitation. However, isolated zones are developing where backfill gypsum equilibrium conditions do not exist (e.g. around well MW-1014C). The results provide ample evidence that the porewater in these areas is being displaced by inflowing groundwater. For example, concentrations of sulfate and other solutes are decreasing around Well MW-1014C without any evidence that precipitation reactions are causing the decrease.

Other observations can be summarised as follows:

- Redox conditions are approximately stable in some wells (e.g. wells MW-1013C and MW-1014C) but continue to fluctuate in others (e.g. wells MW-1013B, MW-1014A and MW-1014B).
- Manganese concentrations in MW-1013B continue to fluctuate (within a narrow range), however, they are nearly constant or slightly decreasing in the remaining wells since 2007.
- While iron concentrations in well MW-1013C appear to be stabilizing, they are very low and stable in other wells, with the exception of MW-1013.
- Equilibrium modeling also suggest that iron oxy-hydroxides precipitates are converting to more stable phases, such as goethite or hematite, and therefore that soluble iron concentrations are unlikely to increase in the future for these wells

5 Conclusions and Recommendations

As concluded from the evaluation of the 2008 monitoring results, the 2009 results for a number of the deeper wells within the backfill indicate stable conditions have been reached at depth in the backfill. Results for MW-1014C clearly indicate that the porewater is being flushed with groundwater inflow leading to decreasing sulfate and other solute concentrations over time. Consequently, solute loadings from the bakfill are therefore expected to start diminishing over time.

Manganese concentrations in all wells appear to have either stabilised or are decreasing over the last three years. The only exception is the variable concentration in MW-1013B, even though average annual concentrations suggest stable conditions.

While the more shallow wells, wells MW-1013, MW-1013A and MW-1014 have only recently recovered sufficiently to allow sampling and monitoring, only MW-1013 continues to show significant variability with respect to alkalinity concentrations.

SRK therefore recommends that monitoring of groundwater within and around the backfilled pit should be continued. To reiterate our conclusion from 2008, based on the current data and trends, an annual monitoring event should be sufficient to appropriately assess groundwater conditions within the backfill. The annual event should include all the parameters that are part of the annual program. While it is probable that some variability in the annual data will be observed, it is considered that a sufficient data base has been accumulated that will enable comparison to historic ranges to verify trends in the results. An annual review of the data should be included in the project's annual report to determine if the conclusions reached in this memorandum remain valid.

TABLE 1
Summary of Routine Pore Water Monitoring Parameters

Parameter	Units	Quarterly	Annual
Alk	(mg/l)	x	x
As	(µg/l)		x
Ba	(µg/l)		x
Cd	(µg/l)		x
Ca	(mg/l)		x
Cl	(mg/l)		x
Cr	(µg/l)		x
Cu	(µg/l)	x	x
Hardness	(mg/l)	x	x
Fe	(mg/l)	x	x
Pb	(µg/l)		x
Mg	(mg/l)		x
Mn	(µg/l)	x	x
CO_2	(µg/l)		
Hg	(µg/l)		x
Field pH	(s.u.)	x	x
Lab pH	(s.u.)	x	x
K	(mg/l)		x
Se	(µg/l)		x
Ag	(µg/l)		x
Na	(mg/l)		x
TDS	(mg/l)	x	x
Sulfate	(mg/l)	x	x
Zn	(µg/l)		x
Color	(After Filter)	x	x
Field Cond	(µmho)	x	x
Redox Potential	(mV)	x	x
Odor		x	x
Turbidity	(Purging)	x	x
Ground Water	El (Feet)	x	x

Notes: from Table 2 of the October 12, 2000 Foth & Van Dyke memorandum

Prepared by: JTC
Checked by: CL

TABLE 2
Estimates of Carbon Dioxide Gas in Equilibrium with Annual Samples

Well	Sample Date	H_2CO_3* (mmol/L)	K_H[1] (mol/atm)	pCO_2 (atm)	Head (feet)	P[2] (atm)	Mole Fraction CO_2 in gas
MW1013	Jun-09	5.4	-16.9	0.084	15	1.43	5.9%
MW1013A	Jun-09	14.3	-16.9	0.22	22	1.65	13%
MW1013B	Jun-09	8.2	-16.9	0.13	57	2.68	4.7%
MW1013C	Jun-09	19.6	-16.9	0.30	173	6.11	5.0%
MW1014	Jun-09	3.8	-16.9	0.06	12	1.35	4.4%
MW1014A	Jun-09	14.1	-16.9	0.22	58	2.70	8.1%
MW1014B	Jun-09	16.2	-16.9	0.25	71	3.11	8.1%
MW1014C	Jun-09	8.5	-16.9	0.13	120	4.53	2.9%
MW1005P	Jun-09	1.1	-16.9	0.017	81	3.40	0.5%
MW-1013	Jun-08	13.0	-16.9	0.20	17	1.49	13%
MW-1013A	Jun-08	2.9	-16.9	0.045	23	1.69	2.7%
MW-1013B	Jun-08	14.2	-16.9	0.22	58	2.72	8.1%
MW-1013C	Jun-08	4.4	-16.9	0.070	175	6.16	1.1%
MW-1014	Jun-08	3.3	-16.9	0.051	13	1.39	3.7%
MW-1014A	Jun-08	5.7	-16.9	0.088	34	2.00	4.4%
MW-1014B	Jun-08	8.4	-16.9	0.13	73	3.17	4.1%
MW-1014C	Jun-08	2.7	-16.9	0.043	122	4.60	0.9%
MW-1005P	Jun-08	0.7	-16.9	0.010	84	3.48	0.3%
MW-1013	Jun-07	15.0	-16.9	0.23	15	1.43	16%
MW-1013A	Jun-07	3.0	-16.9	0.047	22	1.64	2.8%
MW-1013B	Jun-07	11.9	-16.9	0.18	56	2.66	6.9%
MW-1013C	Jun-07	7.1	-16.9	0.11	173	6.09	1.8%
MW-1014	Jun-07	2.2	-16.9	0.034	11	1.32	2.5%
MW-1014A	Jun-07	4.2	-16.9	0.065	32	1.96	3.3%
MW-1014B	Jun-07	7.5	-16.9	0.12	71	3.08	3.8%
MW-1014C	Jun-07	3.7	-16.9	0.057	119	4.52	1.3%
MW-1005P	Jun-07	0.7	-16.9	0.011	81	3.39	0.3%
MW-1013	Jul-06	12.9	-16.9	0.20	15	1.44	13.8%
MW-1013A	Jul-06	3.7	-16.9	0.057	22	1.65	3.5%
MW-1013B	Jul-06	15.0	-16.9	0.23	57	2.67	8.7%
MW-1013C	Jul-06	8.9	-16.9	0.14	174	6.14	2.2%
MW-1014	Jul-06	2.5	-16.9	0.04	13	1.37	2.8%
MW-1014A	Jul-06	5.7	-16.9	0.088	34	1.99	4.4%
MW-1014B	Jul-06	11.2	-16.9	0.17	72	3.13	5.5%
MW-1014C	Jul-06	4.6	-16.9	0.072	120	4.55	1.6%
MW-1005P	Jul-06	1.1	-16.9	0.016	82	3.41	0.5%
MW-1013B	Jul-05	20.3	-16.9	0.31	57	2.69	11.7%
MW-1013C	Jul-05	9.1	-16.9	0.14	174	6.13	2.3%
MW-1014A	Jul-05	7.3	-16.9	0.11	34	2.00	5.6%
MW-1014B	Jul-05	16.9	-16.9	0.26	72	3.14	8.3%
MW-1014C	Jul-05	6.0	-16.9	0.092	121	4.56	2.0%
MW-1005P	Jul-05	0.9	-16.9	0.014	83	3.46	0.4%
MW-1013B	Jul-04	11.8	-16.9	0.16	58	2.62	6.1%
MW-1013C	Jul-04	8.9	-16.9	0.14	175	6.17	2.2%
MW-1014A	Jul-04	4.7	-16.9	0.073	34	2.02	3.6%
MW-1014B	Jul-04	15.0	-16.9	0.23	74	3.18	7.3%
MW-1014C	Jul-04	6.1	-16.9	0.094	122	4.61	2.0%
MW-1005P	Jul-04	0.7	-16.9	0.010	84	3.49	0.3%
MW-1013B	Jul-03	9.3	-16.9	0.16	58	2.62	6.1%
MW-1013C	Jul-03	5.9	-16.9	0.14	175	6.01	2.3%
MW-1014A	Jul-03	4.1	-16.9	0.073	29	1.85	4.0%
MW-1014B	Jul-03	10.7	-16.9	0.23	73	3.06	7.6%
MW-1014C	Jul-03	5.0	-16.9	0.094	122	4.63	2.0%
MW-1005P	Jul-03	0.5	-16.9	0.010	86	3.36	0.3%
MW-1013B	Jul-02	6.5	-16.9	0.11	58	2.62	4.0%
MW-1013C	Jul-02	4.9	-16.9	0.079	175	6.01	1.3%
MW-1014A	Jul-02	3.5	-16.9	0.056	29	1.85	3.0%
MW-1014B	Jul-02	6.4	-16.9	0.10	73	3.06	3.4%
MW-1014C	Jul-02	3.3	-16.9	0.053	122	4.63	1.1%
MW-1005P	Jul-02	0.6	-16.9	0.01	86	3.36	0.3%
MW-1013B	Apr-01	9.3	-16.9	0.14	55	2.62	5.5%
MW-1013C	Apr-01	5.9	-16.9	0.092	170	6.01	1.5%
MW-1014A	Apr-01	4.1	-16.9	0.063	29	1.85	3.4%
MW-1014B	Apr-01	10.7	-16.9	0.17	70	3.06	5.4%
MW-1014C	Apr-01	5	-16.9	0.077	123	4.63	1.7%
MW-1005P	Apr-01	0.5	-16.9	0.008	80	3.36	0.3%

TABLE 2 (continued)
Estimates of Carbon Dioxide Gas in Equilibrium with Annual Samples

Well	Sample Date	H_2CO_3* (mmol/L)	K_H[1] (mol/atm)	pCO_2 (atm)	Head (feet)	P[2] (atm)	Mole Fraction CO_2 in gas
MW-1013B	Apr-00	7.7	-17.8	0.14	55	2.62	5.2%
MW-1013C	Apr-00	5.6	-17.8	0.10	171	6.04	1.7%
MW-1014A	Apr-00	2.9	-19.2	0.055	28	1.83	3.0%
MW-1014B	Apr-00	10	-20.5	0.21	68	3.01	7.0%
MW-1014C	Apr-00	3.6	-19.7	0.071	116	4.42	1.6%
MW-1005P	Apr-00	0.8	-16.2	0.013	83	3.45	0.4%

Notes $H_2CO_3^* = CO_2(aq) + H_2CO_3$

1 Corrected for sample temperature.

2 Absolute pressure at sample depth.

Prepared by: JTC
Checked by: CL

TABLE 3
Summary of PHREEQ-C Runs to Check Saturation of Secondary Mineral Phases

Date	Sample Data Set	Conditions			Saturation Index				
		T (°C)	pH	pE	Calcite/ Aragonite	Gypsum	$Fe(OH)_3$ (am)	Siderite	Rhodocrosite
Jun-2009	MW-1013	11.3	6.1	1.5	-0.67 / -0.83	-1.73	-2.93	0.21	0.85
Jun-2009	MW-1013A	12.8	6.6	1.6	-0.48 / -0.63	-1.19	-3.3	0.15	0.25
Jun-2009	MW-1013B	10.7	6.2	3.8	-0.21 / -0.37	-0.04	-2.85	-0.04	0.73
Jun-2009	MW-1013C	12.6	6.4	0.6	-0.09 / -0.25	-0.05	-2.77	-1.78	0.6
Jun-2009	MW1014	11.6	6.3	3.0	-1.22 / -1.38	-1.37	-3.04	-2.32	-1.13
Jun-2009	MW-1014A	11	6.3	2.9	-0.41 / -0.56	-0.4	-2.74	0.31	-1.15
Jun-2009	MW-1014B	11.2	6.3	3.6	-0.21 / -0.36	-0.14	-2.72	-2.4	0.63
Jun-2009	MW-1014C	11.2	6.6	0.9	-0.45 / -0.61	-1.01	-2.0	-1.66	0.01
Jun-2009	MW-1005P	12.9	7.1	-0.1	-0.37 / -0.52	-3.3	-1.99	-2.26	-0.85
Jun-2008	MW-1013	11.9	6.2	1.5	-0.50 / -0.65	-1.64	-2.40	0.45	1.04
Jun-2008	MW-1013A	12.6	6.6	1.6	-0.14 / -0.30	-1.00	-1.80	0.35	0.61
Jun-2008	MW-1013B	12.0	6.2	3.7	-0.08 / -0.23	-0.02	-1.38	-0.04	0.89
Jun-2008	MW-1013C	14.3	6.4	0.6	0.32 / 0.17	-0.03	-1.52	-0.69	0.99
Jun-2008	MW-1014	11.7	6.3	2.8	-1.06 / -1.21	-1.41	-3.43	-1.20	-0.59
Jun-2008	MW-1014A	11.2	6.6	2.8	0.09 / -0.07	-0.39	-1.04	0.71	-0.40
Jun-2008	MW-1014B	12.6	6.4	3.4	0.05 / -0.10	-0.14	-1.20	-3.10	0.89
Jun-2008	MW-1014C	14.9	6.5	0.9	-0.23 / -0.38	-1.07	-1.38	-0.78	0.25
Jun-2008	MW-1005P	11.8	7.2	-0.1	-0.10 / -0.26	-3.27	-1.38	-1.03	-0.59
Jun-2007	MW-1013	11.4	6.1	1.5	-0.65 / -0.81	-1.64	-2.71	0.20	0.88
Jun-2007	MW-1013A	13.2	6.6	1.8	-0.50 / -0.65	-1.28	-2.47	-1.06	-0.05
Jun-2007	MW-1013B	12.4	6.2	3.8	-0.20 / -0.35	-0.02	-1.82	-1.49	0.76
Jun-2007	MW-1013C	14.2	6.4	1.3	-0.05 / -0.21	-0.02	-2.13	0.36	0.61
Jun-2007	MW-1014	13.4	6.4	3.3	-1.07 / -1.23	-1.32	-1.43	-1.47	-1.05
Jun-2007	MW-1014A	13.1	6.5	3.2	-0.19 / -0.35	-0.35	-1.45	-1.20	-0.47
Jun-2007	MW-1014B	NA	6.3	3.5	-0.18 / -0.34	-0.11	-1.83	-1.40	0.67
Jun-2007	MW-1014C	16.5	6.6	0.9	-0.35 / -0.51	-0.96	-1.97	0.31	0.11
Jun-2007	MW-1005P	12.1	7.0	0.1	-0.45 / -0.60	-4.25	2.49	-0.68	-0.93
Jul-2006	MW-1013	13	6.4	2.9	-0.36 / -0.51	-1.69	-0.74	0.07	1.13
Jul-2006	MW-1013A	13.2	6.7	2.7	-0.39 / -0.54	-1.17	-1.03	-0.8	0.18
Jul-2006	MW-1013B	13.6	6.4	4.2	0.00 / -0.15	-0.04	-0.72	-1.12	1.2
Jul-2006	MW-1013C	14.7	6.7	0.9	0.25 / 0.10	-0.05	-1.69	0.05	0.92
Jul-2006	MW-1014	12.1	6.6	2.9	-0.89 / -1.04	-1.32	-1.02	-1.11	-0.37
Jul-2006	MW-1014A	12.8	6.7	3.2	-0.05 / -0.20	-0.38	-0.8	-0.88	0.03
Jul-2006	MW-1014B	13.7	6.4	3.8	-0.1 / -0.25	-0.16	-0.97	-1.09	0.75
Jul-2006	MW-1014C	13	6.6	1.1	-0.31 / -0.46	-1.01	-1.63	0.39	0.18
Jul-2006	MW-1005P	14.7	7.1	0.02	-0.35 / -0.5	-3.3	-2.1	-0.12	-0.7
Jul-2005	MW-1013B	15.8	6.4	4	0.04 / -0.11	0.01	-0.76	-1.11	1.24
Jul-2005	MW-1013C	14.1	6.6	0.3	0.08 / -0.07	-0.01	-2.47	0.4	0.79
Jul-2005	MW-1014A	14.1	6.8	4.7	0.11 / -0.05	-0.35	1.18	-0.76	0.16
Jul-2005	MW-1014B	15	6.5	5.2	0.05 / -0.10	-0.06	0.77	-1.05	0.95
Jul-2005	MW-1014C	15	6.9	1	-0.04 / -0.19	-0.9	-0.76	0.69	0.46
Jul-2005	MW-1005P	13.3	7.4	-0.02	-0.08 / -0.23	-3.23	-1.8	-0.47	-0.53
Jul-2004	MW-1013B	13.3	6.3	3.2	-0.06 / -0.21	-0.03	-1.77	-1.18	0.96
Jul-2004	MW-1013C	14.9	6.5	0.8	0.09 / -0.06	-0.11	-2.35	0.35	0.76
Jul-2004	MW-1014A	17.1	6.7	2.9	0.04 / -0.11	-0.39	-0.8	-0.69	0.27
Jul-2004	MW-1014B	14.3	6.4	3.2	-0.11 / -0.26	-0.15	-1.52	-1.15	0.79
Jul-2004	MW-1014C	15.5	6.6	0.5	-0.32 / -0.47	-0.92	-2.13	0.42	0.2
Jul-2004	MW-1005P	11.4	7.2	-0.1	-0.25 / -0.4	-3.25	-2.11	-0.21	-0.63
Jul-2003	MW-1013B	14.9	6.8	3.5	0.49 / 0.34	-0.02	0.18	-0.4	1.67
Jul-2003	MW-1013C	14.6	6.5	0.5	0.06 / -0.09	-0.03	-2.9	0.07	0.71
Jul-2003	MW-1014A	12	6.6	3.5	-0.1 / -0.26	-0.34	-0.46	-0.75	0.53
Jul-2003	MW-1014B	12.6	6.2	4.2	-0.3 / -0.45	-0.11	-1.23	-1.4	0.63
Jul-2003	MW-1014C	13	6.6	0.7	-0.26 / -0.41	-0.83	-1.94	0.48	0.25
Jul-2003	MW-1005P	13.4	7	-0.1	-0.41 / -0.56	-3.25	-2.24	0.02	-0.88
Jul-2002	MW-1013B	16.1	6.4	3.5	0.14 / -0.01	-0.08	-1	-0.7	1.32
Jul-2002	MW-1013C	16.5	6.4	0.9	0.05 / -0.10	-0.08	-2.68	0.04	0.71
Jul-2002	MW-1014A	15.1	6.5	3.1	-0.07 / -0.22	-0.37	-1.2	-0.86	0.6
Jul-2002	MW-1014B	14.1	6.3	4.3	-0.16 / -0.31	-0.1	-1.27	-1.59	0.8
Jul-2002	MW-1014C	17.2	6.6	0.8	-0.17 / -0.32	-0.84	-1.71	0.61	0.34
Jul-2002	MW-1005P	13.6	7.2	0.5	-0.23 / -0.38	-2.97	-2.12	-0.74	-0.71
Oct-2001	MW-1013B	14.4	6.1	3.4	-0.3 / -0.45	-0.04	-1.99	-1.1	0.9
Oct-2001	MW-1013C	12.6	6.2	0.4	-0.33 / -0.48	-0.05	-4.11	-0.47	0.32
Oct-2001	MW-1014A	14.3	6.3	2.6	-0.38 / -0.53	-0.36	-1.76	-0.56	0.33
Oct-2001	MW-1014B	13.4	6.1	3.7	-0.4 / -0.55	-0.08	-2.35	-1.78	0.59
Oct-2001	MW-1014C	12.2	6.2	0.9	-0.68 / -0.83	-0.75	-2.91	0.13	-0.1
Jul-2001	MW-1005P[5]	9.9	6.6	0.1	-0.86 / -1.01	-2.98	-3.52	-0.59	-1.28

TABLE 3 (continued)
Summary of PHREEQ-C Runs to Check Saturation of Secondary Mineral Phases

Date	Sample Data Set	Conditions			Saturation Index				
		T (°C)	pH	pE	Calcite/ Aragonite	Gypsum	$Fe(OH)_3$ (am)	Siderite	Rhodocrosite
Apr-2000	MW-1013B[1]	8.7	6.63	4.1	0.24 / 0.08	-0.03	-0.23	-1.01	1.36
Apr-2000	MW-1013C[2]	8.5	6.73	3.1	0.15 / 0.00	-0.01	-0.08	-0.25	0.73
Apr-2000	MW-1014A	11.2	6.87	2.9	0.13 / -0.02	-0.36	-0.23	-0.49	0.91
Apr-2000	MW-1014B[3]	14.2	6.43	5.1	-0.02 / -0.17	-0.07	-0.34	-1.16	0.99
Apr-2000	MW-1014C	11.9	6.65	1.6	-0.02 / 0.17	-0.64	-0.82	0.76	0.49
Apr-2000	MW-1005P[4]	15.9	6.91	1.1	-0.37 / -0.52	-2.83	-2.66	-1.24	-1

Notes:
1. April 2000 data with sulfate adjusted upwards to 1500 mg/L to improve ion balance.
2. April 2000 data with calcium adjusted upwards to 290 mg/L to improve ion balance.
3. In the April 2000 data, the iron detection limit was anomalously high (0.15 mg/L). In the PHREEQ runs, the iron concentration was set to 0.06 mg/L, as measured in other samples from this well.
4. Combination of analytical data from the July 1999 sample with Eh and alkalinity data from the April 2000 sample.
5. July 2001 data.

Prepared by: JTC
Checked by: CL

Table 4
Summary of Annual Average Concentrations

Year	Dissolved Manganese (µg/L)										
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
MW-1005P	47	60	46	44	77	61	60	60	62	67	67
MW-1013	-	-	-	-	-	-	-	21,200	23,750	23,250	23,000
MW-1013A	-	-	-	-	-	-	-	2,725	1,800	2,775	1,790
MW-1013B	28,000	32,750	36,000	36,250	36,125	32,500	28,917	26,500	26,500	28,000	22,000
MW-1013C	7,450	7,925	8,600	9,233	9,625	9,738	10,375	10,375	10,750	10,250	9,725
MW-1014	-	-	-	-	-	-	-	1,030	700	550	295
MW-1014A	-	7,000	6,150	5,900	4,275	2,670	1,725	1,455	808	760	325
MW-1014B	23,000	21,000	18,750	17,750	17,750	15,967	16,000	13,750	14,000	13,800	12,500
MW-1014C	4,200	3,375	2,975	2,625	2,425	2,244	2,175	1,975	1,950	1,825	1,683

Year	Dissolved Iron (mg/L)										
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
MW-1005P	0.28	0.17	0.10	0.13	0.84	0.35	0.29	0.33	0.30	0.95	0.80
MW-1013	-	-	-	-	-	-	-	6.32	9.98	8.93	8.15
MW-1013A	-	-	-	-	-	-	-	< 0.33	< 0.33	< 0.33	0.04
MW-1013B	0.33	0.47	0.67	0.48	0.6	< 0.64	< 0.33	< 0.33	< 0.33	< 0.33	0.031
MW-1013C	1.1	1.7	2.7	4.2	5.1	6.6	8.1	8.2	9.9	9.5	10.5
MW-1014	-	-	-	-	-	-	-	< 0.33	< 0.33	< 0.005	< 0.33
MW-1014A	-	0.9	0.93	0.53	0.62	0.42	< 0.33	< 0.33	< 0.33	< 0.33	0.10
MW-1014B	0.04	0.23	0.2	0.15	0.26	< 0.28	< 0.33	< 0.33	< 0.33	< 0.33	0.01
MW-1014C	14.3	12.5	10.9	9.2	8.1	7.1	6.8	6.1	5.9	5.5	4.8

Prepared by: JTC
Checked by: CL

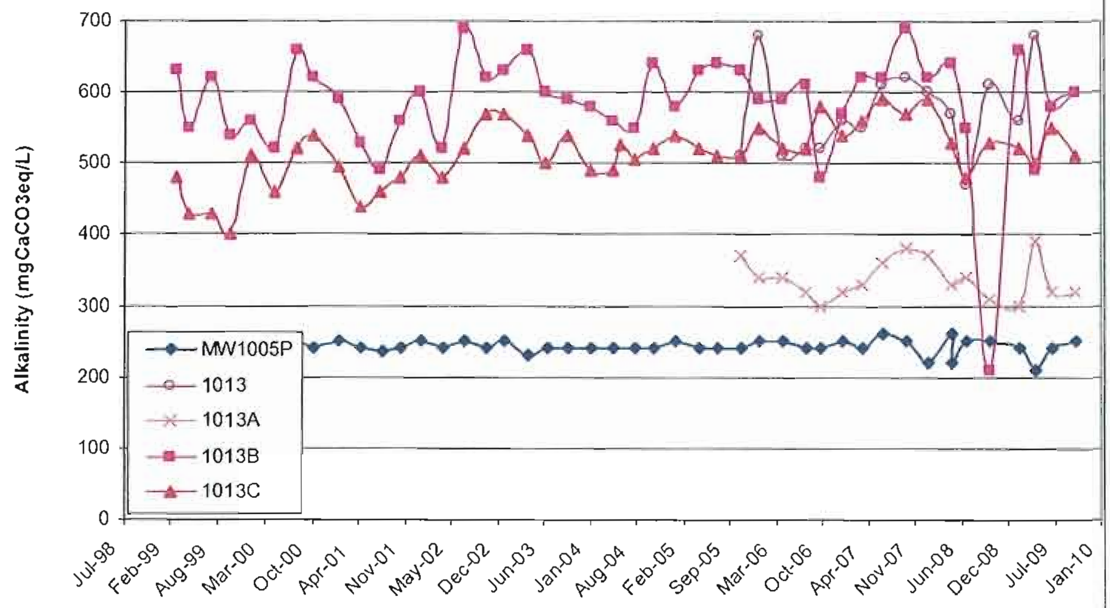


Figure 1. Dissolved Alkalinity in MW-1013, -A, -B and -C

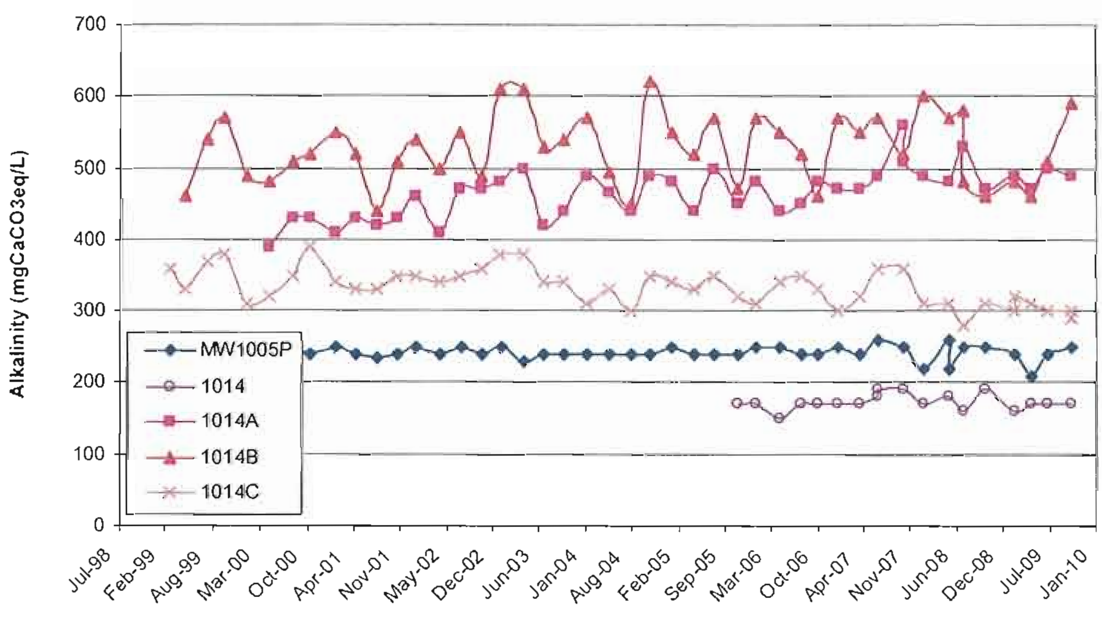


Figure 2. Dissolved Alkalinity in MW-1014, -A, -B and -C

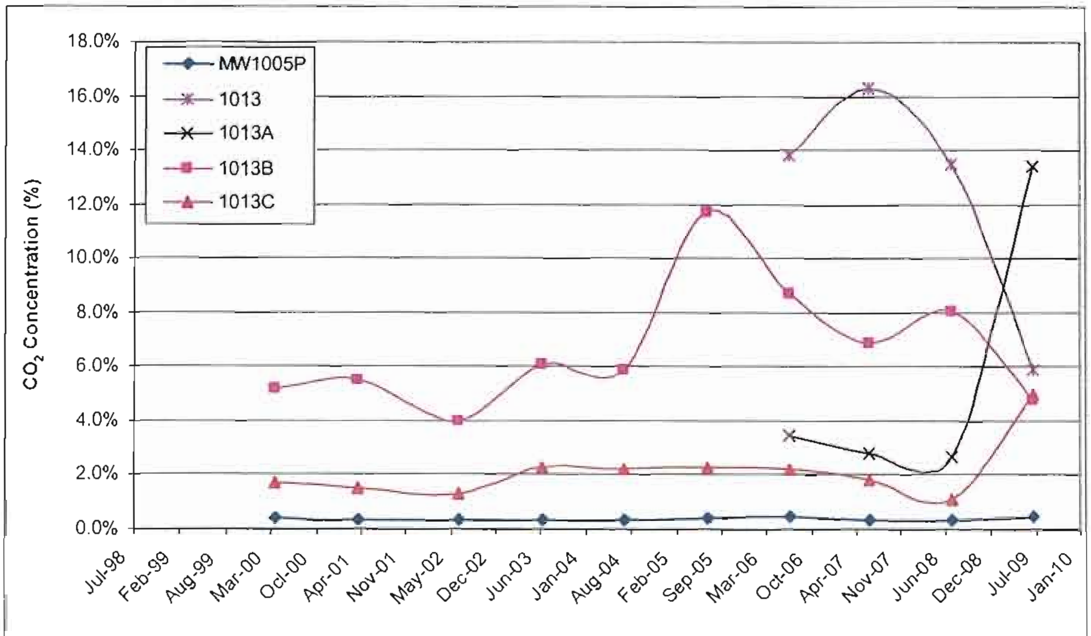


Figure 3. Estimated Carbon Dioxide in MW-1013, -A, -B and -C

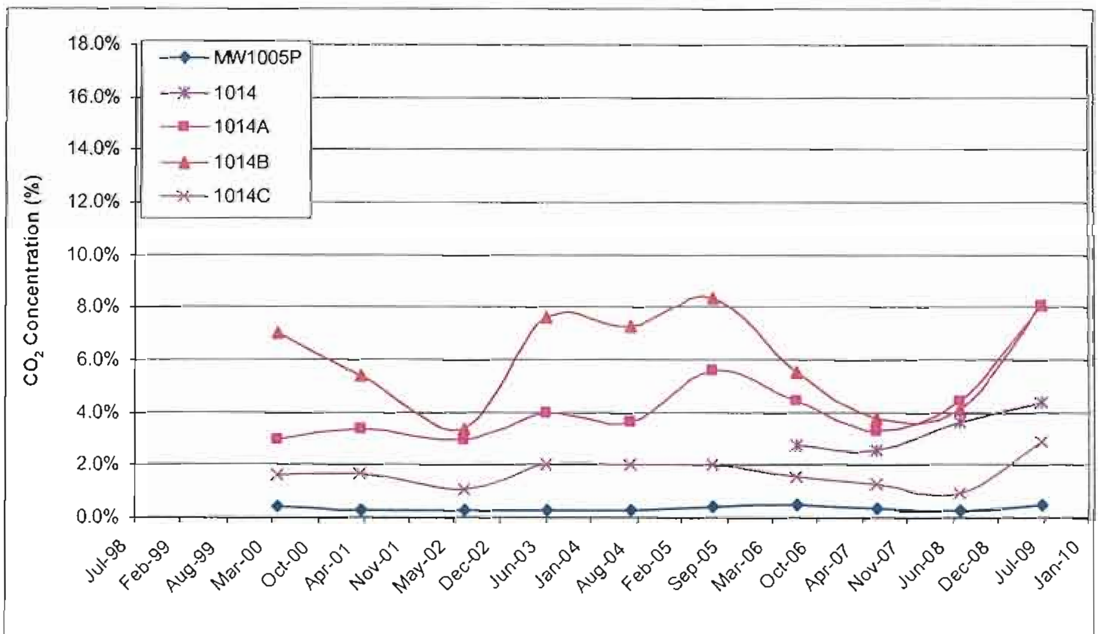


Figure 4. Estimated Carbon Dioxide in MW-1014, -A, -B and -C

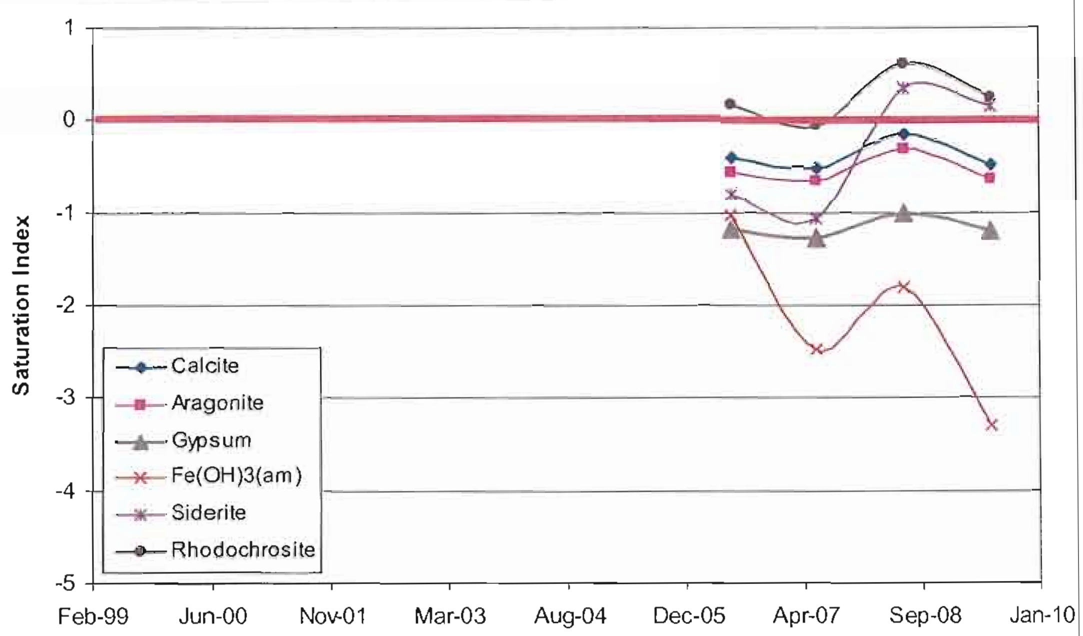


Figure 5. Saturation Indices Calculated for MW1013

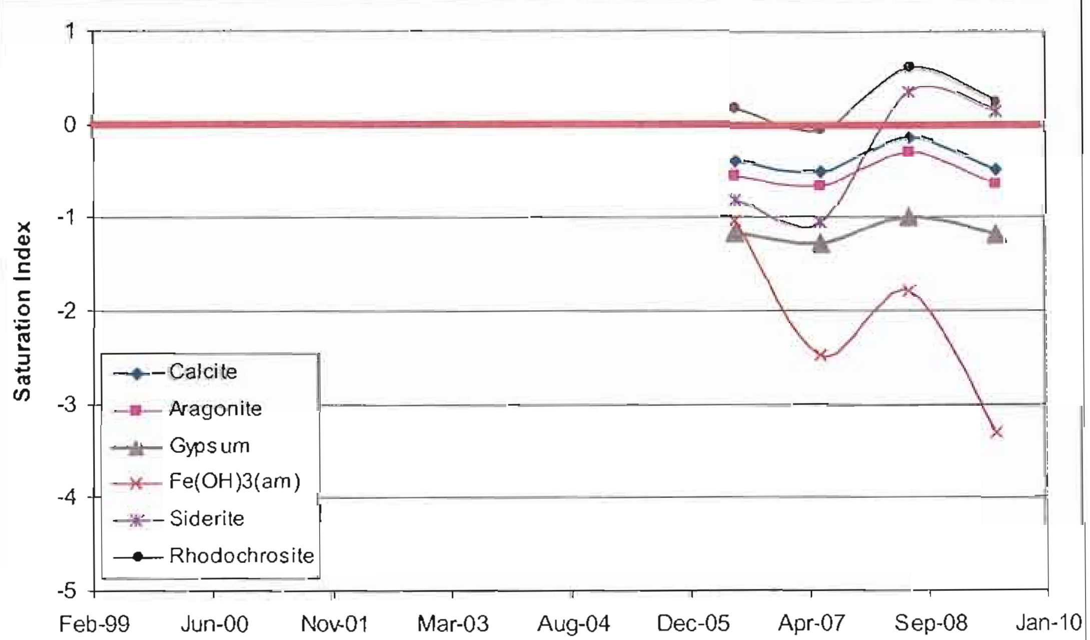


Figure 6. Saturation Indices Calculated for MW1013A

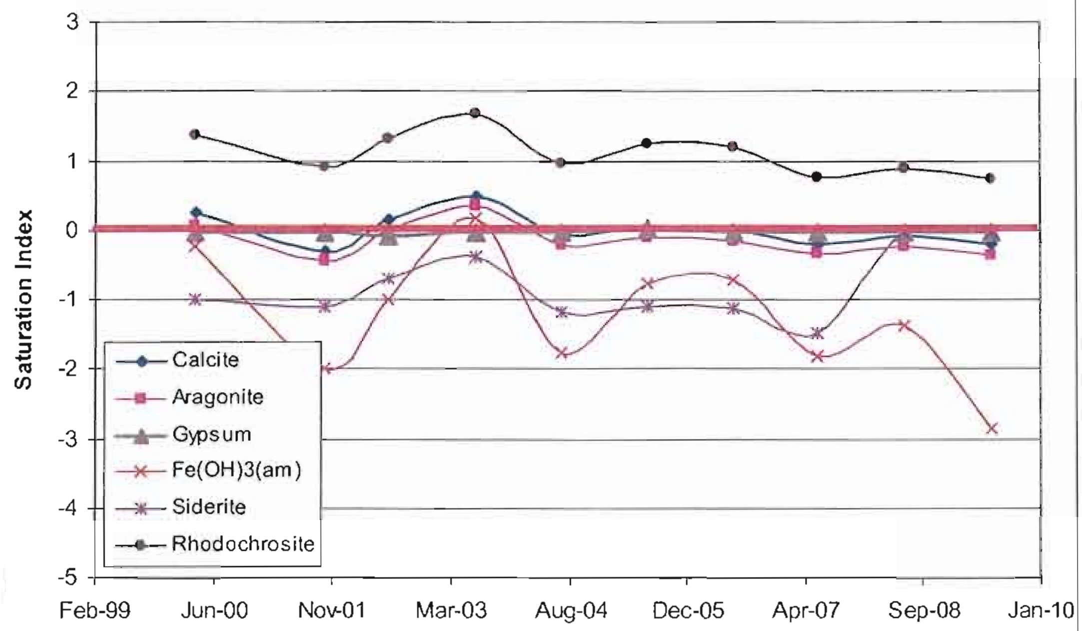


Figure 7. Saturation Indices Calculated for MW1013B

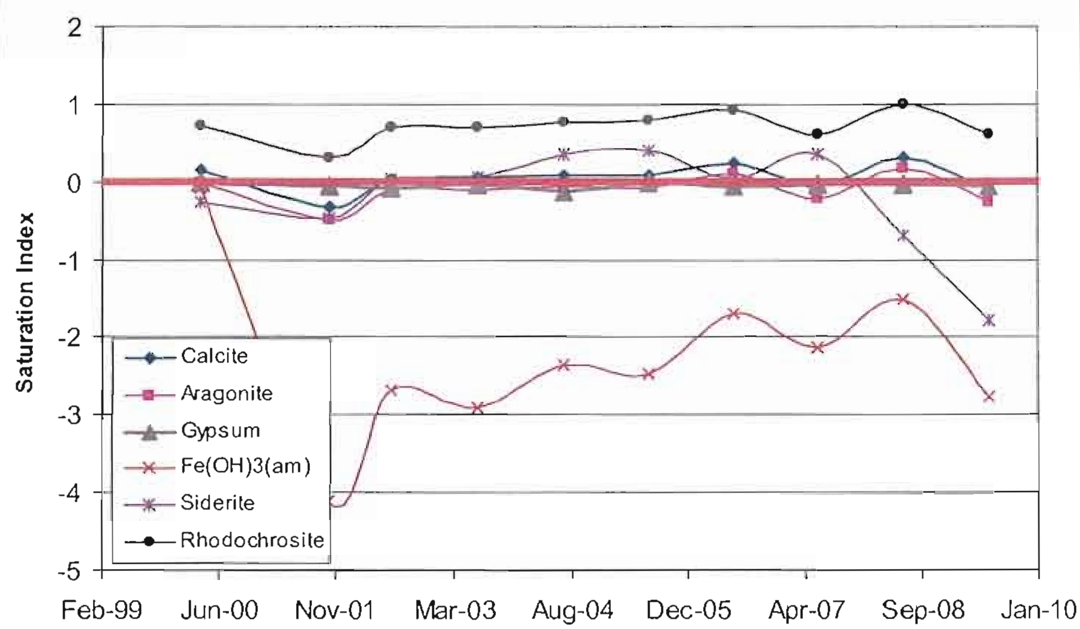


Figure 8. Saturation Indices Calculated for MW1013C

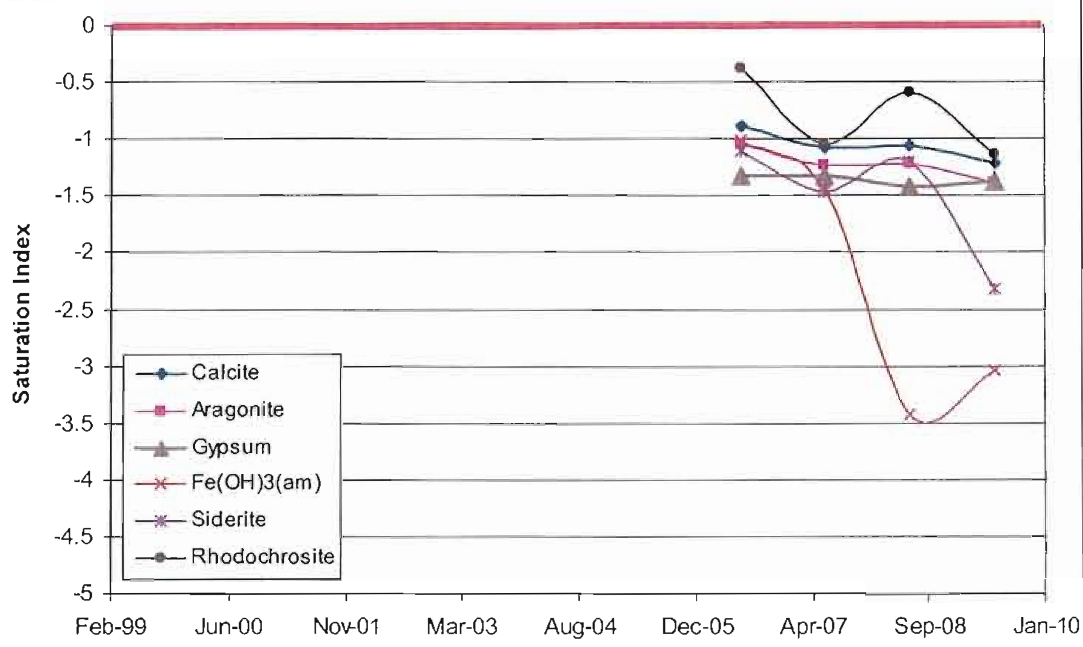


Figure 9. Saturation Indices Calculated for MW1014

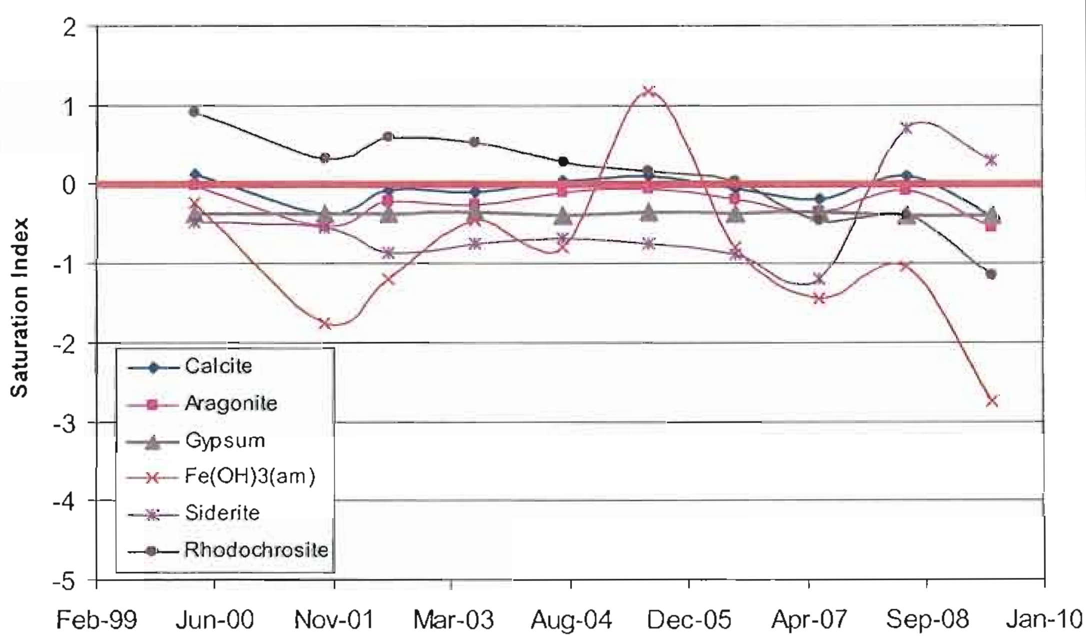


Figure 10. Saturation Indices Calculated for MW1014A

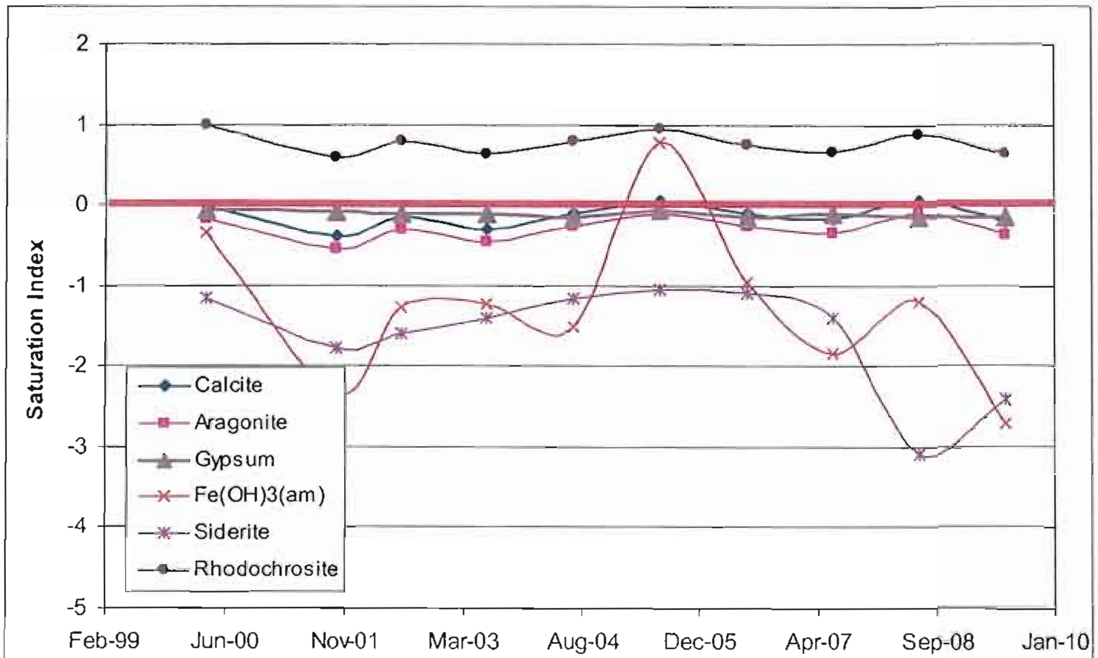


Figure 11. Saturation Indices Calculated for MW1014B

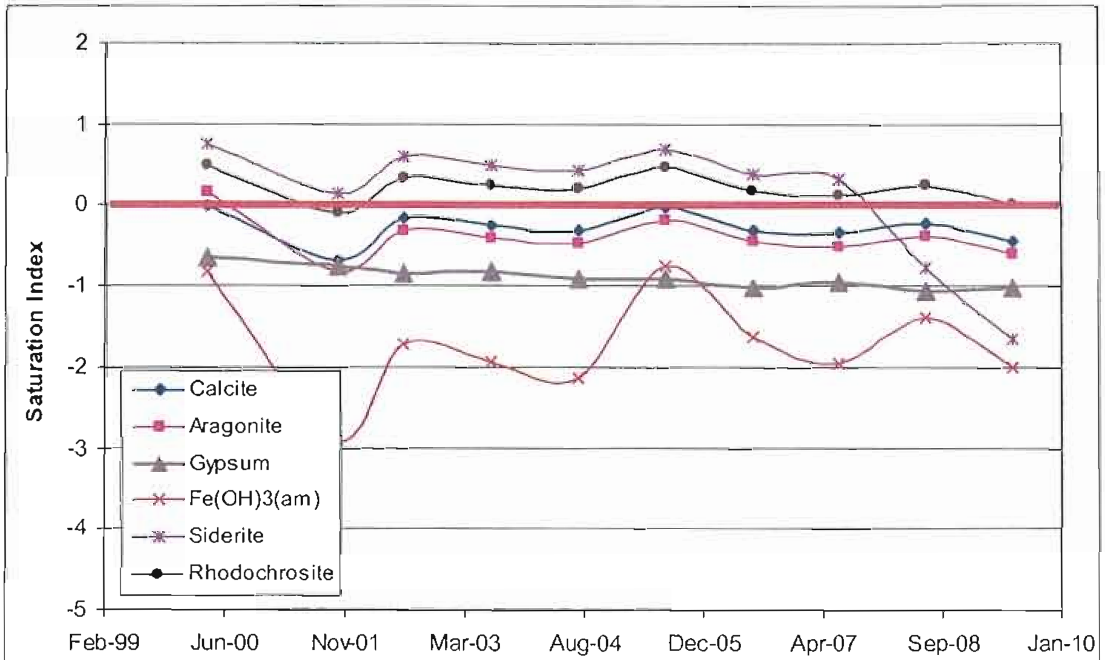


Figure 12. Saturation Indices Calculated for MW1014C

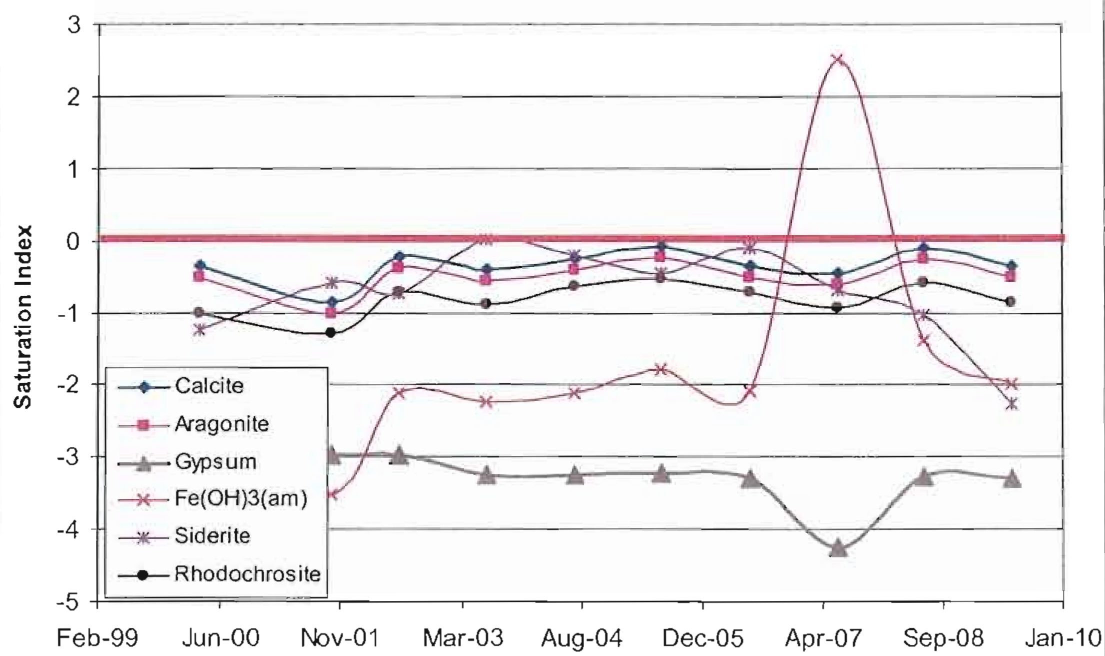


Figure 13. Saturation Indices Calculated for MW1005P

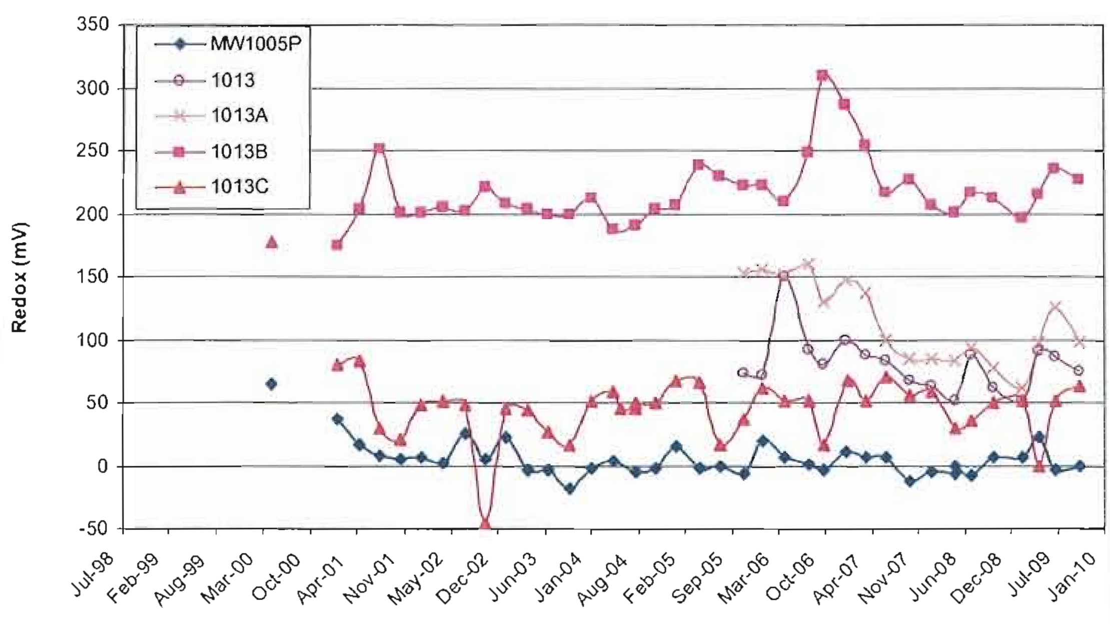


Figure 14. Redox Measured in MW-1013, -A, -B and -C

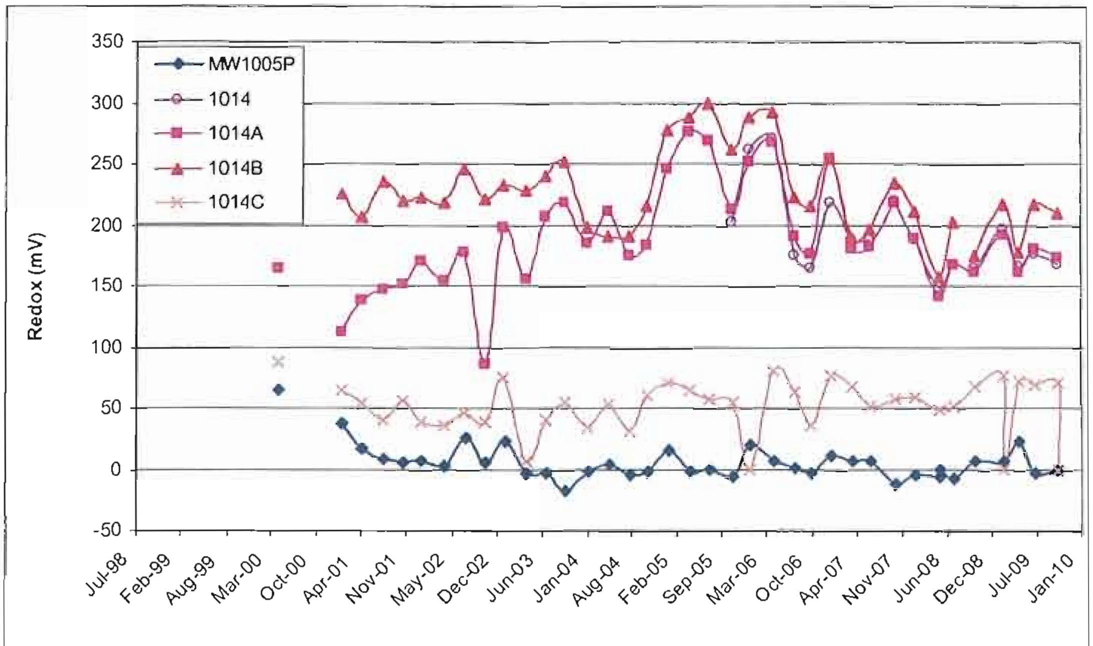


Figure 15. Redox Measured in MW-1014, -A, -B and -C

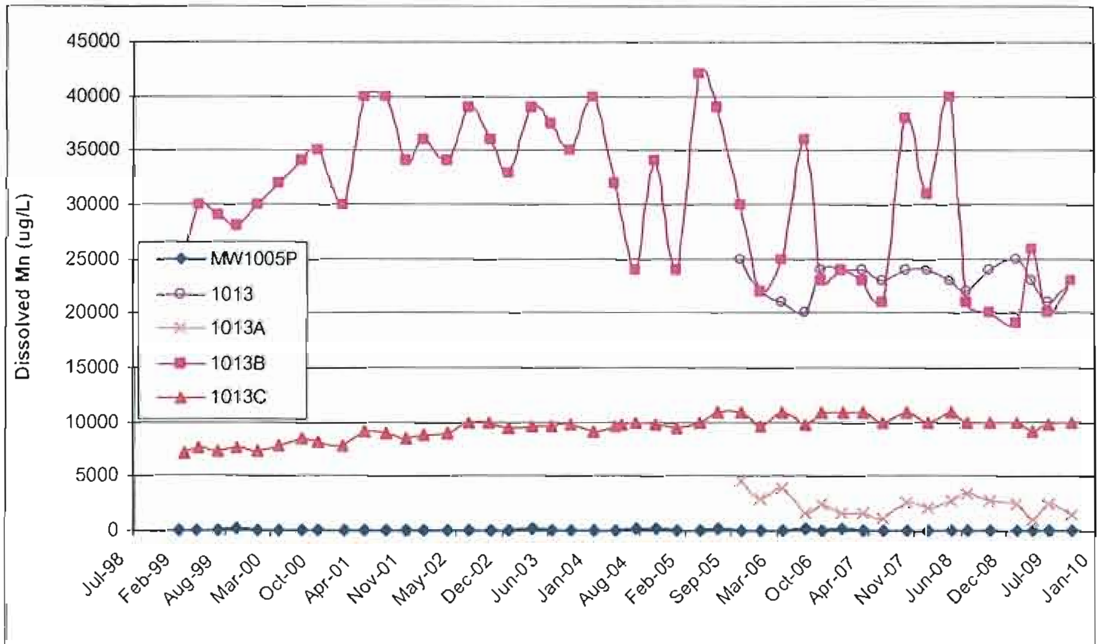


Figure 16. Dissolved Manganese in MW-1013, -A, -B and -C

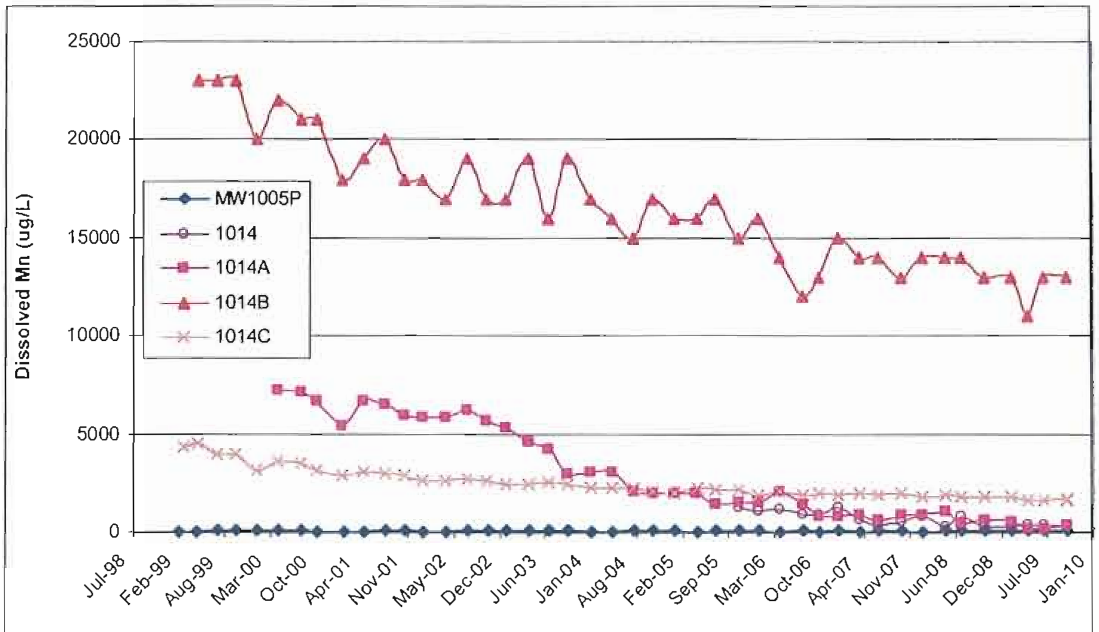


Figure 17. Dissolved Manganese in MW-1014, -A, -B and -C

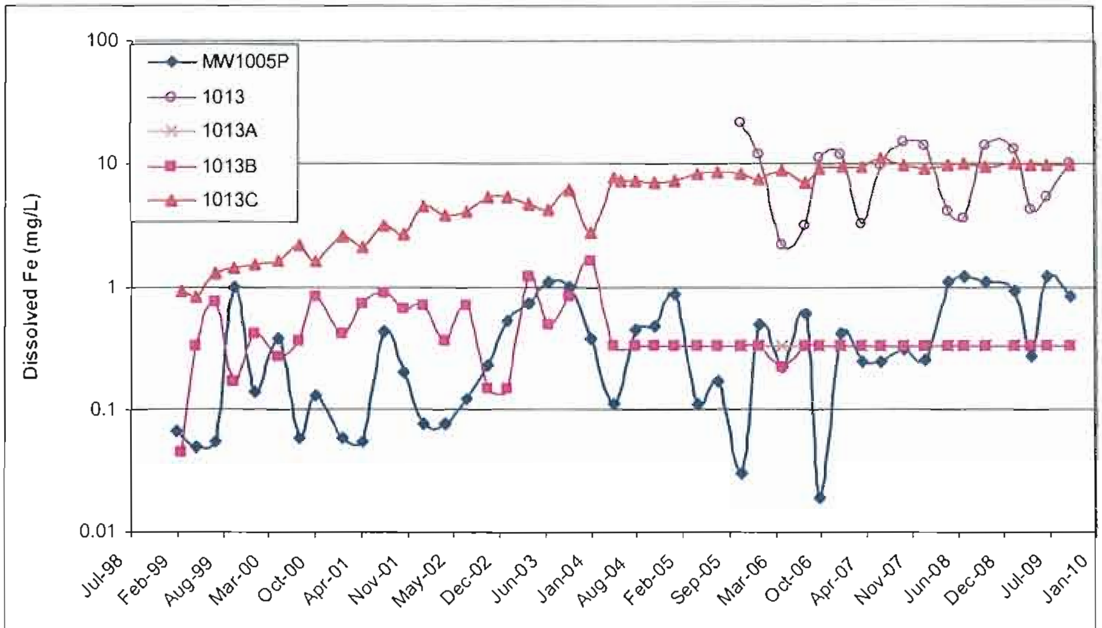


Figure 18. Dissolved Iron in MW-1013, -A, -B and -C

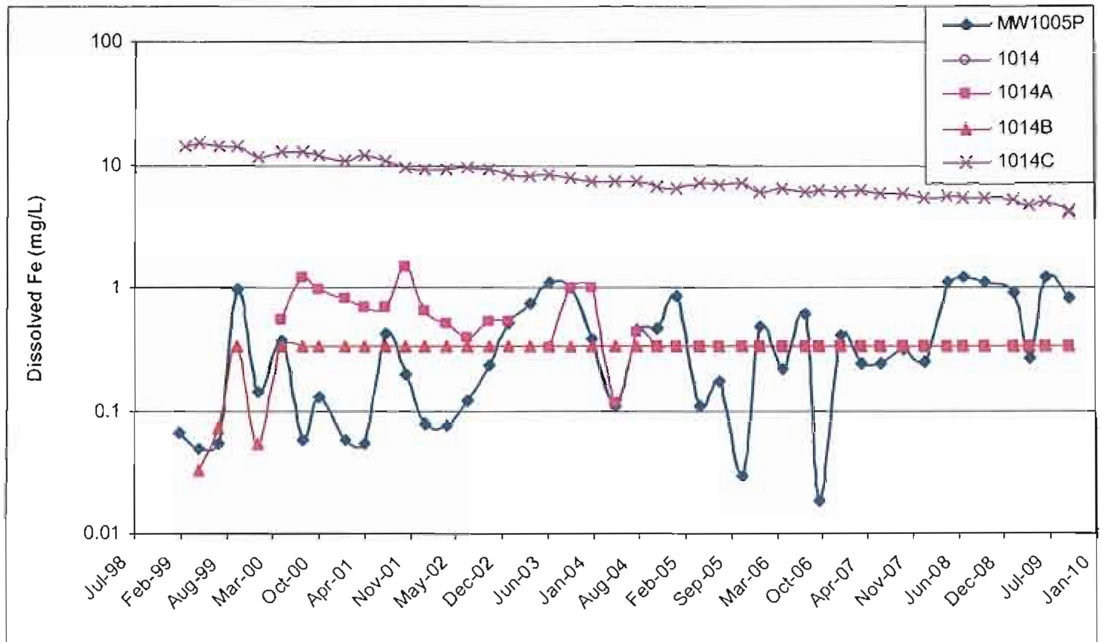


Figure 19. Dissolved Iron in MW-1014, -A, -B and -C

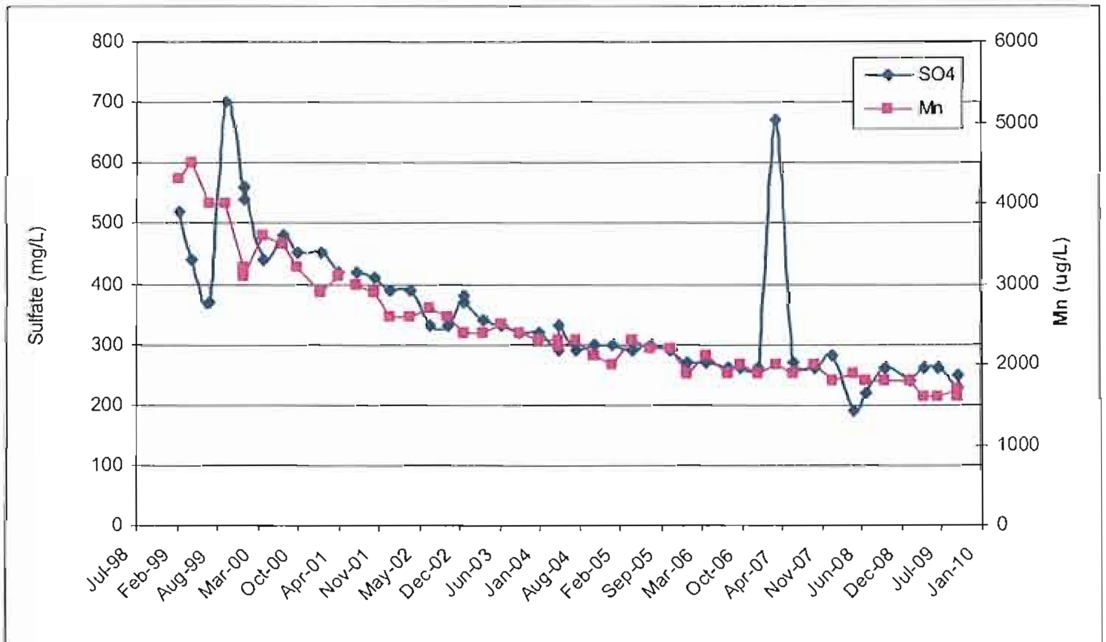


Figure 20. Comparison of Sulfate and Manganese Decrease in Well MW-1014C

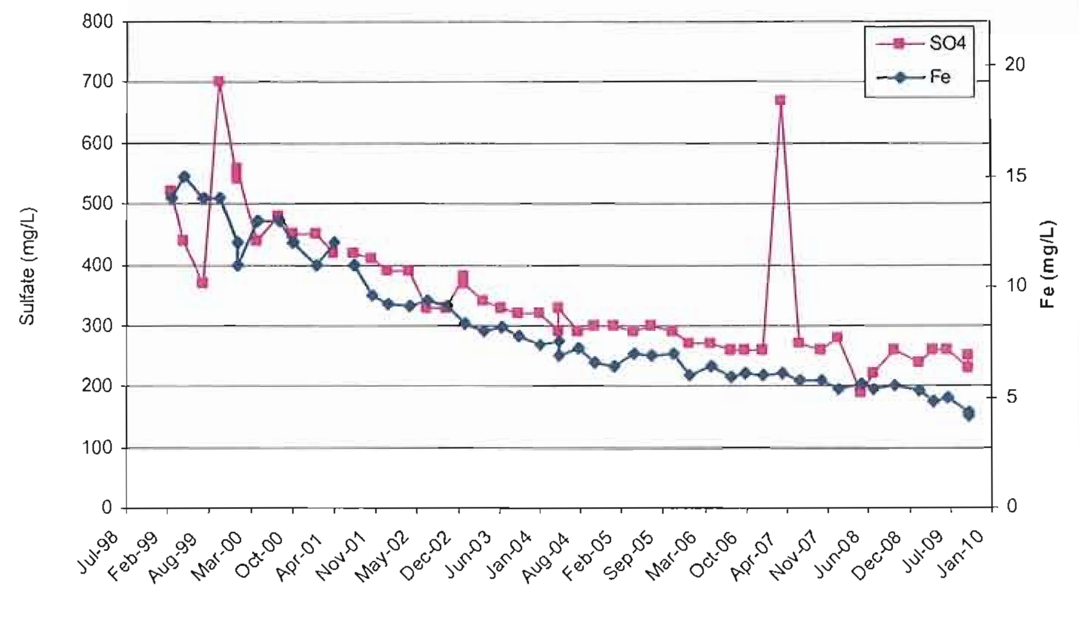


Figure 21. Comparison of Sulfate and Iron Decrease in Well MW-1014C

ATTACHMENT 1
MONITORING RESULTS

MW-1013

Well MW-1013	Alk (mg/l)	As (ug/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 [ug/l]	Hg (ug/l)	Field pH (s.u.)	Lab pH (s.u.)	K	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color (After Filter)	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Apr-99																																1105.11
Jul-99																																1106.07
Oct-99																																1105.80
Jan-00																																1104.64
Apr-00															Well not recovered sufficiently to collect groundwater sample.													97				1103.87
Jul-00																																1104.58
Oct-00																																1105.06
Jan-01																																1103.78
Apr-01																																1104.08
Jul-01																																1106.08
Oct-01																																1106.69
Jan-02																																1105.28
Apr-02																																1105.35
Jul-02																																1106.66
Oct-02																																1107.28
Jan-03																																1105.97
Apr-03																																1106.02
Oct-03																																1109.30
Jan-04																																1108.22
Apr-04																																1108.20
Jul-04																																1111.69
Oct-04																																1110.47
Jan-05																																1109.19
Apr-05																																1108.43
Jul-05																																1110.98
Oct-05	510	2.5						<13	600	22			25000			6.1	6.37					760	62		None	1332	1040	73	None	None	12.9	1109.89
Jan-06	680	0.98						<13	560	12			22000			6.4	6.64					700	79		None	1211	1190	72	None	None	8.4	1108.54
Apr-06	510	<1.0	150	<1.7	150	18	<10	23	550	2.2	14	44	21000		<0.025	6.0	6.28		<2.4	<12		640	65	<50	None	1040	888	150	None	None	9.0	1108.42
Jul-06	520	<1.0	160	<1.7	140	17	<10	24	530	3.2	<13	45	20000		<0.025	6.1	6.38	3.1	<2.4	<12	19	630	58	<50	None	1091	942	92	None	None	13.0	1111.08
Jul-06 D	560	<1.0	150	<1.7	140	17	<10	29	520	3.2	<13	43	19000		<0.025		6.39	3.1	3.4	<12	18	670	58	<50			961					
Oct-06	520	<1.0						<13	580	11			24000			6.5	6.42					620	55		None	1233	998	81	None	None	12.3	1109.73
Jan-07	560	4						<13	600	12			24000			6.4	6.52					680	72		None	1168	1032	100	None	None	9.6	1108.40
Apr-07	550	1.4						<13	620	3.3			24000			6.1	6.18					670	74		None	1149	945	87	None	None	8.5	1108.02
Jun-07	610	3.0	140	<1.7	150	18	<10	<13	560	9.6	23	45	23000		<0.025	6.1	6.36	2.9	<2.4	<12	17	700	61	<50	None	1144	969	84	None	None	11.4	1110.51
Oct-07	620	<1.0						<13	610	15			24000			6.2	6.28					740	53		None	1261	1130	68	None	None	14.4	1110.28
Jan-08	600	2.2						<13	590	14			24000			6.2	6.96					800	78		None	1183	1150	63	None	None	9.8	1109.61
Apr-08	570	5.1						<13	580	4.1			23000			6.2	6.69					770	66		None	1155	1200	52	None	None	9.2	1110.52
Jun-08	470	1.7	130	<1.7	150	17	<10	22	550	3.6	<13	44	22000		<0.025	6.2	6.31	2.6	2.8	<12	13	660	60	<50	None	1150	1080	88	None	None	11.9	1112.75
Oct-08	610	<2.4						<13	590	14			24000			6.2	6.18					760	51		None	1389	1153	62	None	None	12.8	1111.19
Jan-09	560	<2.4						<13	620	13			25000			6.1	6.15					800	73		None	1230	1250	52	None	None	8.4	1109.57
Apr-09	680	<2.4						4.4	570	4.3			23000			6.2	6.11					730	65		Vslight	1172	1040	91	None	None	9.5	1108.25
Jun-09	580	3.2	130	<1.7	140	15	<10	14	520	5.3	19	42	21000		<0.025	6.1	5.82	2.6	<3.1	<12	15	710	51	<50	Vslight	1154	1120	86	None	None	11.3	1110.60
Oct-09	600	<2.4						6.8	1100	10			23000			6.1	5.71					700	40		None	1153	1160	75	None	None	12.0	1110.93

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

MW-1013A

Well MW-1013A

	Alk (mg/l)	As (ug/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 [ug/l]	Hg (ug/l)	Field pH (s.u.)	Lab pH (s.u.)	K	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color After Filte	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Apr-99																																1094.73
Jul-99																																1095.38
Oct-99																																1095.51
Jan-00	Well not recovered sufficiently to collect groundwater sample.																															1095.62
Apr-00																												97				1095.36
Jul-00																																1095.79
Oct-00																																1096.20
Jan-01																																1095.72
Apr-01																																1097.10
Jul-01																																1097.19
Oct-01																																1096.90
Jan-02																																1097.02
Apr-02																																1097.18
Jul-02																																1097.44
Oct-02																																1097.85
Jan-03																																1097.39
Apr-03																																1097.95
Oct-03																																1097.00
Jan-04																																1096.91
Apr-04																																1097.43
Jul-04																																1097.86
Oct-04																																1097.11
Jan-05																																1097.27
Apr-05																																1097.16
Jul-05																																1096.86
Oct-05	370	0.86						<13	680	<0.33			4500			6.7	6.82					870	380		None	1576	1180	153	None	None	11.4	1096.84
Jan-06	340	<0.85						<13	500	<0.33			2900			6.8	6.78					650	240		None	1271	1000	156	Slight	None	8.4	1097.01
Apr-06	340	<1.0	120	<1.7	190	11	<10	17	730	<0.33	19	62	3900		<0.025	6.2	6.72		<2.4	<12		640	270	61	None	1571	929	152	VSl	None	11.0	1097.29
Jul-06	320	<1.0	99	<1.7	120	6.7	<10	16	460	<0.33	<13	42	1700		<0.025	6.52	6.69	7.1	<2.4	<12	35	600	220	<50	None	1104	899	160	None	None	13.2	1096.52
Oct-06	300	<1.0						<13	490	<0.33			2400			7	6.87					560	200		None	1015	951	130	Moderate	None	10.9	1096.36
Jan-07	320	1.9						<13	400	<0.33			1700			7	7.06					510	170		None	885	786	147	None	None	10.3	1096.32
Apr-07	330	<1.0						<13	460	<0.33			1700			6.3	6.73					540	180		None	1006	787	137	Vslight	None	10.6	1096.20
Jun-07	360	2.1	84	<1.7	110	6.1	<10	<13	430	<0.33	<13	37	1200		<0.025	6.6	6.83	7.2	<2.4	<12	32	530	170	<50	None	974	761	100	None	None	13.2	1096.07
Oct-07	380	<1.0						<13	490	<0.33			2600			6.6	6.74					610	210		None	912	925	85	VSlight	None	13.9	1095.72
Jan-08	370	<1.0						<13	410	<0.33			2100			6.6	7.87					590	170		None	963	877	85	Slight	None	9.9	1097.10
Apr-08	330	1.5						<13	500	<0.33			2800			6.7	6.76					640	180		None	862	975	83	None	None	12.4	1096.94
Jun-08	340	2	81	<1.7	160	7	<10	<13	630	<0.33	<13	53	3500		<0.025	6.6	6.82	6.4	<2.4	14	19	740	270	<50	None	1195	1070	94	None	None	12.6	1097.88
Oct-08	310	<2.4						<13	450	<0.33			2700			6.7	6.53					620	210		None	854	924	78	None	None	13.0	1096.84
Oct-08 D	340	<2.4						<13	460	<0.33			2700				6.71					620	200				918					
Jan-09	300	<2.4						<13	440	<0.33			2400			6.6	6.64					620	180		None	953	935	62	None	None	9.4	1096.69
Apr-09	390	<2.4						<1.3	370	0.071			960			6.7	6.59					530	150		None	856	795	98	None	None	9.9	1096.00
Jun-09	320	<2.4	72	<1.7	120	14	<10	<13	460	0.044	<13	40	2400		<0.025	6.6	6.31	6.4	<3.1	<12	26	610	200	<50	None	887	924	126	None	None	12.8	1096.57
Oct-09	320	<2.4						1.4	380	0.012			1400			6.6	6.21					520	170		None	862	922	98	None	None	11.4	1096.23

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

MW-1013B

Well MW-1013B Well Depth: 86.3'		Alk	NH3	NO3+NO2	As	Ba	Cd	Ca	Cl	Cr	Cu	Hard	Fe	Pb	Mg	Mn	CO2	Hg	Ni	Field pH	Lab pH	K	Se	Ag	Na	TDS	Sulf	Zn	Color	Field Cond	Lab Cond	Redox	Odor	Turbidity	Temp	Grd Water
		(mg/l)	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(mg/l)	(mg/l)	(ug/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(s.u.)	(s.u.)		(ug/l)	(ug/l)	(mg/l)	(mg/l)	(mg/l)	(ug/l)	(After Filter	(umho)	(umho)	(mV)		(Purging)	(°C)	El (Feet)
Feb-99		630									36	2300	0.045			25000				6.2	6.5					3100	1400		None	3540			None	None		1093.95
Apr-99		550									16	2300	0.33			30000				6.2	6.4					3700	770		Slight	3130			None	Moderate	16.0	1094.58
Jul-99		620			<42	<50	<21	630	35	16	33	2200	0.76	<14	150	29000		<0.050		6.4	6.5	8.2	1.7	<4.5	35	3800	1600	<120	None	3020			Slight	Slight	18.3	1095.20
Oct-99		540			<42	<50	<4.2	650	35	14	<9.4	2200	0.17	<14	150	28000	180000	<0.050		6.6	6.8	5.9	<1.3	<4.5	26	3700	1900	<120	None	3200			Slight	Slight	14.2	1095.49
Jan-00		560			17	<50	<2.1	600	28	18	<4.7	2100	0.41	<14	150	30000		<0.050		6.4	6.4	6.4	<1.3	<4.5	33	3300	1700	<120	None	3000			None	Slight	12.6	1095.59
Apr-00		520			12	<50	<3.1	630	35	<6.2	19	2200	0.27	<24	150	32000	470000	<0.050		6.6	6.3	8.5	<7.8	<4.7	27	3600	1200	<120	None	3120		230	None	Slight	8.7	1095.54
Jul-00		660			<21	<50	<2.3	670	<40	5.1	14	2300	<0.36	<9.6	160	34000		<0.050		6.3	6.3	7.2	<17	<5.5	34	3200	1600	<120	None	3000	2800		None	Slight	16.0	1096.09
Oct-00		620									<12	2200	0.84			35000				6.3	6.9					3200	1500	<120	None	3180	1800		None	Slight	13.9	1096.45
Jan-01		590									<12	1900	0.41			30000				6.1	6.3					3300	1600	<120	None	3230	2700	174	None	V.Slight	11.2	1095.86
Apr-01		530									35	2300	0.72			40000	410000			6.0	6.5					3300	1600	<120	None	3400	2600	203	None	V.Slight	14.0	1097.57
Jul-01		490			<15	<50	3.3	700		6.4	33	2400	0.89	<7.9	160	40000		<0.050		6.1	6.3		<10	6.5		3500	1600	130	None	3290	2700	252	None	V.Slight	15.7	1097.63
Oct-01		560			18	<50	<1.7	600		4.8	69	2000	0.66	<7.9	130	34000		<0.050		6.1	6.3		<16	6.0		3200	1600	130	None	3320	3000	201	None	V.Slight	14.4	1097.19
Jan-02		600									52	2100	0.71			36000				6.2	6.4					3600	1600	<120	None	3380	2900	201	None	Moderate	13.0	1097.33
Apr-02		520									110	2200	0.36			34000				6.2	6.4					3200	1600	<120	None	3370	3100	205	None	None	12.3	1097.63
Jul-02		690			28/<15	<50	<1.7			<4.5	150	2300	0.70	<7.4		39000		<0.050		6.4	6.3		<15	4.3		3900	1400	130	None	3340	3000	202	None	None	16.1	1097.95
Oct-02		620									210	2300	<0.15			36000				6.1	6.4					3000	1600	130	None	3390	2900	221	None	Slight	13.6	1097.30
Jan-03		630			<27	<50	2.4	640	<50	<4.5	92	2200	0.15	<7.4	150	33000		<0.050		6.1	6.4		<30	5.8		3400	1600	130	None	3420	2800	208	None	None	9.8	1098.58
Apr-03		660									160	2200	1.2			39000				6.2	6.3					3500	1500	130	None	3340	3000	203	None	None	12.1	1097.87
Jul-03		620			<2.6	<25	<2.1	660		<6.4	120	2300	0.61	<10	150	38000		<0.025		6.3	6.8		<2.7	<7.7		3100	1600	140	None	3290	2800	200	None	V.Slight	14.9	1098.71
Jul-03	D	580			4.3	<25	<2.1	660		<6.4	110	2300	0.36	<10	150	37000		<0.025			6.6		<2.7	<7.7		3100	1500	130			2800					
Oct-03		590									110	2300	<0.29			35000				6.3	6.4					3200	1500	140	None	3350	2890	199	None	None	16.1	1097.29
Oct-03	D	550									140	2200	0.83			37000					6.5					3200	1500	150			2830					
Jan-04		580									170	2200	1.6			40000				6.2	6.33					3200	1600		None	3370	2820	212	None	V.Slight	12.1	1097.13
Apr-04		560									230	2200	<0.33			32000				6.3	6.52					3100	1500		None	3260		188	None	None	14.7	1097.77
Jul-04		550			<2.6	<25	<1.7	640	47	<5.1	150	2200	<0.33	20	150	24000		<0.025		6.1	6.34	6.8	<8.0	<6.7	31	3100	1600	150	None	3340	2480	191	None	V.Slight	13.3	1098.27
Oct-04		640			4.2			640			380	2200	<0.33		140	34000				6.3	6.26					3100	1600		None	3250	3010	204	None	None	13.1	1097.10
Jan-05		580			4.8						180	2200	<0.33			24000				6.3	6.52					3000	1700		None	3390	2990	207	None	None	9.0	1097.29
Apr-05		630			1.7						450	2200	<0.33			42000				6.2	6.55					3100	1700		None	3420	2930	238	None	None	11.3	1097.61
Jul-05		640	0.081	0.060	1.9	<25	<1.7	690		<4.5	400	2300	<0.33	<10	150	39000		<0.025	45.0	6.4	6.25		<1.9	<6.7		3100	1700	200	None	3200	2810	229	None	None	15.8	1097.22
Oct-05		630			<0.85						230	2300	<0.33			30000				6.4	6.46					3100	1500		None	3260	2620	222	None	None	11.9	1096.98
Jan-06		590			1.1						210	2200	<0.33			22000				6.4	6.51					3000	1500		None	3480	2510	223	None	None	14.6	1097.17
Apr-06		590	0.2	0.082	<1.0	<25	<1.7	650	48	<10	280	2200	<0.22	<13	150	25000		<0.025		6.1	6.3		<2.4	<12		3000	1600	210	None	3300	2490	210	None	None	9.7	1097.65
Jul-06		610			1.4	<25	<1.7	630	46	<10	470	2200	<0.33	<13	150	36000		<0.025		6.17	6.36	6.3	<4.8	<12	31	3000	1600	210	None	3280	2780	249	None	None	13.6	1096.73
Oct-06		480			<1.0						200	2400	<0.33			23000				6.5	6.46					3000	1600		None	3360	2720	309	None	None	10.9	1096.54
Jan-07		570			<1.0						290	2200	<0.33			24000				6.5	6.77					2900	1600		None	3370	2610	286	None	None	9.1	1096.44
Apr-07		620			3.2						230	2400	<0.33			23000				5.9	6.27					3000	1700		None	3260	2550	255	None	None	9.9	1096.45
Jun-07		620			3.8	<25	<1.7	630	47	<10	240	2100	<0.33	<13	140	21000		<0.025		6.2	6.47	6.4	<2.4	<12	28	3000	1600	170	None	3131	2580	216	None	None	12.4	1096.39
Oct-07		690			3.7						500	2300	<0.33			38000				6.3	6.26					3100	1600		None	3182	2920	227	None	None	14.1	1095.86
Jan-08		620			3.9						400	2200	<0.33			31000				6.2	7.25					3200	1500		None	3141	2950	206	None	None	10.1	1097.27
Apr-08		640			<1.0						530	2200	<0.33			40000				6.2	6.71					3200	1500		None	3200	3090	201	None	None	11.4	1097.36
Apr-08	D	630			2.9						550	2200	<0.33			39000				6.2	6.61					3200	1400			3209	3100				11.3	
Jun-08		550			2.7	<25	<1.7	630	<50	<10	270	2200	<0.33	<13	140	21000		<0.025		6.2	6.34	5.6	<2.4	<12	19	3100	1600	170	None	3159	2940	216	None	None	12.0	1098.29
Oct-08		210			<2.4						260	2200	<0.33			20000				6.3	6.2					3100	1700		None	3134	2850	213	None	None	12.7	1097.10
Jan-09		660			<2.4						240	2200	<0.33			19000				6.2	6.2					3200	1500		None	3075	2820	197	None	None	10.3	1096.95
Apr-09		490			<2.4						390	2100	<0.033			26000				6.2	6.2					3000	1700		None	3181	2550	215	None	None	9.3	1096.3
Jun-09		580			3.9	<25	<1.7	590	76	<10	300	2000	<0.033	<13	130	20000		<0.025		6.2	5.92	3.6	<3.1	<12	27	3200	1700	160	None	3160	3030	235	None	None	12.0	1096.97
Jun-09	D	630			3.9	<25	<1.7	580	77	<10	270	2000	<0.033	<13	130	19000		<0.025			5.95	2.7	<3.1	<12	27	3200	1600	160								
Oct-09		600			<2.4						360	2100	0.031			23000				6.2	5.89					3000	1600		None	3185	3090	227	None	None	10.7	1096.47

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

MW-1013C

Well MW-1013C Well Depth: 201.5'

		Alk (mg/l)	NH3 (mg/l)	NO3+NO2 (mg/l)	As (ug/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 (ug/l)	Hg (ug/l)	Ni (ug/l)
Feb-99		480									100	2100	0.92			7200			
Apr-99		430									75	2200	0.84			7700			
Jul-99		430			83	<50	<21	570	50	<4.2	50	2100	1.3	<14	160	7300		<0.050	
Oct-99		400			<42	<50	<4.2	610	50	7.2	<9.4	2200	1.4	<14	170	7600	140000	<0.050	
Jan-00		510			<15	<50	2.1	550	58	<4.2	<4.7	2100	1.5	<14	170	7300		<0.050	
Apr-00		460			14	<50	<3.1	590	50	<6.2	11	2200	1.6	<24	170	7800	270000	<0.050	
Jul-00		520			<21	<50	<2.3	620	56	<4.0	<12	2300	2.2	<9.6	180	8400		<0.050	
Oct-00		540									<12	2200	1.6			8200			
Jan-01		520									<12	2100	2.6			7800			
Jan-01	D	470									<12	2000	2.5			7700			
Apr-01		440									<13	2300	2.1			9100	260000		
Jul-01		460			<15	<50	<1.7	630		<3.4	<13	2300	3.2	<7.9	180	9000		<0.050	
Oct-01		480			22	<50	<1.7	550		<3.4	<13	2000	2.7	<7.9	160	8500		<0.050	
Jan-02		510									<13	2100	4.5			8800			
Apr-02		480									14	2100	3.9			8900			
Jul-02		520			<27/<15	<50	<1.7			<4.5	<13	2300	4.1	<7.4		10000		<0.050	
Oct-02		570									<13	2300	5.4			9900			
Jan-03		570			<27	<50	<1.7	600	53	<4.5	<13	2300	5.4	<7.4	180	9500		<0.050	
Apr-03		540									<13	2200	4.7			9600			
Jul-03		500			17	<25	<2.1	610		<6.4	<13	2300	4.2	<10	180	9600		<0.025	
Oct-03		540									<13	2200	6.2			9800			
Jan-04		490									40	2200	2.8			9100			
Apr-04		490									<13	2200	7.8			9700			
DNR(4/04)		527	6.25	<0.019	9.9	15	0.10	576	52.4	5.4	2.3	2180	7.2	<1	180	9830		<0.03	
Jul-04		520			16	<25	<1.7	600	57	<5.1	<13	2300	7.4	<8.7	180	10000		<0.025	
Jul-04	D	490			9.7	<25	<1.7	590	61	<5.1	<13	2200	7.3	14	180	10000		<0.025	
Oct-04		520			17			580			<13	2200	7.0		170	9800			
Jan-05		540			20						<13	2100	7.2			9500			
Apr-05		520			16						<13	2200	8.2			10000			
Jul-05		510	7.2	0.048	13	<25	<1.7	630		32	<13	2300	8.5	<10	190	11000		<0.025	200
Oct-05		510			9.2						<13	2200	8.3			11000			
Oct-05	D	500			9.4						<13	2300	8.7			11000			
Jan-06		550			13						<13	2100	7.6			9700			
Apr-06		520	6.4	0.079	12	<25	<1.7	620	61	<10	<13	2300	8.9	<13	180	11000		<0.025	
Jul-06		520			18	<25	<1.7	580	53	<10	14	2200	7.0	<13	180	9800		<0.025	
Oct-06		580			15						<13	2200	9.1			11000			
Jan-07		540			9						<13	2300	9.5			11000			
Apr-07		560			16						<13	2300	9.3			11000			
Jun-07		590			22	<25	<1.7	600	60	<10	<13	2200	11	15	170	10000		<0.025	
Oct-07		570			16						<13	2300	9.7			11000			
Jan-08		590			22						<13	2100	9.1			10000			
Apr-08		530			16						<13	2200	9.6			11000			
Jun-08		480			18	27	1.8	610	60	<10	<13	2200	10	<13	170	10000		<0.025	
Oct-08		530			17						<13	2200	9.4			10000			
Jan-09		520			17						<13	2100	10			10000			
Apr-09		500			15						<1.3	2100	9.8			9100			
Apr-09	D	460			14						<1.3	2700	13			12000			
Jun-09		550			18	<25	<1.7	560	91	<10	<13	2000	9.8	<13	260	9800		<0.025	
Oct-09		510			15						<0.31	2100	9.8			10000			

		Field pH (s.u.)	Lab pH (s.u.)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color (After Filter)	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Feb-99		6.3	6.6					3000	1300		None	3170			None	None		1095.27
Apr-99		6.4	6.6					3300	920		None	3030			None	None	13.5	1095.73
Jul-99		6.4	6.7	23	3.0	<4.5	35	2700	870	660	Slight	3020			None	VSlight	——	1096.67
Oct-99		6.8	6.7	26	<1.3	<4.5	29	3000	2000	660	None	3300			None	Moderate	9.6	1096.97
Jan-00		6.5	6.4	23	<1.3	5.2	39	2900	1700	630	None	2700			Vslight	Slight	10.4	1097.10
Apr-00		6.7	6.4	25	<7.8	<4.7	34	2900	1700	610	None	3370		177	None	Moderate	8.5	1097.39
Jul-00		6.3	6.4	24	<17	<5.5	45	3300	1600	620	None	3100	2800		None	VSlight	13.8	1097.84
Oct-00		6.4	6.9					3200	1600	370	None	3310	2500		None	VSlight	11.9	1097.86
Jan-01		6.3	6.4					3200	1600	480	None	3310	2800	80	None	VSlight	11.4	1098.03
Jan-01	D		6.4					3000	1600	470			2800					
Apr-01		6.3	6.5					3000	1600	330	None	3000	2700	84	None	Vslight	13.8	1100.12
Jul-01		6.3	6.6		<10	<3.1		3500	1600	570	None	3400	2800	30	None	VSlight	15.0	1099.39
Oct-01		6.2	6.5		<16	6.8		3200	1700	510	None	3380	3100	21	None	VSlight	12.6	1099.04
Jan-02		6.3	6.5					3400	1700	500	None	3430	3000	48	None	Slight	11.5	1099.65
Apr-02		6.3	6.6					3200	1700	360	None	3420	3500	51	None	Slight	14.4	1101.39
Jul-02		6.4	6.6		<15	<4.3		3500	1500	440	None	3400	3100	49	Vslight	VSlight	16.5	1099.76
Oct-02		6.4	6.5					3400	1600	480	None	3520	3000	-46	None	VSlight	11.7	1101.33
Jan-03		6.5	6.4		<30	5.7		3500	1800	440	None	3510	3000	46	Slight	Moderate	11.6	1099.80
Apr-03		6.4	6.5					3500	1700	310	None	3450	3000	44	Vslight	VSlight	16.5	1099.98
Jul-03		6.3	6.5		<27	<7.7		3200	1700	320	None	3430	2900	27	Slight	VSlight	14.6	1100.31
Oct-03		6.4	6.5					3200	1700	400	None	3520	2950	16	None	VSlight	12.7	1099.27
Jan-04		6.3	6.6					3300	1700		None	3510	2860	51	None	Slight	10.9	1099.18
Apr-04		6.7	6.6					3200	1600		None	3520	2870	59	Vslight	VSlight	12.1	1099.81
DNR(4/04)			6.8		<1	0.3		3210	1840	454			3210					
Jul-04		6.2	6.5	26	<16	<6.7	42	3200	1400	460	None	3490	2660	45	None	Vslight	14.9	1099.75
Jul-04	D		6.6	25	<8.0	<6.7	41	3200	1600	460			2640					
Oct-04		6.3	6.5					3200	1700		None	3450	3120	50	Slight	None	12.1	1099.48
Jan-05		6.3	6.6					3000	1700		None	3540	3060	67	None	Slight	10.7	1099.34
Apr-05		6.3	6.7					3100	1700		None	3390	3010	66	Vslight	VSlight	12.4	1099.38
Jul-05		6.6	6.5		<1.9	<6.7		3100	1800	460	None	3400	2910	17	None	Slight	14.1	1098.89
Oct-05		6.7	6.7					3200	1700		None	3410	2950	37	Vslight	None	11.9	1099.20
Oct-05	D		6.7					3100	1700				2930					
Jan-06		6.3	6.7					3100	1700		None	3480	2860	61	None	Vslight	11.4	1099.30
Apr-06		6.2	6.5		<2.4	<12		3000	1600	470	None	3380	2550	51	None	None	12.0	1099.24
Jul-06		6.1	6.7	24	2.7	<12	43	3100	1700	440	Vslight	3300	2750	51	None	Slight	14.7	1098.20
Oct-06		6.7	6.6					3000	1600		None	3390	2790	16	None	Slight	12.4	1097.94
Jan-07		6.6	7.0					3000	1700		None	3460	2780	68	None	VSlight	10.7	1098.06
Apr-07		6.2	6.4					3100	1700		None	3320	2710	51	None	None	12.5	1098.24
Jun-07		6.4	6.7	25	<2.4	<12	38	3100	1700	470	None	NA	2660	71	None	VSlight	14.2	1097.64
Oct-07		6.3	6.5					3100	1800		None	3108	3030	56	None	None	14.6	1097.98
Jan-08		6.5	7.3					3200	1800		None	3203	2900	58	None	VSlight	10.6	1098.85
Apr-08		6.4	6.8					3200	1600		Slight	3156	3160	29	None	Slight	12.5	1099.98
Jun-08		6.4	6.8	22	<2.4	<12	28	3100	1700	450	None	3288	3040	36	None	None	14.3	1100.00
Oct-08		6.5	6.5					3000	1700		None	3163	2930	50	None	Slight	12.7	1097.61
Jan-09		6.3	6.4					3100	1600		None	3277	2920	51	None	VSlight	9.6	1098.87
Apr-09		6.3	6.4					3100	1500		None	3241	2660		None	None	12.2	1097.96
Apr-09	D	6.4	6.4					3100	1700			3265	2620	55			12.2	
Jun-09		6.4	6.1	20	<24	<12	36	3100	1900	450	None	3251	3110	51	None	Slight	14.2	1098.14
Oct-09		6.3	6.0					3000	1700		Vslight	3289	3150	63	None	Slight	12.6	1097.80

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

MW-1014

Well not recovered sufficiently to collect groundwater sample.

Well MW-1014	Alk (mg/l)	As (ug/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 [ug/l]	Hg (ug/l)	Field pH (s.u.)	Lab pH (s.u.)	K	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color (After Filter)	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Apr-99																																DRY
Jul-99																																DRY
Oct-99																																1111.60
Jan-00																																1112.07
Apr-00																												160				1112.41
Jul-00																																1113.00
Oct-00																																1113.98
Jan-01																																1113.86
Apr-01																																1114.62
Jul-01																																1115.67
Oct-01																																1116.86
Jan-02																																1116.91
Apr-02																																1117.24
Jul-02																																1117.37
Oct-02																																1118.56
Jan-03																																1119.07
Apr-03																																1118.91
Oct-03																																1119.25
Jan-04																																1118.37
Apr-04																																1117.83
Jul-04																																1118.45
Oct-04																																1119.12
Jan-05																																1118.50
Oct-05	170	<0.85						<13	350	<0.33			1300			7.1	6.78					500	200		None	726	688	202	None	None	11.0	1117.70
Jan-06	170	<0.85						<13	310	<0.33			1100			6.9	6.5					540	190		None	748	696	261	None	None	9.9	1117.27
Apr-06	150	<1.0	40	<1.7	91	30	<10	36	340	<0.33	<13	28	1200		<0.025	6.5	6.3		<2.4	<12		410	170	79	None	677	630	271	None	None	10.4	1117.25
Jul-06	170	<1.0	<25	<1.7	84	26	<10	26	320	<0.33	<13	28	940		<0.025	6.54	6.59	3.7	<2.4	<12	20	490	180	59	None	713	661	175	None	None	12.1	1117.53
Oct-06	170	<1.0						<13	350	<0.33			880			6.7	6.8					430	180		None	739	647	165	None	Slight	10.7	1117.45
Jan-07	170	2.1						39	330	<0.33			1300			6.8	6.63					420	170		None	710	644	218	None	None	11.5	1117.15
Apr-07	170	1.1						17	350	<0.033			610			6.2	6.39					420	180		None	677	602	188	None	None	NA	1116.26
Jun-07	180	1.8	31	<1.7	70	24	<10	<13	260	<0.33	<13	22	310		<0.025	6.4	6.67	3.8	<2.4	<12	16	450	170	<50	None	701	624	187	None	None	13.4	1115.87
Jun-07 D	190	2.8	39	<1.7	86	24	<10	15	330	<0.33	<13	27	380		<0.025		6.61	3.8	<2.4	<12	20	430	170	<50								
Oct-07	190	<1.0						33	350	<0.33			580			6.4	7.89					470	180		None	739	740	220	None	None	12.3	1115.95
Jan-08	170	<1.0						<13	310	<0.33			800			6.3	7.38					480	160		None	661	672	188	None	None	9.6	1117.28
Apr-08	180	<1.0						<13	320	<0.33			260			6.3	6.46					490	160		None	683	745	149	None	None	11.9	1116.86
Jun-08	160	<1.5	35	0.25	83	27	<0.88	22	310	<0.0050	<1.3	26	830		<0.025	6.3	6.44	3.5	<1.8	1.2	14	410	140	12	None	676	662	167	None	None	11.7	1118.17
Oct-08	190	<2.4						14	320	<0.33			310			6.4	6.37					540	180		None	739	706	165	None	None	12.5	1117.04
Jan-09	160	<2.4						<13	320	<0.33			260			6.4	6.31					540	140		None	729	707	196	None	None	8.7	1118.33
Apr-09	170	<2.4						6.3	300	<0.033			330			6.4	6.46					470	160		None	711	655	166	None	None	8.7	1117.03
Jun-09	170	<2.4	34	<1.7	76	30	<10	30	290	<0.033	<13	24	320		<0.25	6.3	6.11	3	<3.1	<12	19	460	170	<50	None	710	715	176	None	None	11.6	1117.02
Oct-09	170	<2.4						7.1	310	<0.0037			270			6.3	6.33					440	170		None	735	747	167	None	None	10.1	1117.09

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

MW-1014A

Well MW-1014A Well Depth: 63.9'

Previous to April 2000, well not recovered sufficiently to collect groundwater sample.

Date	Alk (mg/l)	NH3 (mg/l)	NO3+NO2	As (ug/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 [ug/l]	Hg (ug/l)	Ni (ug/l)
Apr-99																		
Jul-99																		
Oct-99																		
Jan-00																		
Apr-00	390			15	59	<3.1	330	<50	<6.2	<6.0	1300	0.55	<24	120	7200	150000	<0.050	
Jul-00	430			<21	58	<2.3	360	<25	12	<12	1400	1.2	<9.6	130	7100		<0.050	
Oct-00	430									<12	1400	0.96			6700			
Jan-01	410									<12	1200	0.83			5400			
Apr-01	430									<13	1400	0.69			6700	180000		
Jul-01	420			<15	<50	<1.7	370		5.3	<13	1500	0.70	<7.9	130	6500		<0.050	
Oct-01	430			37	<50	<1.7	330		<3.4	<13	1300	1.5	<7.9	110	6000		<0.050	
Jan-02	460									<13	1300	0.65			5900			
Apr-02	410									16	1400	0.51			5900			
Jul-02	460			<27/<15	<50	<1.7			<4.5	<13	1400	0.38	<7.4		6100		<0.050	
Jul-02	480			<27/<15	<50	<1.7			<4.5	<13	1500	0.42	<7.4		6400		<0.050	
Oct-02	470									<13	1400	0.54			5700			
Jan-03	480			<27	<50	<1.7	350	<20	<4.5	<13	1400	0.54	<7.4	120	5300		<0.050	
Apr-03	500									<13	1400	<0.29			4600			
Jul-03	420			<2.6	27	<2.1	340		<6.4	<13	1400	0.32	<10	120	4200		<0.025	
Oct-03	440									<13	1400	1.0			3000			
Jan-04	490									<13	1300	1.0			3100			
Apr-04	470									<13	1300	0.13			3100			
DNR(4/04)	463	0.024	<0.19	<1	20	1.05	331	10.9	1.5	6.0	1320	0.1	<1	119	3050		<0.03	
Jul-04	440			<2.6	25	<1.7	340	15	<5.1	<13	1400	0.43	<8.7	120	2100		<0.025	
Oct-04	490			2.9			320			<13	1300	<0.33		110	2000			
Jan-05	480			2.3						<13	1300	<0.33			2000			
Apr-05	440			1.9						<13	1300	<0.33			2000			
Jul-05	500	0.059	0.044	1.2	<25	<1.7	340		8.1	<13	1300	<0.33	13	120	1400		<0.025	13
Oct-05	450			<0.85						<13	1300	<0.33			1500			
Jan-06	480			<0.85						17	1200	<0.33			1500			
Apr-06	440	0.038	0.059	<1.0	<25	<1.7	340	17	<10	22	1300	<0.33	<13	120	2100		<0.025	
Jul-06	450			<1.0	<25	<1.7	320	<18	<10	31	1300	<0.33	<13	120	1400		<0.025	
Oct-06	480			<1.0						<13	1400	<0.66			820			
Jan-07	470			<1.0						<13	1300	<0.33			780			
Apr-07	470			3.7						<13	1400	0.53			920			
Jun-07	490			4.4	<25	<1.7	330	15	<10	<13	1300	<0.33	<13	110	640		<0.025	
Oct-07	560			<1.0						<13	1400	<0.33			890			
Oct-07 D	510			1.5						27	1400	<0.33			880			
Jan-08	490			<1.0						<13	1300	<0.33			940			
Apr-08	480			1.2						<13	1700	<0.33			1100			
Jun-08	530			2	<25	<1.7	330	13	<10	<13	1300	<0.33	<13	120	410		<0.025	
Oct-08	470			<2.4						<13	1300	<0.33			590			
Jan-09	490			<2.4						<13	1300	<0.33			560			
Apr-09	470			<2.4						4.8	1200	<0.033			210			
Jun-09	500			4.1	<25	<1.7	300	<50	<10	18	1200	0.12	<13	110	200		<0.025	
Oct-09	490			<2.4						19	1300	0.076			330			

Date	Field pH (s.u.)	Lab pH (s.u.)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color (After Filter)	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Apr-99																	1103.93
Jul-99																	1106.42
Oct-99																	1107.87
Jan-00																	1109.22
Apr-00	6.9	6.6	12	<7.8	<4.7	34	1800	970	<120	None	2220		165	None	None	11.2	1109.24
Jul-00	6.6	6.6	12	<17	<5.5	35	2200	960	<120	None	2000	2000		None	None	15.4	1110.50
Oct-00	6.7	6.9					2300	880	<120	None	2250	1800		None	Vslight	14.1	1111.39
Jan-01	6.5	6.6					1900	970	<120	None	2310	1900	113	Slight	VSlight	NA	1111.59
Apr-01	6.3	6.7					1700	920	<120	None	2300	1900	138	None	Slight	12.1	1112.51
Jul-01	6.2	6.6		<10	<3.1		2000	960	<120	None	2250	2000	147	None	Slight	17.4	1112.88
Oct-01	6.3	6.7		<16	<3.1		1900	1000	<120	None	2280	2200	152	Vslight	Slight	14.3	1114.03
Jan-02	6.6	6.7					2100	1000	<120	None	2280	2000	170	Vslight	None	13.5	1114.51
Apr-02	6.8	6.7					1900	1000	<120	None	2250	2200	155	None	Slight	11.5	1115.15
Jul-02	6.5	6.6		<15	4.8		2100	910	<120	None	2280	2100	177	None	Vslight	15.1	1114.80
Jul-02		6.6		<15	4.3		2200	910	<120			2100					
Oct-02	6.5	6.7					1800	930	<120	None	2370	2100	86	None	None	12.7	1115.50
Jan-03	6.5	6.6		<30	<4.3		2100	1000	<120	None	2370	2000	198	None	Vslight	12.0	1116.36
Apr-03	6.4	6.7					2000	930	<100	None	2280	2100	156	None	None	14.3	1116.82
Jul-03	6.6	6.9		<2.7	<7.7		1900	910	<50	None	2230	1900	206	None	Vslight	13.6	1116.45
Oct-03	6.6	6.8					2000	980	77	None	2310	2080	218	None	Vslight	12.9	1116.50
Jan-04	6.6	6.79					2000	1000		None	2310	1951	185	None	None	7.0	1116.08
Apr-04	6.8	6.72					1800	910		None	2250	1942	211	None	Slight	9.5	1116.64
DNR(4/04)		7.00		<1	<0.1		1920	1040	<16			2190					
Jul-04	6.7	6.66	11	<8.0	<6.7	52	1900	940	<50	None	2250	1810	175	None	None	17.1	1115.52
Oct-04	6.7	6.64					1800	930		None	2220	2100	184	None	Slight	12.6	1114.83
Jan-05	6.7	6.89					1800	990		None	2330	1980	246	None	Vslight	8.9	1115.84
Apr-05	6.6	6.92					1800	1000		None	2250	1760	276	None	Vslight	10.0	1115.68
Jul-05	6.8	6.59		<7.4	14		1800	1000	<50	None	2170	1920	269	None	None	14.1	1114.86
Oct-05	6.7	6.85					1800	890		None	2270	1890	213	None	None	11.2	1114.97
Jan-06	6.8	6.72					1800	970		None	2390	1910	252	None	None	11.2	1114.81
Apr-06	6.4	6.63		<2.4	<12		1700	880	55	None	2200	1680	268	None	None	11.5	1114.95
Jul-06	6.6	6.65	9.6	2.8	<12	58	1800	1000	57	None	2190	1820	190	None	None	12.8	1114.77
Oct-06	6.7	6.79					1800	1000		None	2290	1860	176	None	None	10.6	1114.6
Jan-07	6.6	6.8					1700	1000		None	3150	1860	254	None	Slight	9.3	1111.42
Apr-07	6.2	6.63					1800	950		None	2180	1849	180	None	None	9.8	1113.98
Jun-07	6.5	6.82	10	<2.4	<12	60	1800	1000	<50	None	2187	1785	182	None	None	13.1	1113.49
Oct-07	6.6	7.87					1900	940		None	2175	1980	218	None	Vslight	12.7	1113.13
Oct-07 D		7.84					1800	860				2030					
Jan-08	6.6	7.81					1900	940		None	2202	2030	189	None	None	9.5	1114.15
Apr-08	6.6	6.74					1900	880		None	2202	2170	142	None	None	10.8	1114.25
Jun-08	6.6	6.72	8	<2.4	<12	40	1900	910	<50	None	2211	2100	167	None	None	11.2	1114.85
Oct-08	6.6	6.51					2000	970		None	2185	2050	162	None	None	11.5	1119.04
Jan-09	6.6	6.54					2100	1000		None	2138	2080	192	None	None	9.5	1115.84
Apr-09	6.6	6.58					1900	1100		None	2203	1880	162	None	None	9.1	1114.88
Jun-09	6.3	6.5	6.3	<3.1	<12	62	1900	970	<50	None	2195	2150	180	None	None	11.0	1114.70
Oct-09	6.5	6.3					1800	940		None	2173	2180	173	None	None	11.0	1114.28

MW-1014B

Well MW-1014B   Well Depth: 104.9'

		Alk (mg/l)	As (ug/l)	NH3 (mg/l)	NO3+NO2 (mg/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 [ug/l]	Hg (ug/l)	Ni (ug/l)
Feb-99		510									810	2100	0.062			23000			
Apr-99		460									420	2100	0.033			23000			
Jul-99		540	70			<50	31	580	49	13	520	2100	0.072	<14	170	23000		<0.050	
Oct-99		570	<42			<50	10	640	43	7.4	530	2200	<0.010	<14	150	23000	300000	<0.050	
Jan-00		490	<15			<50	10	550	<100	<4.2	500	1900	0.055	<14	140	20000		<0.050	
Apr-00		480	<7.5			<50	10	600	42	<6.2	520	2100	<0.15	<24	150	22000	560000	<0.050	
Jul-00		510	<21			<50	8.9	600	38	<4.0	330	2200	<0.36	<9.6	160	21000		<0.050	
Oct-00		520									430	2200	<0.36			21000			
Jan-01		550									450	1900	<0.36			18000			
Apr-01		520									530	2000	<0.15			19000	470000		
Jul-01		440	<15			<50	6.2	600		8.9	480	2200	<0.15	<7.9	160	20000		<0.050	
Oct-01		510	20			<50	4.3	530		<3.4	490	1900	<0.15	<7.9	140	18000		<0.050	
Jan-02		540									540	1900	<0.15			18000			
Apr-02		500									470	1900	<0.15			17000			
Jul-02		550	<27/<15			<50	4.7			<4.5	550	2100	<0.15	<7.4		19000		<0.050	
Oct-02		490									450	2000	<0.15			17000			
Jan-03		610	<27			<50	6.9	580	46	<4.5	590	2000	<0.15	<74	140	17000		<0.050	
Apr-03		610									690	2100	<0.29			19000			
Jul-03		530	<2.6			<25	4.2	530		<6.4	500	1900	<0.29	<10	140	16000		<0.025	
Oct-03		540									640	2100	<0.29			19000			
Jan-04		570									590	2000	<0.29			17000			
Apr-04		530									440	1700	<0.33			14000			
Apr-04	D	570									440	1700	<0.33			14000			
DNR(4/04)		461	<1	3.58	0.03	15	4.39	538	39.0	4.3	492	1920	<0.1	<1	139	18800		<0.03	
Jul-04		450	<2.6			<25	2.9	530	49	<5.1	520	1900	<0.33	<8.7	140	15000		<0.025	
Oct-04		620	3.6					560			550	2000	<0.33		140	17000			
Jan-05		550	5.3								520	2000	<0.33			16000			
Apr-05		520	2.6								460	1900	<0.33			16000			
Jul-05		570	2.3	3.9	0.14	<25	2.8	610		14	560	2100	<0.33	<10	150	17000		<0.025	440
Oct-05		470	1.2								400	1800	<0.33			15000			
Jan-06		570	2.4								560	1900	<0.33			16000			
Apr-06		550	1.1	4	0.13	<25	<1.7	540	45	14	530	1900	<0.33	<13	130	14000		<0.025	
Jul-06		520	1.8			<25	<1.7	470	42	<10	510	1700	<0.33	<13	130	12000		<0.025	
Oct-06		460	<1.0								460	1900	<0.33			13000			
Jan-07		570	<1.0								600	1900	<0.33			15000			
Apr-07		550	3.2								470	1900	<0.33			14000			
Jun-07		570	6.6			<25	<1.7	530	47	<10	600	1900	<0.33	<13	140	14000		<0.025	
Oct-07		520	1.9								490	1900	<0.33			13000			
Jan-08		600	4.4								500	1900	<0.33			14000			
Apr-08		570	1.9								570	1900	<0.33			14000			
Jun-08		580	4.8			<25	<1.7	540	56	<10	580	1900	<0.33	<13	140	14000		<0.025	
Jun-08	D	480	5.5			<25	4.2	550	36	<10	570	2000	<0.33	<13	140	14000		<0.025	
Oct-08		460	2.8								480	1100	<0.33			13000			
Jan-09		480	<2.4								480	1800	<0.33			13000			
Apr-09		460	<2.4								550	1700	<0.033			11000			
Jun-09		510	2.4			<25	12	520	53	35	490	1800	<0.033	1.3	130	13000		<0.025	
Oct-09		590	2.7								490	1900	0.010			13000			

		Field pH (s.u.)	Lab pH (s.u.)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color (After Filter)	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Feb-99		6.2	6.3					2900	1200		None	3280			None	Slight		1105.62
Apr-99		6.2	6.4					3300	770		None	2890			None	None	14.2	1106.23
Jul-99		6.3	6.4	25	2.2	<45	93	3100	580	2500	None	3540			None	Moderate	17.4	1107.13
Oct-99		6.4	6.5	17	1.4	<4.5	24	3100	1600	5000	None	3200			None	Moderate	12.1	1108.33
Jan-00		6.5	6.2	18	2.6	<4.5	27	3200	1400	4100	None	3000			None	Slight	12.1	1108.88
Apr-00		6.4	6.2	23	<7.8	<4.7	26	3200	1500	3700	None	2940		290	None	Slight	14.2	1108.85
Jul-00		6.3	6.4	22	<17	<5.5	42	3000	1600	2500	None	3000	2700		None	Slight	15.1	1109.47
Oct-00		6.3	6.6					2900	1500	2100	None	3240	2400		None	Moderate	13.1	1110.09
Jan-01		6.3	6.3					2600	1400	2800	None	3140	2600	226	None	Slight	10.5	1109.89
Apr-01		6.1	6.3					3300	1400	3500	None	3200	2500	207	None	Moderate	13.5	1111.14
Jul-01		6.0	6.3		<10	<3.1		3000	1500	1900	None	2990	2700	235	None	Moderate	16.5	1112.02
Oct-01		6.1	6.4		<16	7.2		2900	1600	1600	None	3150	2900	219	None	Moderate	13.4	1112.38
Jan-02		6.2	6.3					3100	1500	2800	None	3110	2700	222	None	Vslight	12.6	1112.61
Apr-02		6.4	6.4					3100	1500	1500	None	3140	3000	218	None	Slight	13.1	1113.00
Jul-02		6.3	6.3		<15	4.6		3000	1400	1900	None	3100	3000	245	None	Moderate	14.1	1113.19
Oct-02		6.3	6.5					3300	1300	1500	None	3110	2600	221	None	Moderate	12.2	1114.21
Jan-03		6.2	6.3		<30	<4.3		2800	1500	2500	None	3160	2700	232	None	Slight	11.5	1114.14
Apr-03		6.3	6.2					3400	1500	2500	Moderate	2970	3000	228	None	Moderate	13.6	1113.96
Jul-03		6.3	6.2		<2.7	<7.7		3800	1400	1600	None	2900	2600	240	None	Moderate	12.6	1114.33
Oct-03		6.4	6.4					3000	1500	2600	None	2930	2760	251	None	Slight	12.4	1113.77
Jan-04		6.3	6.4					3100	1600		None	3130	2820	198	None	Moderate	10.0	1113.07
Apr-04		6.5	6.47					2800	1400		None	2880	2750	246	None	Slight	11.3	1112.89
Apr-04	D		6.42					2800	1400				2750					
DNR(4/04)			6.84		<1	<0.1		2530	1480	1470			2710					
Jul-04		6.3	6.4	20	<8.0	<6.7	32	2600	1300	1200	None	2950	2290	191	None	Vslight	14.3	1113.85
Oct-04		6.3	6.33					2800	1500		None	2950	2910	215	None	Vslight	13.1	1113.33
Jan-05		6.4	6.56					2700	1500		None	3210	2750	277	None	None	9.1	1113.05
Apr-05		6.4	6.61					2700	1400		None	2790	2470	288	None	Vslight	10.2	1112.91
Jul-05		6.5	6.28		<1.9	11		2800	1500	2200	None	3010	2630	299	None	Vslight	15.0	1112.42
Oct-05		6.5	6.67					2400	1300		None	2820	2290	261	None	Vslight	12.0	1112.41
Jan-06		6.5	6.46					2800	1400		None	3350	2650	287	None	None	14.6	1112.12
Apr-06		6.2	6.33		<2.4	<12		2700	1400	1300	None	2740	2260	292	None	Vslight	12.0	1112.27
Jul-06		6.4	6.42	18	<2.4	<12	29	2400	1400	1100	Slight	2780	2220	222	None	None	13.7	1112.10
Oct-06		6.5	6.58					2400	1300		None	2900	2300	215	None	Vslight	10.9	1111.88
Jan-07		6.6	6.56					2600	1400		None	3150	2470	254	None	Slight	9.3	1111.42
Apr-07		6.0	6.39					2500	1300		None	2750	2100	189	None	Vslight	9.9	1111.12
Jun-07		6.3	6.63	21	<2.4	<12	27	2500	1400	1400	None	2888	2410	197	None	Vslight	NA	1110.64
Oct-07		6.4	7.68					2500	1300		None	2670	2500	234	None	Vslight	14.2	1110.47
Jan-08		6.4	7.54					2800	1400		None	2882	2730	211	None	Vslight	9.3	1112.06
Apr-08		6.4	6.74					2800	1400		Vslight	2815	2800	157	None	Vslight	11.3	1111.97
Jun-08		6.4	6.47	18	<2.4	<12	18	2600	1300	1700	None	2972	2730	202	None	None	12.6	1113.44
Jun-08	D	6.5	6.51	21	<2.4	<12	29	2700	1400	1700		2975	2720					
Oct-08		6.4	6.27					2700	1400		None	2814	2560	174	None	None	12.6	1116.11
Jan-09		6.4	6.31					2700	1300		Slight	2908	2630	216	None	Slight	8.7	1112.54
Apr-09		6.4	6.34					2600	1400		None	2850	2360	178	None	Slight	9.8	1111.43
Jun-09		6.3	6.04	12	<3.1	23	25	2800	1300	1100	None	2893	2570	216	None	Slight	11.2	1111.48
Oct-09		6.3	6.05					2600	1500		Vslight	2964	2890	209	None	Vslight	10.2	1111.21

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

MW-1014C

D =Field Duplicate Sample

Well MW-1014C Well Depth: 156.6'

	Alk (mg/l)	NH3 (mg/l)	NO3+NO2 (mg/l)	As (ug/l)	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Pb (ug/l)	Mg (mg/l)	Mn (ug/l)	CO2 (ug/l)	Hg (ug/l)	Ni (ug/l)
Feb-99	360									<4.7	980	14			4300			
Apr-99	330									<4.7	1000	15			4500			
Jul-99	370			<42	<50	<21	280	32	<4.2	16	930	14	<14	56	4000		<0.050	
Oct-99	380			<42	<50	<4.2	290	33	<4.2	<9.4	960	14	<14	56	4000	160000	<0.050	
Jan-00	320			<15	25	<0.21	250	31	<0.42	<0.47	810	12	<1.4	48	3200		<0.050	
Jan-00 D	300			<15	25	<0.21	230	30	2.0	<0.47	820	11	2.0	46	3100		<0.050	
Apr-00	320			14	<50	<3.1	260	33	<6.2	<6.0	870	13	<24	51	3600	260000	<0.050	
Jul-00	350			39	<50	<2.3	270	36	4.2	<12	890	13	<9.6	54	3500		<0.050	
Oct-00	390									<12	840	12			3200			
Jan-01	340									<12	760	11			2900			
Apr-01	330									<13	830	12			3100	220000		
Apr-01 D																220000		
Jul-01	330			21	<50	<1.7	240		4.7	<13	810	11	<7.9	49	3000		<0.050	
Oct-01	350			15	<50	<1.7	210		<3.4	<13	710	9.6	<7.9	44	2900		<0.050	
Jan-02	350									<13	690	9.2			2600			
Apr-02	340									15	710	9.1			2600			
Jul-02	350			<27/18	<50	<1.7			<4.5	<13	740	9.4	<7.4		2700		<0.050	
Oct-02	360									<13	730	9.1			2600			
Jan-03	390			<27	<50	<1.7	210	39	<4.5	<13	700	8.3	<7.4	45	2400		<0.050	
Jan-03	370			<27	<50	<1.7	200	42	<4.5	<13	690	8.3	<7.4	45	2400		<0.050	
Apr-03	380									<13	690	8.0			2400			
Jul-03	340			13	26	<2.1	210		<6.4	<13	700	8.2	<10	45	2500		<0.025	
Oct-03	340									<1.3	680	7.8			2400			
Jan-04	310									<1.3	650	7.4			2300			
Apr-04	330									<13	640	7.5			2300			
DNR(4/04)				8.4	26	<0.05	185	38.2	<1	1.2	657	6.9	<1	47.3	2220		<0.03	
Jul-04	300			15	27	<1.7	190	40	<5.1	<13	660	7.2	11	43	2300		<0.025	
Oct-04	350			17			180			<13	610	6.6		41	2100			
Jan-05	340			21						<13	600	6.4			2000			
Apr-05	330			16						<13	660	7.0			2300			
Jul-05	350	0.85	0.037	15	27	<1.7	190		<4.5	<13	650	6.9	<10	43	2200		<0.025	81.0
Oct-05	320			14						<13	630	7.0			2200			
Jan-06	300			16						<13	590	6.2			2000			
Jan-06 D	310			18						<13	570	6.0			1900			
Apr-06	340	0.76	0.041	16	28	<1.7	180	40	<10	<13	620	6.4	<13	42	2100		<0.025	
Jul-06	350			16	<25	<1.7	160	38	<10	16	580	5.9	<13	41	1900		<0.025	
Oct-06	330			20						<13	620	6.1			2000			
Jan-07	300			21						<13	580	6.0			1900			
Apr-07	320			19						<13	620	6.1			2000			
Jun-07	360			19	31	4.7	170	41	<10	<13	580	5.8	<13	39	1900		<0.025	
Oct-07	360			19						<13	600	5.8			2000			
Jan-08	310			24						<13	550	5.4			1800			
Apr-08	310			24						<13	570	5.6			1900			
Jun-08	280			22	28	<1.7	160	35	<10	<13	550	5.4	<13	38	1800		<0.025	
Oct-08	310			17						<13	570	5.5			1800			
Jan-09	300			23						<13	540	5.3			1800			
Jan-09 D	320			22						<13	540	5.3			1800			
Apr-09	310			20						<1.3	510	4.8			1600			
Jun-09	300			19	26	<1.7	150	53	<10	<13	510	5	<13	35	1600		<0.025	
Oct-09	300			20						<0.31	540	4.3			1700			
Oct-09 D	290			20						<0.31	520	4.2			1600			

	Field pH (s.u.)	Lab pH (s.u.)	K	Se (ug/l)	Ag (ug/l)	Na (mg/l)	TDS (mg/l)	Sulf (mg/l)	Zn (ug/l)	Color (After Filter)	Field Cond (umho)	Lab Cond (umho)	Redox (mV)	Odor	Turbidity (Purging)	Temp (°C)	Grd Water El (Feet)
Feb-99	6.3	6.5					1200	520		None	1900			None	None		1103.39
Apr-99	6.3	6.5					1200	440		None	1623			None	None	13.5	1102.83
Jul-99	6.4	6.5	4.8	1.8	<45	11	1200	370	2200	None	1657			None	None	13.2	1103.90
Oct-99	6.6	6.7	4.0	<1.3	<4.5	9.6	1200	700	2100	None	1600			None	None	9.9	1104.81
Jan-00	6.6	6.5	6.3	1.9	<0.45	12	1200	540	1700	None	1500			None	None	10.5	1105.18
Jan-00 D	—	6.4	6.3	1.6	<0.45	11	1300	560	1600	—	—			—	—	—	—
Apr-00	6.7	6.3	7.6	<7.8	<4.7	9.4	1000	440	1800	None	1470		88	None	None	11.9	1105.25
Jul-00	6.4	6.5	7.4	<17	<5.5	12	1400	480	1700	None	1400	1400		None	None	13.7	1105.82
Oct-00	6.4	6.7					1300	450	1500	None	1490	1200		None	None	11.5	1106.21
Jan-01	6.5	6.4					1100	450	1200	None	1452	1300	64	None	None	10.9	1106.15
Apr-01	6.2	6.5					1100	420	1300	None	1400	1300	55	None	None	12.8	1107.65
Apr-01 D																	
Jul-01	6.2	6.5		<10	<3.1		1100	420	1200	None	1360	1300	40	None	None	13.7	1108.11
Oct-01	6.2	6.6		<1.6	4.6		990	410	1100	None	1354	1300	56	None	None	12.2	1108.10
Jan-02	6.6	6.5					1100	390	980	None	1341	1200	38	None	None	13.9	1108.48
Apr-02	6.4	6.6					1000	390	950	None	1310	1300	36	None	None	13.5	1109.25
Jul-02	6.6	6.6		<15	<4.3		1200	330	1000	None	1269	1300	45	None	None	17.2	1108.93
Oct-02	6.5	6.6					810	330	940	None	1299	1200	38	None	None	11.6	1110.10
Jan-03	6.4	6.5		<30	<4.3		1100	380	840	None	1311	1200	74	None	None	11.0	1109.58
Jan-03		6.4		<30	<4.3		1000	370	860			1400					
Apr-03	6.4	6.5					990	340	810	None	1287	1300	7	None	None	13.3	1109.35
Jul-03	6.4	6.6		<13	<7.7		920	330	820	None	1239	1100	40	None	None	13.0	1109.74
Oct-03	6.6	6.6					910	320	770	None	1256	1160	55	None	None	12.7	1109.01
Jan-04	6.4	6.54					930	320		None	1259	1096	34	None	None	10.6	1108.52
Apr-04	6.8	6.69					820	290		None	1233	1108	53	None	None	11.6	1108.53
DNR(4/04)				<1	<0.1		868	330	638								
Jul-04	6.4	6.59	6.2	<8.0	<6.7	12	820	290	630	None	1171	1029	31	None	None	15.5	1109.22
Oct-04	6.5	6.59					780	300		None	1175	1190	60	None	None	13.0	1108.87
Jan-05	6.5	6.80					730	300		None	1174	1110	70	None	None	11.4	1108.62
Apr-05	6.3	6.82					750	290		None	1202	1090	64	None	None	11.2	1108.19
Jul-05	6.9	6.52		<1.9	<6.7		760	300	550	None	1150	1090	57	None	None	15.0	1107.80
Oct-05	6.7	6.77					790	290		None	1157	1040	54	None	None	11.4	1108.06
Jan-06	6.9	6.69					740	280		None	1182	1110	67	None	None	9.6	1107.25
Jan-06 D		6.76					750	270				1070					
Apr-06	6.4	6.66		<2.4	<12		700	270	560	None	1124	961	80	None	None	12.8	1107.90
Jul-06	6.6	6.63	5.4	<2.4	<12	12	770	260	470	None	1080	989	63	None	None	13.0	1107.35
Oct-06	7.0	6.71					700	260		None	1113	997	36	None	None	11.1	1106.97
Jan-07	6.8	6.8					680	260		None	1122	986	76	None	None	9.8	1106.92
Apr-07	6.2	6.63					670	670		None	1072	934	68	Vslight	None	11.6	1106.71
Jun-07	6.6	6.74	5.4	<2.4	<12	10	720	270	470	None	1050	952	51	None	None	16.5	1106.19
Oct-07	6.6	6.76					670	260		None	1041	1060	57	None	None	16.2	1106.22
Jan-08	6.6	7.85					750	280		None	1081	1020	59	None	None	9.9	1107.58
Apr-08	6.6	6.98					780	190		None	1069	1110	48	None	None	12.1	1107.87
Jun-08	6.5	6.76	4.8	<2.4	<12	7.8	690	220	390	None	1061	1080	52	Vslight	None	14.9	1108.96
Oct-08	6.6	6.42					730	260		None	1058	1036	68	None	None	12.6	1113.25
Jan-09	6.6	6.65					810	240		None	1061	1050	76	None	None	9.4	1107.83
Jan-09 D		6.59					730	240				1050					
Apr-09	6.6	6.54					720	260		None	1059	960	72	None	None	10.4	1106.80
Jun-09	6.6	6.3	3.6	<3.1	<12	9.5	720	260	360	None	1026	1010	69	None	None	13.8	1106.86
Oct-09	6.6	6.31					670	230		None	1034	1063	71	None	None	11.2	1106.57
Oct-09 D	6.6	6.3					670	250			1045	1059				11.3	

Flambeau Mining Company
1/02/2010
Flambeau_Groundwater_Data___Thru_Fourth_Qtr_2009.xls

ATTACHMENT 2
PHREEQ-C RESULTS

Prepared by: JTC
Checked by: DE

```
   Input file: C:\DOCUME~1\jchapman\LOCALS~1\Temp\phreeqc.tmp
  Output file: C:\projects\SRKNAC_TASK_Flambeau09\FMC_2009_input_final.out
Database file: C:\Program Files\Phreeqc\Phreeqc.dat

------------------
Reading data base.
------------------

      SOLUTION_MASTER_SPECIES
      SOLUTION_SPECIES
      PHASES
      EXCHANGE_MASTER_SPECIES
      EXCHANGE_SPECIES
      SURFACE_MASTER_SPECIES
      SURFACE_SPECIES
      RATES
      END
------------------------------------
Reading input data for simulation 1.
------------------------------------

      SOLUTION  1 23/06/2009   MW1005P       7.1         0002
            units mg/L
            pH    7.1
          pe  -0.135
            density     1
            temp  12.9
            Ca    49
            Mg    20
            Na    10
            K     0.082
            Fe    1.2
            Mn    0.065
            Ba    0.064
            Cl    5.2
            Alkalinity  293 as HCO3
            S(6)   2.4
      SOLUTION  2 23/06/2009   MW1013        6.1         0003
            units mg/L
            pH    6.1
            pe  1.488
          density 1
            temp  11.3
            Ca    140
            Mg    42
            Na    15
            K     0.026
            Fe    5.3
            Mn    21
            Ba    0.130
            Cl    15
            Alkalinity  707 as HCO3
            S(6)  51
      SOLUTION  3 23/06/2009   MW1013A       6.6         0004
            units mg/L
            pH    6.6
            pe  1.589
            density     1
            temp  12.8
            Ca    120
            Mg    40
```

```
        Na    19
        K     0.064
        Fe    0.044
        Mn    2.4
        Ba    0.072
        Cl    14
        Alkalinity  390 as HCO3
        S(6)  200
SOLUTION  4 23/06/2009   MW1013B       6.2          0005
        units mg/L
        pH    6.2
        pe  3.651
      density 1
        temp  10.7
        Ca    580
        Mg    130
        Na    27
        K     0.027
        Fe    0.033
        Mn    19
        Cu  0.27
      Cl      77
        Alkalinity  769 as HCO3
        S(6)  1600
        Zn    0.160
SOLUTION  5 23/06/2009   MW1013C       6.4          0006
        units mg/L
        pH    6.4
        pe  0.609
        density     1
        temp  12.6
        Ca    560
        Mg    260
        Na    36
        K     0.020
        Fe    9.8
        Mn    9.8
        Cl    91
        Alkalinity  671 as HCO3
        S(6)  1900
        Zn    0.450
SOLUTION  6 23/06/2008   MW1014        6.3          0007
        units mg/L
        pH    6.3
        pe  2.823
        density     1
        temp  11.6
        Ca    76
        Mg    24
        Na    19
        K     0.003
        Fe    0.033
        Mn    0.320
        Ba    0.034
        Cl    30
        Alkalinity  207 as HCO3
        S(6)  170
SOLUTION  7 23/06/2008   MW1014A       6.3          0008
        units mg/L
        pH    6.3
        pe  2.823
```

```
        density    1
        temp  11.0
        Ca    300
        Mg    110
        Na    62
        K     0.0083
        Fe    0.12
        Mn    0.20
        Cl    13
        Alkalinity  610 as HCO3
        S(6)  970
  SOLUTION  8 23/06/2008   MW1014B       6.3        0009
        units mg/L
        pH    6.3
        pe  3.415
        density    1
        temp  11.2
        Ca    520
        Mg    130
        Na    25
        K     0.012
        Fe    0.033
        Mn    13
        Cl    53
        Alkalinity  622 as HCO3
        S     1300
        Zn    1.1
  SOLUTION  9 23/06/2008   MW1014C       6.6         0010
        units mg/L
        pH    6.6
        pe  0.879
        density    1
        temp  11.2
        Ca    150
        Mg    35
        Na    8.5
        K     0.0036
        Fe    5.0
        Mn    1.6
        Ba    0.026
        Cl    53
        Alkalinity  366 as HCO3
        S     260
        Zn    0.360
  END
-------------------------------------------
Beginning of initial solution calculations.
-------------------------------------------


Initial solution 1.     23/06/2009   MW1005P      7.1         0002

-----------------------------Solution composition------------------------------

  Elements           Molality       Moles

  Alkalinity        4.804e-03   4.804e-03
  Ba                4.662e-07   4.662e-07
  Ca                1.223e-03   1.223e-03
  Cl                1.467e-04   1.467e-04
  Fe                2.150e-05   2.150e-05
```

K	2.098e-06	2.098e-06
Mg	8.230e-04	8.230e-04
Mn	1.184e-06	1.184e-06
Na	4.351e-04	4.351e-04
S(6)	2.499e-05	2.499e-05

---------------------------Description of solution---------------------------

pH	=	7.100
pe	=	-0.135
Activity of water	=	1.000
Ionic strength	=	6.705e-03
Mass of water (kg)	=	1.000e+00
Total carbon (mol/kg)	=	5.738e-03
Total CO2 (mol/kg)	=	5.738e-03
Temperature (deg C)	=	12.900
Electrical balance (eq)	=	-4.248e-04
Percent error, 100*(Cat-|An|)/(Cat+|An|)	=	-4.52
Iterations	=	10
Total H	=	1.110172e+02
Total O	=	5.552259e+01

---------------------------Distribution of species---------------------------

	Species		Molality	Activity	Log Molality	Log Activity	Log Gamma
	H+		8.570e-08	7.943e-08	-7.067	-7.100	-0.033
	OH-		5.172e-08	4.745e-08	-7.286	-7.324	-0.037
	H2O		5.551e+01	9.999e-01	1.744	-0.000	0.000
Ba		4.662e-07					
	Ba+2		4.534e-07	3.252e-07	-6.344	-6.488	-0.144
	BaHCO3+		1.006e-08	9.246e-09	-7.997	-8.034	-0.037
	BaSO4		2.471e-09	2.475e-09	-8.607	-8.606	0.001
	BaCO3		2.536e-10	2.540e-10	-9.596	-9.595	0.001
	BaOH+		1.510e-13	1.387e-13	-12.821	-12.858	-0.037
C(4)		5.738e-03					
	HCO3-		4.714e-03	4.341e-03	-2.327	-2.362	-0.036
	CO2		9.409e-04	9.423e-04	-3.026	-3.026	0.001
	CaHCO3+		4.008e-05	3.692e-05	-4.397	-4.433	-0.036
	MgHCO3+		3.038e-05	2.791e-05	-4.517	-4.554	-0.037
	FeHCO3+		5.328e-06	4.895e-06	-5.273	-5.310	-0.037
	CO3-2		2.679e-06	1.928e-06	-5.572	-5.715	-0.143
	CaCO3		2.281e-06	2.284e-06	-5.642	-5.641	0.001
	NaHCO3		9.730e-07	9.745e-07	-6.012	-6.011	0.001
	MgCO3		8.705e-07	8.718e-07	-6.060	-6.060	0.001
	FeCO3		5.206e-07	5.214e-07	-6.283	-6.283	0.001
	MnHCO3+		2.542e-07	2.336e-07	-6.595	-6.632	-0.037
	MnCO3		9.230e-08	9.244e-08	-7.035	-7.034	0.001
	BaHCO3+		1.006e-08	9.246e-09	-7.997	-8.034	-0.037
	NaCO3-		8.256e-09	7.585e-09	-8.083	-8.120	-0.037
	BaCO3		2.536e-10	2.540e-10	-9.596	-9.595	0.001
Ca		1.223e-03					
	Ca+2		1.178e-03	8.473e-04	-2.929	-3.072	-0.143
	CaHCO3+		4.008e-05	3.692e-05	-4.397	-4.433	-0.036
	CaCO3		2.281e-06	2.284e-06	-5.642	-5.641	0.001
	CaSO4		2.279e-06	2.282e-06	-5.642	-5.642	0.001
	CaOH+		1.927e-09	1.770e-09	-8.715	-8.752	-0.037
	CaHSO4+		1.013e-12	9.303e-13	-11.995	-12.031	-0.037
Cl		1.467e-04					
	Cl-		1.467e-04	1.346e-04	-3.833	-3.871	-0.037

	FeCl+		2.281e-09	2.096e-09	-8.642	-8.679	-0.037
	MnCl+		3.604e-10	3.312e-10	-9.443	-9.480	-0.037
	MnCl2		1.943e-14	1.946e-14	-13.711	-13.711	0.001
	MnCl3-		7.857e-19	7.218e-19	-18.105	-18.142	-0.037
	FeCl+2		1.513e-21	1.078e-21	-20.820	-20.967	-0.147
	FeCl2+		1.052e-24	9.669e-25	-23.978	-24.015	-0.037
	FeCl3		1.300e-29	1.302e-29	-28.886	-28.885	0.001
Fe(2)		2.150e-05					
	Fe+2		1.560e-05	1.128e-05	-4.807	-4.948	-0.141
	FeHCO3+		5.328e-06	4.895e-06	-5.273	-5.310	-0.037
	FeCO3		5.206e-07	5.214e-07	-6.283	-6.283	0.001
	FeSO4		2.414e-08	2.418e-08	-7.617	-7.617	0.001
	FeOH+		1.904e-08	1.749e-08	-7.720	-7.757	-0.037
	FeCl+		2.281e-09	2.096e-09	-8.642	-8.679	-0.037
	FeHSO4+		1.348e-14	1.238e-14	-13.870	-13.907	-0.037
Fe(3)		8.022e-11					
	Fe(OH)2+		4.300e-11	3.951e-11	-10.367	-10.403	-0.037
	Fe(OH)3		3.692e-11	3.697e-11	-10.433	-10.432	0.001
	Fe(OH)4-		2.783e-13	2.557e-13	-12.556	-12.592	-0.037
	FeOH+2		2.146e-14	1.529e-14	-13.668	-13.816	-0.147
	Fe+3		7.831e-19	3.954e-19	-18.106	-18.403	-0.297
	FeSO4+		5.421e-20	4.980e-20	-19.266	-19.303	-0.037
	FeCl+2		1.513e-21	1.078e-21	-20.820	-20.967	-0.147
	Fe(SO4)2-		1.715e-23	1.575e-23	-22.766	-22.803	-0.037
	FeCl2+		1.052e-24	9.669e-25	-23.978	-24.015	-0.037
	Fe2(OH)2+4		4.114e-26	1.060e-26	-25.386	-25.975	-0.589
	FeHSO4+2		1.530e-26	1.090e-26	-25.815	-25.962	-0.147
	FeCl3		1.300e-29	1.302e-29	-28.886	-28.885	0.001
	Fe3(OH)4+5		2.331e-33	2.802e-34	-32.632	-33.553	-0.920
H(0)		1.712e-17					
	H2		8.558e-18	8.571e-18	-17.068	-17.067	0.001
K		2.098e-06					
	K+		2.098e-06	1.925e-06	-5.678	-5.716	-0.037
	KSO4-		1.794e-10	1.649e-10	-9.746	-9.783	-0.037
	KOH		8.389e-14	8.402e-14	-13.076	-13.076	0.001
Mg		8.230e-04					
	Mg+2		7.902e-04	5.707e-04	-3.102	-3.244	-0.141
	MgHCO3+		3.038e-05	2.791e-05	-4.517	-4.554	-0.037
	MgSO4		1.466e-06	1.468e-06	-5.834	-5.833	0.001
	MgCO3		8.705e-07	8.718e-07	-6.060	-6.060	0.001
	MgOH+		9.090e-09	8.351e-09	-8.041	-8.078	-0.037
Mn(2)		1.184e-06					
	Mn+2		8.353e-07	6.037e-07	-6.078	-6.219	-0.141
	MnHCO3+		2.542e-07	2.336e-07	-6.595	-6.632	-0.037
	MnCO3		9.230e-08	9.244e-08	-7.035	-7.034	0.001
	MnSO4		1.280e-09	1.282e-09	-8.893	-8.892	0.001
	MnCl+		3.604e-10	3.312e-10	-9.443	-9.480	-0.037
	MnOH+		7.605e-11	6.987e-11	-10.119	-10.156	-0.037
	MnCl2		1.943e-14	1.946e-14	-13.711	-13.711	0.001
	MnCl3-		7.857e-19	7.218e-19	-18.105	-18.142	-0.037
Mn(3)		4.647e-33					
	Mn+3		4.647e-33	2.167e-33	-32.333	-32.664	-0.331
Na		4.351e-04					
	Na+		4.341e-04	3.992e-04	-3.362	-3.399	-0.036
	NaHCO3		9.730e-07	9.745e-07	-6.012	-6.011	0.001
	NaSO4-		3.053e-08	2.805e-08	-7.515	-7.552	-0.037
	NaCO3-		8.256e-09	7.585e-09	-8.083	-8.120	-0.037
	NaOH		3.315e-11	3.320e-11	-10.480	-10.479	0.001
O(0)		0.000e+00					
	O2		0.000e+00	0.000e+00	-62.400	-62.399	0.001
S(6)		2.499e-05					

SO4-2	2.119e-05	1.519e-05	-4.674	-4.819	-0.145
CaSO4	2.279e-06	2.282e-06	-5.642	-5.642	0.001
MgSO4	1.466e-06	1.468e-06	-5.834	-5.833	0.001
NaSO4-	3.053e-08	2.805e-08	-7.515	-7.552	-0.037
FeSO4	2.414e-08	2.418e-08	-7.617	-7.617	0.001
BaSO4	2.471e-09	2.475e-09	-8.607	-8.606	0.001
MnSO4	1.280e-09	1.282e-09	-8.893	-8.892	0.001
KSO4-	1.794e-10	1.649e-10	-9.746	-9.783	-0.037
HSO4-	9.940e-11	9.132e-11	-10.003	-10.039	-0.037
CaHSO4+	1.013e-12	9.303e-13	-11.995	-12.031	-0.037
FeHSO4+	1.348e-14	1.238e-14	-13.870	-13.907	-0.037
FeSO4+	5.421e-20	4.980e-20	-19.266	-19.303	-0.037
Fe(SO4)2-	1.715e-23	1.575e-23	-22.766	-22.803	-0.037
FeHSO4+2	1.530e-26	1.090e-26	-25.815	-25.962	-0.147

----------------------------Saturation indices----------------------------

Phase	SI	log IAP	log KT	
Anhydrite	-3.56	-7.89	-4.33	CaSO4
Aragonite	-0.52	-8.79	-8.27	CaCO3
Barite	-1.12	-11.31	-10.19	BaSO4
Calcite	-0.37	-8.79	-8.42	CaCO3
CO2(g)	-1.71	-3.03	-1.31	CO2
Dolomite	-0.95	-17.75	-16.80	CaMg(CO3)2
Fe(OH)3(a)	-1.99	2.90	4.89	Fe(OH)3
Goethite	3.45	2.90	-0.55	FeOOH
Gypsum	-3.30	-7.89	-4.59	CaSO4:2H2O
H2(g)	-13.87	31.20	45.07	H2
H2O(g)	-1.83	-0.00	1.83	H2O
Halite	-8.82	-7.27	1.55	NaCl
Hausmannite	-26.28	37.87	64.15	Mn3O4
Hematite	8.85	5.79	-3.05	Fe2O3
Jarosite-K	-19.72	-27.96	-8.24	KFe3(SO4)2(OH)6
Manganite	-10.39	14.95	25.34	MnOOH
Melanterite	-7.40	-9.77	-2.37	FeSO4:7H2O
O2(g)	-59.61	-62.40	-2.79	O2
Pyrochroite	-7.22	7.98	15.20	Mn(OH)2
Pyrolusite	-21.49	21.91	43.40	MnO2:H2O
Rhodochrosite	-0.85	-11.93	-11.09	MnCO3
Siderite	0.15	-10.66	-10.81	FeCO3
Witherite	-3.59	-12.20	-8.61	BaCO3

Initial solution 2. 23/06/2009 MW1013 6.1 0003

---------------------------Solution composition---------------------------

Elements	Molality	Moles
Alkalinity	1.160e-02	1.160e-02
Ba	9.475e-07	9.475e-07
Ca	3.496e-03	3.496e-03
Cl	4.235e-04	4.235e-04
Fe	9.500e-05	9.500e-05
K	6.656e-07	6.656e-07
Mg	1.729e-03	1.729e-03
Mn	3.826e-04	3.826e-04
Na	6.531e-04	6.531e-04
S(6)	5.314e-04	5.314e-04

---------------------------Description of solution---------------------------

```
                                        pH  =   6.100
                                        pe  =   1.488
                          Activity of water  =   0.999
                             Ionic strength  =   1.725e-02
                        Mass of water (kg)  =   1.000e+00
                     Total carbon (mol/kg)  =   3.350e-02
                        Total CO2 (mol/kg)  =   3.350e-02
                       Temperature (deg C)  =  11.300
                   Electrical balance (eq)  =  -1.022e-03
 Percent error, 100*(Cat-|An|)/(Cat+|An|)  =  -4.33
                                Iterations  =  11
                                   Total H  = 1.110240e+02
                                   Total O  = 5.558693e+01

---------------------------Distribution of species---------------------------

                                                    Log       Log       Log
       Species          Molality    Activity  Molality  Activity     Gamma

       H+              8.856e-07   7.943e-07    -6.053    -6.100    -0.047
       OH-             4.706e-09   4.128e-09    -8.327    -8.384    -0.057
       H2O             5.551e+01   9.993e-01     1.744    -0.000     0.000
Ba               9.475e-07
       Ba+2            8.485e-07   5.164e-07    -6.071    -6.287    -0.216
       BaSO4           6.311e-08   6.336e-08    -7.200    -7.198     0.002
       BaHCO3+         3.578e-08   3.150e-08    -7.446    -7.502    -0.055
       BaCO3           8.398e-11   8.432e-11   -10.076   -10.074     0.002
       BaOH+           2.500e-14   2.201e-14   -13.602   -13.657    -0.055
C(4)             3.350e-02
       CO2             2.191e-02   2.199e-02    -1.659    -1.658     0.002
       HCO3-           1.107e-02   9.795e-03    -1.956    -2.009    -0.053
       CaHCO3+         2.091e-04   1.850e-04    -3.680    -3.733    -0.053
       MnHCO3+         1.418e-04   1.249e-04    -3.848    -3.903    -0.055
       MgHCO3+         1.214e-04   1.069e-04    -3.916    -3.971    -0.055
       FeHCO3+         3.812e-05   3.357e-05    -4.419    -4.474    -0.055
       MnCO3           4.710e-06   4.729e-06    -5.327    -5.325     0.002
       NaHCO3          3.141e-06   3.154e-06    -5.503    -5.501     0.002
       CaCO3           1.122e-06   1.126e-06    -5.950    -5.948     0.002
       CO3-2           6.791e-07   4.162e-07    -6.168    -6.381    -0.213
       FeCO3           3.407e-07   3.421e-07    -6.468    -6.466     0.002
       MgCO3           3.112e-07   3.124e-07    -6.507    -6.505     0.002
       BaHCO3+         3.578e-08   3.150e-08    -7.446    -7.502    -0.055
       NaCO3-          2.442e-09   2.150e-09    -8.612    -8.667    -0.055
       BaCO3           8.398e-11   8.432e-11   -10.076   -10.074     0.002
Ca               3.496e-03
       Ca+2            3.203e-03   1.962e-03    -2.494    -2.707    -0.213
       CaHCO3+         2.091e-04   1.850e-04    -3.680    -3.733    -0.053
       CaSO4           8.348e-05   8.381e-05    -4.078    -4.077     0.002
       CaCO3           1.122e-06   1.126e-06    -5.950    -5.948     0.002
       CaOH+           4.652e-10   4.096e-10    -9.332    -9.388    -0.055
       CaHSO4+         3.824e-10   3.367e-10    -9.417    -9.473    -0.055
Cl               4.235e-04
       Cl-             4.233e-04   3.715e-04    -3.373    -3.430    -0.057
       MnCl+           2.459e-07   2.165e-07    -6.609    -6.665    -0.055
       FeCl+           1.996e-08   1.757e-08    -7.700    -7.755    -0.055
       MnCl2           3.496e-11   3.510e-11   -10.456   -10.455     0.002
       MnCl3-          4.079e-15   3.591e-15   -14.389   -14.445    -0.055
       FeCl+2          5.427e-19   3.261e-19   -18.265   -18.487    -0.221
       FeCl2+          9.689e-22   8.531e-22   -21.014   -21.069    -0.055
       FeCl3           3.156e-26   3.169e-26   -25.501   -25.499     0.002
```

Fe(2)		9.500e-05				
	Fe+2	5.536e-05	3.427e-05	-4.257	-4.465	-0.208
	FeHCO3+	3.812e-05	3.357e-05	-4.419	-4.474	-0.055
	FeSO4	1.143e-06	1.147e-06	-5.942	-5.940	0.002
	FeCO3	3.407e-07	3.421e-07	-6.468	-6.466	0.002
	FeCl+	1.996e-08	1.757e-08	-7.700	-7.755	-0.055
	FeOH+	5.295e-09	4.662e-09	-8.276	-8.331	-0.055
	FeHSO4+	6.679e-12	5.881e-12	-11.175	-11.231	-0.055
Fe(3)		4.747e-11				
	Fe(OH)2+	4.387e-11	3.863e-11	-10.358	-10.413	-0.055
	Fe(OH)3	3.335e-12	3.348e-12	-11.477	-11.475	0.002
	FeOH+2	2.660e-13	1.599e-13	-12.575	-12.796	-0.221
	Fe(OH)4-	2.450e-15	2.157e-15	-14.611	-14.666	-0.055
	Fe+3	1.220e-16	4.583e-17	-15.914	-16.339	-0.425
	FeSO4+	1.017e-16	8.953e-17	-15.993	-16.048	-0.055
	FeCl+2	5.427e-19	3.261e-19	-18.265	-18.487	-0.221
	Fe(SO4)2-	5.150e-19	4.534e-19	-18.288	-18.344	-0.055
	FeCl2+	9.689e-22	8.531e-22	-21.014	-21.069	-0.055
	FeHSO4+2	3.287e-22	1.976e-22	-21.483	-21.704	-0.221
	Fe2(OH)2+4	9.546e-24	1.245e-24	-23.020	-23.905	-0.885
	FeCl3	3.156e-26	3.169e-26	-25.501	-25.499	0.002
	Fe3(OH)4+5	9.115e-31	3.780e-32	-30.040	-31.423	-1.382
H(0)		9.731e-19				
	H2	4.865e-19	4.885e-19	-18.313	-18.311	0.002
K		6.656e-07				
	K+	6.647e-07	5.834e-07	-6.177	-6.234	-0.057
	KSO4-	8.872e-10	7.811e-10	-9.052	-9.107	-0.055
	KOH	2.535e-15	2.545e-15	-14.596	-14.594	0.002
Mg		1.729e-03				
	Mg+2	1.569e-03	9.709e-04	-2.804	-3.013	-0.208
	MgHCO3+	1.214e-04	1.069e-04	-3.916	-3.971	-0.055
	MgSO4	3.834e-05	3.850e-05	-4.416	-4.415	0.002
	MgCO3	3.112e-07	3.124e-07	-6.507	-6.505	0.002
	MgOH+	1.377e-09	1.213e-09	-8.861	-8.916	-0.055
Mn(2)		3.826e-04				
	Mn+2	2.311e-04	1.431e-04	-3.636	-3.845	-0.208
	MnHCO3+	1.418e-04	1.249e-04	-3.848	-3.903	-0.055
	MnSO4	4.717e-06	4.736e-06	-5.326	-5.325	0.002
	MnCO3	4.710e-06	4.729e-06	-5.327	-5.325	0.002
	MnCl+	2.459e-07	2.165e-07	-6.609	-6.665	-0.055
	MnOH+	1.630e-09	1.435e-09	-8.788	-8.843	-0.055
	MnCl2	3.496e-11	3.510e-11	-10.456	-10.455	0.002
	MnCl3-	4.079e-15	3.591e-15	-14.389	-14.445	-0.055
Mn(3)		5.252e-29				
	Mn+3	5.252e-29	1.670e-29	-28.280	-28.777	-0.498
Na		6.531e-04				
	Na+	6.492e-04	5.725e-04	-3.188	-3.242	-0.055
	NaHCO3	3.141e-06	3.154e-06	-5.503	-5.501	0.002
	NaSO4-	7.285e-07	6.414e-07	-6.138	-6.193	-0.055
	NaCO3-	2.442e-09	2.150e-09	-8.612	-8.667	-0.055
	NaOH	4.740e-12	4.759e-12	-11.324	-11.322	0.002
O(0)		0.000e+00				
	O2	0.000e+00	0.000e+00	-60.489	-60.487	0.002
S(6)		5.314e-04				
	SO4-2	4.029e-04	2.448e-04	-3.395	-3.611	-0.216
	CaSO4	8.348e-05	8.381e-05	-4.078	-4.077	0.002
	MgSO4	3.834e-05	3.850e-05	-4.416	-4.415	0.002
	MnSO4	4.717e-06	4.736e-06	-5.326	-5.325	0.002
	FeSO4	1.143e-06	1.147e-06	-5.942	-5.940	0.002
	NaSO4-	7.285e-07	6.414e-07	-6.138	-6.193	-0.055
	BaSO4	6.311e-08	6.336e-08	-7.200	-7.198	0.002

HSO4-	1.621e-08	1.427e-08	-7.790	-7.845	-0.055
KSO4-	8.872e-10	7.811e-10	-9.052	-9.107	-0.055
CaHSO4+	3.824e-10	3.367e-10	-9.417	-9.473	-0.055
FeHSO4+	6.679e-12	5.881e-12	-11.175	-11.231	-0.055
FeSO4+	1.017e-16	8.953e-17	-15.993	-16.048	-0.055
Fe(SO4)2-	5.150e-19	4.534e-19	-18.288	-18.344	-0.055
FeHSO4+2	3.287e-22	1.976e-22	-21.483	-21.704	-0.221

----------------------------Saturation indices----------------------------

Phase	SI	log IAP	log KT	
Anhydrite	-1.98	-6.32	-4.33	CaSO4
Aragonite	-0.83	-9.09	-8.26	CaCO3
Barite	0.32	-9.90	-10.22	BaSO4
Calcite	-0.67	-9.09	-8.42	CaCO3
CO2(g)	-0.37	-1.66	-1.29	CO2
Dolomite	-1.72	-18.48	-16.76	CaMg(CO3)2
Fe(OH)3(a)	-2.93	1.96	4.89	Fe(OH)3
Goethite	2.45	1.96	-0.49	FeOOH
Gypsum	-1.73	-6.32	-4.59	CaSO4:2H2O
H2(g)	-15.11	30.24	45.36	H2
H2O(g)	-1.88	-0.00	1.88	H2O
Halite	-8.22	-6.67	1.55	NaCl
Hausmannite	-24.34	40.24	64.58	Mn3O4
Hematite	6.84	3.92	-2.92	Fe2O3
Jarosite-K	-17.77	-25.87	-8.11	KFe3(SO4)2(OH)6
Manganite	-9.40	15.94	25.34	MnOOH
Melanterite	-5.69	-8.08	-2.39	FeSO4:7H2O
O2(g)	-57.71	-60.49	-2.78	O2
Pyrochroite	-6.85	8.35	15.20	Mn(OH)2
Pyrolusite	-20.15	23.53	43.68	MnO2:H2O
Rhodochrosite	0.85	-10.23	-11.08	MnCO3
Siderite	-0.04	-10.85	-10.80	FeCO3
Witherite	-4.05	-12.67	-8.62	BaCO3

Initial solution 3. 23/06/2009 MW1013A 6.6 0004

----------------------------Solution composition----------------------------

Elements	Molality	Moles
Alkalinity	6.396e-03	6.396e-03
Ba	5.247e-07	5.247e-07
Ca	2.996e-03	2.996e-03
Cl	3.952e-04	3.952e-04
Fe	7.885e-07	7.885e-07
K	1.638e-06	1.638e-06
Mg	1.647e-03	1.647e-03
Mn	4.372e-05	4.372e-05
Na	8.271e-04	8.271e-04
S(6)	2.084e-03	2.084e-03

----------------------------Description of solution----------------------------

pH = 6.600
pe = 1.589
Activity of water = 1.000
Ionic strength = 1.518e-02
Mass of water (kg) = 1.000e+00
Total carbon (mol/kg) = 1.018e-02

```
                      Total CO2 (mol/kg)  =   1.018e-02
                    Temperature (deg C)   =  12.800
                 Electrical balance (eq)  =  -7.541e-04
 Percent error, 100*(Cat-|An|)/(Cat+|An|) =  -3.97
                              Iterations  =   9
                                 Total H  = 1.110188e+02
                                 Total O  = 5.554130e+01
```

----------------------------Distribution of species----------------------------

	Species	Molality	Activity	Log Molality	Log Activity	Log Gamma
	H+	2.787e-07	2.512e-07	-6.555	-6.600	-0.045
	OH-	1.684e-08	1.487e-08	-7.774	-7.828	-0.054
	H2O	5.551e+01	9.997e-01	1.744	-0.000	0.000
Ba		5.247e-07				
	Ba+2	3.910e-07	2.439e-07	-6.408	-6.613	-0.205
	BaSO4	1.237e-07	1.241e-07	-6.908	-6.906	0.002
	BaHCO3+	9.932e-09	8.801e-09	-8.003	-8.055	-0.053
	BaCO3	7.606e-11	7.633e-11	-10.119	-10.117	0.002
	BaOH+	3.712e-14	3.289e-14	-13.430	-13.483	-0.053
C(4)		1.018e-02				
	HCO3-	6.210e-03	5.527e-03	-2.207	-2.258	-0.051
	CO2	3.789e-03	3.802e-03	-2.421	-2.420	0.002
	CaHCO3+	1.014e-04	9.027e-05	-3.994	-4.044	-0.051
	MgHCO3+	6.351e-05	5.628e-05	-4.197	-4.250	-0.053
	MnHCO3+	1.039e-05	9.208e-06	-4.983	-5.036	-0.053
	NaHCO3	2.256e-06	2.264e-06	-5.647	-5.645	0.002
	CaCO3	1.758e-06	1.764e-06	-5.755	-5.753	0.002
	CO3-2	1.233e-06	7.740e-07	-5.909	-6.111	-0.202
	MnCO3	1.145e-06	1.149e-06	-5.941	-5.940	0.002
	MgCO3	5.517e-07	5.536e-07	-6.258	-6.257	0.002
	FeHCO3+	2.080e-07	1.843e-07	-6.682	-6.735	-0.053
	BaHCO3+	9.932e-09	8.801e-09	-8.003	-8.055	-0.053
	NaCO3-	6.239e-09	5.528e-09	-8.205	-8.257	-0.053
	FeCO3	6.169e-09	6.191e-09	-8.210	-8.208	0.002
	BaCO3	7.606e-11	7.633e-11	-10.119	-10.117	0.002
Ca		2.996e-03				
	Ca+2	2.601e-03	1.632e-03	-2.585	-2.787	-0.202
	CaSO4	2.925e-04	2.935e-04	-3.534	-3.532	0.002
	CaHCO3+	1.014e-04	9.027e-05	-3.994	-4.044	-0.051
	CaCO3	1.758e-06	1.764e-06	-5.755	-5.753	0.002
	CaOH+	1.216e-09	1.078e-09	-8.915	-8.968	-0.053
	CaHSO4+	4.265e-10	3.779e-10	-9.370	-9.423	-0.053
Cl		3.952e-04				
	Cl-	3.952e-04	3.492e-04	-3.403	-3.457	-0.054
	MnCl+	3.001e-08	2.659e-08	-7.523	-7.575	-0.053
	FeCl+	1.814e-10	1.607e-10	-9.741	-9.794	-0.053
	MnCl2	4.039e-12	4.053e-12	-11.394	-11.392	0.002
	MnCl3-	4.399e-16	3.898e-16	-15.357	-15.409	-0.053
	FeCl+2	7.036e-21	4.337e-21	-20.153	-20.363	-0.210
	FeCl2+	1.143e-23	1.012e-23	-22.942	-22.995	-0.053
	FeCl3	3.523e-28	3.535e-28	-27.453	-27.452	0.002
Fe(2)		7.885e-07				
	Fe+2	5.264e-07	3.334e-07	-6.279	-6.477	-0.198
	FeHCO3+	2.080e-07	1.843e-07	-6.682	-6.735	-0.053
	FeSO4	4.754e-08	4.770e-08	-7.323	-7.321	0.002
	FeCO3	6.169e-09	6.191e-09	-8.210	-8.208	0.002
	FeOH+	1.831e-10	1.622e-10	-9.737	-9.790	-0.053
	FeCl+	1.814e-10	1.607e-10	-9.741	-9.794	-0.053

	FeHSO4+	8.716e-14	7.723e-14	-13.060	-13.112	-0.053
Fe(3)		8.669e-12				
	Fe(OH)2+	6.867e-12	6.085e-12	-11.163	-11.216	-0.053
	Fe(OH)3	1.786e-12	1.792e-12	-11.748	-11.747	0.002
	FeOH+2	1.213e-14	7.480e-15	-13.916	-14.126	-0.210
	Fe(OH)4-	4.402e-15	3.901e-15	-14.356	-14.409	-0.053
	FeSO4+	5.836e-18	5.171e-18	-17.234	-17.286	-0.053
	Fe+3	1.570e-18	6.156e-19	-17.804	-18.211	-0.407
	Fe(SO4)2-	1.233e-19	1.093e-19	-18.909	-18.961	-0.053
	FeCl+2	7.036e-21	4.337e-21	-20.153	-20.363	-0.210
	FeCl2+	1.143e-23	1.012e-23	-22.942	-22.995	-0.053
	FeHSO4+2	5.810e-24	3.582e-24	-23.236	-23.446	-0.210
	Fe2(OH)2+4	1.764e-26	2.547e-27	-25.753	-26.594	-0.840
	FeCl3	3.523e-28	3.535e-28	-27.453	-27.452	0.002
	Fe3(OH)4+5	2.154e-34	1.047e-35	-33.667	-34.980	-1.313
H(0)		6.091e-20				
	H2	3.045e-20	3.056e-20	-19.516	-19.515	0.002
K		1.638e-06				
	K+	1.629e-06	1.439e-06	-5.788	-5.842	-0.054
	KSO4-	9.280e-09	8.223e-09	-8.032	-8.085	-0.053
	KOH	1.979e-14	1.986e-14	-13.704	-13.702	0.002
Mg		1.647e-03				
	Mg+2	1.428e-03	9.040e-04	-2.845	-3.044	-0.199
	MgSO4	1.545e-04	1.550e-04	-3.811	-3.810	0.002
	MgHCO3+	6.351e-05	5.628e-05	-4.197	-4.250	-0.053
	MgCO3	5.517e-07	5.536e-07	-6.258	-6.257	0.002
	MgOH+	4.674e-09	4.142e-09	-8.330	-8.383	-0.053
Mn(2)		4.372e-05				
	Mn+2	2.951e-05	1.869e-05	-4.530	-4.728	-0.198
	MnHCO3+	1.039e-05	9.208e-06	-4.983	-5.036	-0.053
	MnSO4	2.638e-06	2.648e-06	-5.579	-5.577	0.002
	MnCO3	1.145e-06	1.149e-06	-5.941	-5.940	0.002
	MnCl+	3.001e-08	2.659e-08	-7.523	-7.575	-0.053
	MnOH+	7.652e-10	6.780e-10	-9.116	-9.169	-0.053
	MnCl2	4.039e-12	4.053e-12	-11.394	-11.392	0.002
	MnCl3-	4.399e-16	3.898e-16	-15.357	-15.409	-0.053
Mn(3)		1.039e-29				
	Mn+3	1.039e-29	3.498e-30	-28.983	-29.456	-0.473
Na		8.271e-04				
	Na+	8.210e-04	7.285e-04	-3.086	-3.138	-0.052
	NaSO4-	3.859e-06	3.420e-06	-5.413	-5.466	-0.053
	NaHCO3	2.256e-06	2.264e-06	-5.647	-5.645	0.002
	NaCO3-	6.239e-09	5.528e-09	-8.205	-8.257	-0.053
	NaOH	1.909e-11	1.916e-11	-10.719	-10.718	0.002
O(0)		0.000e+00				
	O2	0.000e+00	0.000e+00	-57.541	-57.539	0.002
S(6)		2.084e-03				
	SO4-2	1.630e-03	1.015e-03	-2.788	-2.993	-0.206
	CaSO4	2.925e-04	2.935e-04	-3.534	-3.532	0.002
	MgSO4	1.545e-04	1.550e-04	-3.811	-3.810	0.002
	NaSO4-	3.859e-06	3.420e-06	-5.413	-5.466	-0.053
	MnSO4	2.638e-06	2.648e-06	-5.579	-5.577	0.002
	BaSO4	1.237e-07	1.241e-07	-6.908	-6.906	0.002
	FeSO4	4.754e-08	4.770e-08	-7.323	-7.321	0.002
	HSO4-	2.174e-08	1.927e-08	-7.663	-7.715	-0.053
	KSO4-	9.280e-09	8.223e-09	-8.032	-8.085	-0.053
	CaHSO4+	4.265e-10	3.779e-10	-9.370	-9.423	-0.053
	FeHSO4+	8.716e-14	7.723e-14	-13.060	-13.112	-0.053
	FeSO4+	5.836e-18	5.171e-18	-17.234	-17.286	-0.053
	Fe(SO4)2-	1.233e-19	1.093e-19	-18.909	-18.961	-0.053
	FeHSO4+2	5.810e-24	3.582e-24	-23.236	-23.446	-0.210

```
------------------------------Saturation indices-------------------------------

      Phase               SI log IAP  log KT

      Anhydrite         -1.45   -5.78   -4.33  CaSO4
      Aragonite         -0.63   -8.90   -8.27  CaCO3
      Barite             0.58   -9.61  -10.19  BaSO4
      Calcite           -0.48   -8.90   -8.42  CaCO3
      CO2(g)            -1.11   -2.42   -1.31  CO2
      Dolomite          -1.26  -18.05  -16.79  CaMg(CO3)2
      Fe(OH)3(a)        -3.30    1.59    4.89  Fe(OH)3
      Goethite           2.14    1.59   -0.55  FeOOH
      Gypsum            -1.19   -5.78   -4.59  CaSO4:2H2O
      H2(g)            -16.32   28.77   45.09  H2
      H2O(g)            -1.84   -0.00    1.84  H2O
      Halite            -8.15   -6.59    1.55  NaCl
      Hausmannite      -22.38   41.79   64.18  Mn3O4
      Hematite           6.22    3.18   -3.04  Fe2O3
      Jarosite-K       -18.63  -26.86   -8.23  KFe3(SO4)2(OH)6
      Manganite         -8.68   16.66   25.34  MnOOH
      Melanterite       -7.10   -9.47   -2.37  FeSO4:7H2O
      O2(g)            -54.75  -57.54   -2.79  O2
      Pyrochroite       -6.73    8.47   15.20  Mn(OH)2
      Pyrolusite       -18.57   24.85   43.42  MnO2:H2O
      Rhodochrosite      0.25  -10.84  -11.09  MnCO3
      Siderite          -1.78  -12.59  -10.81  FeCO3
      Witherite         -4.11  -12.72   -8.61  BaCO3

Initial solution 4.     23/06/2009   MW1013B       6.2          0005

----------------------------Solution composition------------------------------

      Elements           Molality       Moles

      Alkalinity        1.264e-02   1.264e-02
      Ca                1.452e-02   1.452e-02
      Cl                2.179e-03   2.179e-03
      Cu                4.263e-06   4.263e-06
      Fe                5.928e-07   5.928e-07
      K                 6.927e-07   6.927e-07
      Mg                5.364e-03   5.364e-03
      Mn                3.470e-04   3.470e-04
      Na                1.178e-03   1.178e-03
      S(6)              1.671e-02   1.671e-02
      Zn                2.455e-06   2.455e-06

----------------------------Description of solution----------------------------

                                       pH  =   6.200
                                       pe  =   3.651
                        Activity of water  =   0.999
                           Ionic strength  =   5.831e-02
                       Mass of water (kg)  =   1.000e+00
                    Total carbon (mol/kg)  =   2.993e-02
                       Total CO2 (mol/kg)  =   2.993e-02
                      Temperature (deg C)  =  10.700
                  Electrical balance (eq)  =  -6.589e-03
 Percent error, 100*(Cat-|An|)/(Cat+|An|)  =  -9.94
                               Iterations  =  11
                                  Total H  = 1.110251e+02
```

Total O = 5.564554e+01

----------------------------Distribution of species----------------------------

	Species	Molality	Activity	Log Molality	Log Activity	Log Gamma
	H+	7.420e-07	6.310e-07	-6.130	-6.200	-0.070
	OH-	6.122e-09	4.927e-09	-8.213	-8.307	-0.094
	H2O	5.551e+01	9.989e-01	1.744	-0.000	0.000
C(4)		2.993e-02				
	CO2	1.729e-02	1.753e-02	-1.762	-1.756	0.006
	HCO3-	1.178e-02	9.696e-03	-1.929	-2.013	-0.084
	CaHCO3+	5.156e-04	4.246e-04	-3.288	-3.372	-0.084
	MgHCO3+	2.358e-04	1.924e-04	-3.628	-3.716	-0.088
	MnHCO3+	9.433e-05	7.700e-05	-4.025	-4.114	-0.088
	NaHCO3	5.048e-06	5.116e-06	-5.297	-5.291	0.006
	MnCO3	3.561e-06	3.609e-06	-5.448	-5.443	0.006
	CaCO3	3.193e-06	3.236e-06	-5.496	-5.490	0.006
	CO3-2	1.109e-06	5.099e-07	-5.955	-6.293	-0.338
	ZnHCO3+	7.396e-07	6.037e-07	-6.131	-6.219	-0.088
	MgCO3	6.812e-07	6.904e-07	-6.167	-6.161	0.006
	FeHCO3+	1.761e-07	1.438e-07	-6.754	-6.842	-0.088
	ZnCO3	4.964e-08	5.032e-08	-7.304	-7.298	0.006
	NaCO3-	5.116e-09	4.177e-09	-8.291	-8.379	-0.088
	FeCO3	1.789e-09	1.814e-09	-8.747	-8.741	0.006
	Zn(CO3)2-2	1.235e-09	5.485e-10	-8.908	-9.261	-0.353
Ca		1.452e-02				
	Ca+2	1.001e-02	4.622e-03	-2.000	-2.335	-0.336
	CaSO4	3.990e-03	4.044e-03	-2.399	-2.393	0.006
	CaHCO3+	5.156e-04	4.246e-04	-3.288	-3.372	-0.084
	CaCO3	3.193e-06	3.236e-06	-5.496	-5.490	0.006
	CaHSO4+	1.573e-08	1.284e-08	-7.803	-7.892	-0.088
	CaOH+	1.488e-09	1.214e-09	-8.827	-8.916	-0.088
Cl		2.179e-03				
	Cl-	2.178e-03	1.757e-03	-2.662	-2.755	-0.093
	MnCl+	7.812e-07	6.377e-07	-6.107	-6.195	-0.088
	ZnCl+	1.477e-09	1.206e-09	-8.831	-8.919	-0.088
	MnCl2	4.824e-10	4.889e-10	-9.317	-9.311	0.006
	FeCl+	4.405e-10	3.596e-10	-9.356	-9.444	-0.088
	ZnCl2	2.060e-12	2.088e-12	-11.686	-11.680	0.006
	MnCl3-	2.898e-13	2.366e-13	-12.538	-12.626	-0.088
	ZnCl3-	4.607e-15	3.761e-15	-14.337	-14.425	-0.088
	ZnCl4-2	6.620e-18	2.939e-18	-17.179	-17.532	-0.353
	FeCl+2	2.066e-18	9.173e-19	-17.685	-18.037	-0.353
	FeCl2+	1.420e-20	1.159e-20	-19.848	-19.936	-0.088
	FeCl3	2.008e-24	2.036e-24	-23.697	-23.691	0.006
Cu(1)		1.690e-07				
	Cu+	1.690e-07	1.341e-07	-6.772	-6.872	-0.100
Cu(2)		4.093e-06				
	Cu+2	2.793e-06	1.317e-06	-5.554	-5.881	-0.327
	CuSO4	1.206e-06	1.223e-06	-5.919	-5.913	0.006
	Cu(OH)2	6.803e-08	6.895e-08	-7.167	-7.161	0.006
	CuOH+	2.573e-08	2.084e-08	-7.590	-7.681	-0.091
	Cu(OH)3-	8.057e-15	6.577e-15	-14.094	-14.182	-0.088
	Cu(OH)4-2	4.679e-21	2.078e-21	-20.330	-20.682	-0.353
Fe(2)		5.928e-07				
	Fe+2	3.146e-07	1.483e-07	-6.502	-6.829	-0.327
	FeHCO3+	1.761e-07	1.438e-07	-6.754	-6.842	-0.088
	FeSO4	9.975e-08	1.011e-07	-7.001	-6.995	0.006
	FeCO3	1.789e-09	1.814e-09	-8.747	-8.741	0.006

	FeCl+	4.405e-10	3.596e-10	-9.356	-9.444	-0.088
	FeOH+	2.960e-11	2.417e-11	-10.529	-10.617	-0.088
	FeHSO4+	5.045e-13	4.118e-13	-12.297	-12.385	-0.088
Fe(3)	4.661e-11					
	Fe(OH)2+	4.270e-11	3.485e-11	-10.370	-10.458	-0.088
	Fe(OH)3	3.644e-12	3.694e-12	-11.438	-11.433	0.006
	FeOH+2	2.647e-13	1.175e-13	-12.577	-12.930	-0.353
	Fe(OH)4-	3.572e-15	2.916e-15	-14.447	-14.535	-0.088
	FeSO4+	1.353e-15	1.105e-15	-14.869	-14.957	-0.088
	Fe(SO4)2-	1.409e-16	1.150e-16	-15.851	-15.939	-0.088
	Fe+3	1.197e-16	2.784e-17	-15.922	-16.555	-0.633
	FeCl+2	2.066e-18	9.173e-19	-17.685	-18.037	-0.353
	FeCl2+	1.420e-20	1.159e-20	-19.848	-19.936	-0.088
	FeHSO4+2	4.374e-21	1.942e-21	-20.359	-20.712	-0.353
	Fe2(OH)2+4	1.780e-23	6.916e-25	-22.750	-24.160	-1.410
	FeCl3	2.008e-24	2.036e-24	-23.697	-23.691	0.006
	Fe3(OH)4+5	3.220e-30	2.014e-32	-29.492	-31.696	-2.204
H(0)	2.876e-23					
	H2	1.438e-23	1.457e-23	-22.842	-22.836	0.006
K	6.927e-07					
	K+	6.745e-07	5.440e-07	-6.171	-6.264	-0.093
	KSO4-	1.818e-08	1.484e-08	-7.740	-7.829	-0.088
	KOH	2.947e-15	2.986e-15	-14.531	-14.525	0.006
Mg	5.364e-03					
	Mg+2	3.727e-03	1.768e-03	-2.429	-2.753	-0.324
	MgSO4	1.401e-03	1.420e-03	-2.854	-2.848	0.006
	MgHCO3+	2.358e-04	1.924e-04	-3.628	-3.716	-0.088
	MgCO3	6.812e-07	6.904e-07	-6.167	-6.161	0.006
	MgOH+	3.206e-09	2.617e-09	-8.494	-8.582	-0.088
Mn(2)	3.470e-04					
	Mn+2	1.891e-04	8.911e-05	-3.723	-4.050	-0.327
	MnHCO3+	9.433e-05	7.700e-05	-4.025	-4.114	-0.088
	MnSO4	5.923e-05	6.003e-05	-4.227	-4.222	0.006
	MnCO3	3.561e-06	3.609e-06	-5.448	-5.443	0.006
	MnCl+	7.812e-07	6.377e-07	-6.107	-6.195	-0.088
	MnOH+	1.306e-09	1.066e-09	-8.884	-8.972	-0.088
	MnCl2	4.824e-10	4.889e-10	-9.317	-9.311	0.006
	MnCl3-	2.898e-13	2.366e-13	-12.538	-12.626	-0.088
Mn(3)	8.543e-27					
	Mn+3	8.543e-27	1.375e-27	-26.068	-26.862	-0.793
Na	1.178e-03					
	Na+	1.147e-03	9.384e-04	-2.941	-3.028	-0.087
	NaSO4-	2.643e-05	2.157e-05	-4.578	-4.666	-0.088
	NaHCO3	5.048e-06	5.116e-06	-5.297	-5.291	0.006
	NaCO3-	5.116e-09	4.177e-09	-8.291	-8.379	-0.088
	NaOH	9.685e-12	9.815e-12	-11.014	-11.008	0.006
O(0)	0.000e+00					
	O2	0.000e+00	0.000e+00	-51.660	-51.654	0.006
S(6)	1.671e-02					
	SO4-2	1.123e-02	5.046e-03	-1.950	-2.297	-0.347
	CaSO4	3.990e-03	4.044e-03	-2.399	-2.393	0.006
	MgSO4	1.401e-03	1.420e-03	-2.854	-2.848	0.006
	MnSO4	5.923e-05	6.003e-05	-4.227	-4.222	0.006
	NaSO4-	2.643e-05	2.157e-05	-4.578	-4.666	-0.088
	CuSO4	1.206e-06	1.223e-06	-5.919	-5.913	0.006
	ZnSO4	5.142e-07	5.211e-07	-6.289	-6.283	0.006
	HSO4-	2.830e-07	2.310e-07	-6.548	-6.636	-0.088
	FeSO4	9.975e-08	1.011e-07	-7.001	-6.995	0.006
	Zn(SO4)2-2	5.404e-08	2.399e-08	-7.267	-7.620	-0.353
	KSO4-	1.818e-08	1.484e-08	-7.740	-7.829	-0.088
	CaHSO4+	1.573e-08	1.284e-08	-7.803	-7.892	-0.088

```
      FeHSO4+           5.045e-13   4.118e-13   -12.297   -12.385    -0.088
      FeSO4+            1.353e-15   1.105e-15   -14.869   -14.957    -0.088
      Fe(SO4)2-         1.409e-16   1.150e-16   -15.851   -15.939    -0.088
      FeHSO4+2          4.374e-21   1.942e-21   -20.359   -20.712    -0.353
Zn               2.455e-06
      Zn+2              1.095e-06   4.946e-07    -5.961    -6.306    -0.345
      ZnHCO3+           7.396e-07   6.037e-07    -6.131    -6.219    -0.088
      ZnSO4             5.142e-07   5.211e-07    -6.289    -6.283     0.006
      Zn(SO4)2-2        5.404e-08   2.399e-08    -7.267    -7.620    -0.353
      ZnCO3             4.964e-08   5.032e-08    -7.304    -7.298     0.006
      ZnCl+             1.477e-09   1.206e-09    -8.831    -8.919    -0.088
      Zn(CO3)2-2        1.235e-09   5.485e-10    -8.908    -9.261    -0.353
      ZnOH+             3.366e-10   2.748e-10    -9.473    -9.561    -0.088
      Zn(OH)2           1.540e-11   1.561e-11   -10.813   -10.807     0.006
      ZnCl2             2.060e-12   2.088e-12   -11.686   -11.680     0.006
      ZnCl3-            4.607e-15   3.761e-15   -14.337   -14.425    -0.088
      Zn(OH)3-          9.572e-17   7.813e-17   -16.019   -16.107    -0.088
      ZnCl4-2           6.620e-18   2.939e-18   -17.179   -17.532    -0.353
      Zn(OH)4-2         4.416e-23   1.961e-23   -22.355   -22.708    -0.353

------------------------------Saturation indices-------------------------------

      Phase               SI log IAP  log KT

      Anhydrite         -0.30   -4.63   -4.34  CaSO4
      Aragonite         -0.37   -8.63   -8.26  CaCO3
      Calcite           -0.21   -8.63   -8.41  CaCO3
      CO2(g)            -0.48   -1.76   -1.28  CO2
      Dolomite          -0.93  -17.67  -16.74  CaMg(CO3)2
      Fe(OH)3(a)        -2.85    2.04    4.89  Fe(OH)3
      Goethite           2.51    2.04   -0.47  FeOOH
      Gypsum            -0.04   -4.63   -4.59  CaSO4:2H2O
      H2(g)            -19.64   25.83   45.46  H2
      H2O(g)            -1.90   -0.00    1.89  H2O
      Halite            -7.33   -5.78    1.55  NaCl
      Hausmannite      -20.00   44.75   64.75  Mn3O4
      Hematite           6.96    4.09   -2.87  Fe2O3
      Jarosite-K       -15.27  -23.33   -8.05  KFe3(SO4)2(OH)6
      Manganite         -7.14   18.20   25.34  MnOOH
      Melanterite       -6.73   -9.13   -2.40  FeSO4:7H2O
      O2(g)            -48.88  -51.65   -2.77  O2
      Pyrochroite       -6.85    8.35   15.20  Mn(OH)2
      Pyrolusite       -15.73   28.05   43.78  MnO2:H2O
      Rhodochrosite      0.73  -10.34  -11.08  MnCO3
      Siderite          -2.32  -13.12  -10.80  FeCO3
      Smithsonite       -2.76  -12.60   -9.84  ZnCO3
      Zn(OH)2(e)        -5.41    6.09   11.50  Zn(OH)2

Initial solution 5.     23/06/2009   MW1013C       6.4          0006

-----------------------------Solution composition------------------------------

      Elements           Molality       Moles

      Alkalinity        1.104e-02   1.104e-02
      Ca                1.402e-02   1.402e-02
      Cl                2.576e-03   2.576e-03
      Fe                1.761e-04   1.761e-04
      K                 5.133e-07   5.133e-07
      Mg                1.073e-02   1.073e-02
      Mn                1.790e-04   1.790e-04
```

```
     Na                  1.571e-03   1.571e-03
     S(6)                1.985e-02   1.985e-02
     Zn                  6.908e-06   6.908e-06

----------------------------Description of solution----------------------------

                                       pH  =   6.400
                                       pe  =   0.609
                        Activity of water  =   0.999
                           Ionic strength  =   6.712e-02
                       Mass of water (kg)  =   1.000e+00
                 Total carbon (mol/kg)     =   1.991e-02
                    Total CO2 (mol/kg)     =   1.991e-02
                      Temperature (deg C)  =  12.600
                  Electrical balance (eq)  =  -1.505e-03
 Percent error, 100*(Cat-|An|)/(Cat+|An|)  =  -2.01
                               Iterations  =  10
                                  Total H  = 1.110234e+02
                                  Total O  = 5.563646e+01

----------------------------Distribution of species----------------------------

                                                  Log        Log          Log
     Species            Molality    Activity  Molality   Activity        Gamma

     H+                 4.715e-07   3.981e-07   -6.327     -6.400       -0.073
     OH-                1.160e-08   9.218e-09   -7.936     -8.035       -0.100
     H2O                5.551e+01   9.990e-01    1.744     -0.000        0.000
C(4)             1.991e-02
     HCO3-              1.011e-02   8.239e-03   -1.995     -2.084       -0.089
     CO2                8.887e-03   9.026e-03   -2.051     -2.045        0.007
     CaHCO3+            4.272e-04   3.482e-04   -3.369     -3.458       -0.089
     MgHCO3+            3.846e-04   3.107e-04   -3.415     -3.508       -0.093
     FeHCO3+            4.491e-05   3.627e-05   -4.348     -4.440       -0.093
     MnHCO3+            4.144e-05   3.347e-05   -4.383     -4.475       -0.093
     NaHCO3             5.642e-06   5.730e-06   -5.249     -5.242        0.007
     CaCO3              4.219e-06   4.285e-06   -5.375     -5.368        0.007
     MnCO3              2.581e-06   2.622e-06   -5.588     -5.581        0.007
     MgCO3              1.883e-06   1.912e-06   -5.725     -5.718        0.007
     ZnHCO3+            1.767e-06   1.427e-06   -5.753     -5.846       -0.093
     CO3-2              1.641e-06   7.240e-07   -5.785     -6.140       -0.355
     FeCO3              7.530e-07   7.647e-07   -6.123     -6.117        0.007
     ZnCO3              1.957e-07   1.988e-07   -6.708     -6.702        0.007
     NaCO3-             1.075e-08   8.682e-09   -7.969     -8.061       -0.093
     Zn(CO3)2-2         7.226e-09   3.077e-09   -8.141     -8.512       -0.371
Ca               1.402e-02
     Ca+2               9.559e-03   4.244e-03   -2.020     -2.372       -0.353
     CaSO4              4.032e-03   4.094e-03   -2.395     -2.388        0.007
     CaHCO3+            4.272e-04   3.482e-04   -3.369     -3.458       -0.089
     CaCO3              4.219e-06   4.285e-06   -5.375     -5.368        0.007
     CaHSO4+            1.033e-08   8.341e-09   -7.986     -8.079       -0.093
     CaOH+              2.188e-09   1.767e-09   -8.660     -8.753       -0.093
Cl               2.576e-03
     Cl-                2.575e-03   2.051e-03   -2.589     -2.688       -0.099
     MnCl+              4.716e-07   3.809e-07   -6.326     -6.419       -0.093
     FeCl+              1.543e-07   1.247e-07   -6.812     -6.904       -0.093
     ZnCl+              5.315e-09   4.294e-09   -8.274     -8.367       -0.093
     MnCl2              3.358e-10   3.411e-10   -9.474     -9.467        0.007
     ZnCl2              8.620e-12   8.755e-12  -11.064    -11.058        0.007
     MnCl3-             2.385e-13   1.927e-13  -12.622    -12.715       -0.093
     ZnCl3-             2.308e-14   1.864e-14  -13.637    -13.729       -0.093
```

	ZnCl4-2		4.063e-17	1.730e-17	-16.391	-16.762	-0.371
	FeCl+2		8.120e-19	3.457e-19	-18.090	-18.461	-0.371
	FeCl2+		5.909e-21	4.774e-21	-20.228	-20.321	-0.093
	FeCl3		9.641e-25	9.791e-25	-24.016	-24.009	0.007
Fe(2)		1.761e-04					
	Fe+2		9.707e-05	4.403e-05	-4.013	-4.356	-0.343
	FeHCO3+		4.491e-05	3.627e-05	-4.348	-4.440	-0.093
	FeSO4		3.321e-05	3.372e-05	-4.479	-4.472	0.007
	FeCO3		7.530e-07	7.647e-07	-6.123	-6.117	0.007
	FeCl+		1.543e-07	1.247e-07	-6.812	-6.904	-0.093
	FeOH+		1.645e-08	1.329e-08	-7.784	-7.877	-0.093
	FeHSO4+		1.071e-10	8.654e-11	-9.970	-10.063	-0.093
Fe(3)		4.608e-11					
	Fe(OH)2+		4.006e-11	3.236e-11	-10.397	-10.490	-0.093
	Fe(OH)3		5.861e-12	5.952e-12	-11.232	-11.225	0.007
	FeOH+2		1.494e-13	6.362e-14	-12.826	-13.196	-0.371
	Fe(OH)4-		1.003e-14	8.098e-15	-13.999	-14.092	-0.093
	FeSO4+		4.679e-16	3.779e-16	-15.330	-15.423	-0.093
	Fe(SO4)2-		5.310e-17	4.289e-17	-16.275	-16.368	-0.093
	Fe+3		3.855e-17	8.411e-18	-16.414	-17.075	-0.661
	FeCl+2		8.120e-19	3.457e-19	-18.090	-18.461	-0.371
	FeCl2+		5.909e-21	4.774e-21	-20.228	-20.321	-0.093
	FeHSO4+2		9.753e-22	4.153e-22	-21.011	-21.382	-0.371
	Fe2(OH)2+4		5.657e-24	1.860e-25	-23.247	-24.731	-1.483
	FeCl3		9.641e-25	9.791e-25	-24.016	-24.009	0.007
	Fe3(OH)4+5		8.619e-31	4.149e-33	-30.065	-32.382	-2.318
H(0)		1.379e-17					
	H2		6.897e-18	7.004e-18	-17.161	-17.155	0.007
K		5.133e-07					
	K+		4.983e-07	3.969e-07	-6.303	-6.401	-0.099
	KSO4-		1.503e-08	1.214e-08	-7.823	-7.916	-0.093
	KOH		3.400e-15	3.453e-15	-14.469	-14.462	0.007
Mg		1.073e-02					
	Mg+2		7.323e-03	3.349e-03	-2.135	-2.475	-0.340
	MgSO4		3.023e-03	3.070e-03	-2.520	-2.513	0.007
	MgHCO3+		3.846e-04	3.107e-04	-3.415	-3.508	-0.093
	MgCO3		1.883e-06	1.912e-06	-5.725	-5.718	0.007
	MgOH+		1.174e-08	9.485e-09	-7.930	-8.023	-0.093
Mn(2)		1.790e-04					
	Mn+2		1.005e-04	4.559e-05	-3.998	-4.341	-0.343
	MnHCO3+		4.144e-05	3.347e-05	-4.383	-4.475	-0.093
	MnSO4		3.403e-05	3.456e-05	-4.468	-4.461	0.007
	MnCO3		2.581e-06	2.622e-06	-5.588	-5.581	0.007
	MnCl+		4.716e-07	3.809e-07	-6.326	-6.419	-0.093
	MnOH+		1.268e-09	1.024e-09	-8.897	-8.990	-0.093
	MnCl2		3.358e-10	3.411e-10	-9.474	-9.467	0.007
	MnCl3-		2.385e-13	1.927e-13	-12.622	-12.715	-0.093
Mn(3)		5.909e-30					
	Mn+3		5.909e-30	8.654e-31	-29.228	-30.063	-0.834
Na		1.571e-03					
	Na+		1.527e-03	1.237e-03	-2.816	-2.908	-0.092
	NaSO4-		3.857e-05	3.116e-05	-4.414	-4.506	-0.093
	NaHCO3		5.642e-06	5.730e-06	-5.249	-5.242	0.007
	NaCO3-		1.075e-08	8.682e-09	-7.969	-8.061	-0.093
	NaOH		2.019e-11	2.050e-11	-10.695	-10.688	0.007
O(0)		0.000e+00					
	O2		0.000e+00	0.000e+00	-62.339	-62.332	0.007
S(6)		1.985e-02					
	SO4-2		1.269e-02	5.457e-03	-1.897	-2.263	-0.366
	CaSO4		4.032e-03	4.094e-03	-2.395	-2.388	0.007
	MgSO4		3.023e-03	3.070e-03	-2.520	-2.513	0.007

```
          NaSO4-            3.857e-05   3.116e-05    -4.414    -4.506    -0.093
          MnSO4             3.403e-05   3.456e-05    -4.468    -4.461     0.007
          FeSO4             3.321e-05   3.372e-05    -4.479    -4.472     0.007
          ZnSO4             1.569e-06   1.593e-06    -5.804    -5.798     0.007
          HSO4-             2.024e-07   1.635e-07    -6.694    -6.787    -0.093
          Zn(SO4)2-2        1.834e-07   7.807e-08    -6.737    -7.108    -0.371
          KSO4-             1.503e-08   1.214e-08    -7.823    -7.916    -0.093
          CaHSO4+           1.033e-08   8.341e-09    -7.986    -8.079    -0.093
          FeHSO4+           1.071e-10   8.654e-11    -9.970   -10.063    -0.093
          FeSO4+            4.679e-16   3.779e-16   -15.330   -15.423    -0.093
          Fe(SO4)2-         5.310e-17   4.289e-17   -16.275   -16.368    -0.093
          FeHSO4+2          9.753e-22   4.153e-22   -21.011   -21.382    -0.371
Zn                6.908e-06
          Zn+2              3.179e-06   1.376e-06    -5.498    -5.861    -0.364
          ZnHCO3+           1.767e-06   1.427e-06    -5.753    -5.846    -0.093
          ZnSO4             1.569e-06   1.593e-06    -5.804    -5.798     0.007
          ZnCO3             1.957e-07   1.988e-07    -6.708    -6.702     0.007
          Zn(SO4)2-2        1.834e-07   7.807e-08    -6.737    -7.108    -0.371
          Zn(CO3)2-2        7.226e-09   3.077e-09    -8.141    -8.512    -0.371
          ZnCl+             5.315e-09   4.294e-09    -8.274    -8.367    -0.093
          ZnOH+             1.756e-09   1.419e-09    -8.755    -8.848    -0.093
          Zn(OH)2           1.074e-10   1.091e-10    -9.969    -9.962     0.007
          ZnCl2             8.620e-12   8.755e-12   -11.064   -11.058     0.007
          ZnCl3-            2.308e-14   1.864e-14   -13.637   -13.729    -0.093
          Zn(OH)3-          1.071e-15   8.655e-16   -14.970   -15.063    -0.093
          ZnCl4-2           4.063e-17   1.730e-17   -16.391   -16.762    -0.371
          Zn(OH)4-2         8.084e-22   3.442e-22   -21.092   -21.463    -0.371

------------------------------Saturation indices------------------------------

          Phase               SI log IAP  log KT

          Anhydrite         -0.30   -4.64   -4.33  CaSO4
          Aragonite         -0.25   -8.51   -8.27  CaCO3
          Calcite           -0.09   -8.51   -8.42  CaCO3
          CO2(g)            -0.74   -2.04   -1.31  CO2
          Dolomite          -0.34  -17.13  -16.79  CaMg(CO3)2
          Fe(OH)3(a)        -2.77    2.12    4.89  Fe(OH)3
          Goethite           2.66    2.12   -0.54  FeOOH
          Gypsum            -0.05   -4.64   -4.59  CaSO4:2H2O
          H2(g)            -13.96   31.17   45.12  H2
          H2O(g)            -1.84   -0.00    1.84  H2O
          Halite            -7.15   -5.60    1.55  NaCl
          Hausmannite      -24.84   39.39   64.23  Mn3O4
          Hematite           7.28    4.25   -3.03  Fe2O3
          Jarosite-K       -15.54  -23.76   -8.22  KFe3(SO4)2(OH)6
          Manganite         -9.87   15.47   25.34  MnOOH
          Melanterite       -4.25   -6.62   -2.37  FeSO4:7H2O
          O2(g)            -59.54  -62.33   -2.79  O2
          Pyrochroite       -6.74    8.46   15.20  Mn(OH)2
          Pyrolusite       -20.98   22.48   43.45  MnO2:H2O
          Rhodochrosite      0.60  -10.48  -11.08  MnCO3
          Siderite           0.31  -10.50  -10.81  FeCO3
          Smithsonite       -2.14  -12.00   -9.86  ZnCO3
          Zn(OH)2(e)        -4.56    6.94   11.50  Zn(OH)2

Initial solution 6.    23/06/2008    MW1014        6.3          0007

-----------------------------Solution composition-----------------------------

          Elements           Molality       Moles
```

Alkalinity	3.394e-03	3.394e-03
Ba	2.477e-07	2.477e-07
Ca	1.897e-03	1.897e-03
Cl	8.466e-04	8.466e-04
Fe	5.912e-07	5.912e-07
K	7.676e-08	7.676e-08
Mg	9.877e-04	9.877e-04
Mn	5.828e-06	5.828e-06
Na	8.269e-04	8.269e-04
S(6)	1.771e-03	1.771e-03

----------------------------Description of solution----------------------------

```
                                       pH  =   6.300
                                       pe  =   2.823
                        Activity of water  =   1.000
                           Ionic strength  =   1.058e-02
                       Mass of water (kg)  =   1.000e+00
                 Total carbon (mol/kg)     =   7.627e-03
                    Total CO2 (mol/kg)     =   7.627e-03
                     Temperature (deg C)   =  11.600
                 Electrical balance (eq)   =  -1.172e-03
Percent error, 100*(Cat-|An|)/(Cat+|An|)   =  -8.94
                               Iterations  =   9
                                  Total H  = 1.110158e+02
                                  Total O  = 5.553195e+01
```

----------------------------Distribution of species----------------------------

	Species	Molality	Activity	Log Molality	Log Activity	Log Gamma
	H+	5.488e-07	5.012e-07	-6.261	-6.300	-0.039
	OH-	7.468e-09	6.719e-09	-8.127	-8.173	-0.046
	H2O	5.551e+01	9.998e-01	1.744	-0.000	0.000
Ba		2.477e-07				
	Ba+2	1.844e-07	1.231e-07	-6.734	-6.910	-0.176
	BaSO4	6.068e-08	6.083e-08	-7.217	-7.216	0.001
	BaHCO3+	2.587e-09	2.333e-09	-8.587	-8.632	-0.045
	BaCO3	9.922e-12	9.947e-12	-11.003	-11.002	0.001
	BaOH+	9.224e-15	8.318e-15	-14.035	-14.080	-0.045
C(4)		7.627e-03				
	CO2	4.233e-03	4.243e-03	-2.373	-2.372	0.001
	HCO3-	3.333e-03	3.016e-03	-2.477	-2.521	-0.043
	CaHCO3+	3.615e-05	3.271e-05	-4.442	-4.485	-0.043
	MgHCO3+	2.209e-05	1.992e-05	-4.656	-4.701	-0.045
	NaHCO3	1.255e-06	1.258e-06	-5.901	-5.900	0.001
	MnHCO3+	8.984e-07	8.101e-07	-6.047	-6.091	-0.045
	CaCO3	3.156e-07	3.164e-07	-6.501	-6.500	0.001
	CO3-2	3.055e-07	2.048e-07	-6.515	-6.689	-0.174
	FeHCO3+	1.010e-07	9.106e-08	-6.996	-7.041	-0.045
	MgCO3	9.321e-08	9.344e-08	-7.031	-7.029	0.001
	MnCO3	4.891e-08	4.903e-08	-7.311	-7.310	0.001
	BaHCO3+	2.587e-09	2.333e-09	-8.587	-8.632	-0.045
	NaCO3-	1.546e-09	1.394e-09	-8.811	-8.856	-0.045
	FeCO3	1.480e-09	1.483e-09	-8.830	-8.829	0.001
	BaCO3	9.922e-12	9.947e-12	-11.003	-11.002	0.001
Ca		1.897e-03				
	Ca+2	1.668e-03	1.118e-03	-2.778	-2.952	-0.174
	CaSO4	1.925e-04	1.929e-04	-3.716	-3.715	0.001

	CaHCO3+	3.615e-05	3.271e-05	-4.442	-4.485	-0.043
	CaCO3	3.156e-07	3.164e-07	-6.501	-6.500	0.001
	CaHSO4+	5.437e-10	4.903e-10	-9.265	-9.310	-0.045
	CaOH+	4.103e-10	3.700e-10	-9.387	-9.432	-0.045
Cl		8.466e-04				
	Cl-	8.466e-04	7.620e-04	-3.072	-3.118	-0.046
	MnCl+	1.038e-08	9.357e-09	-7.984	-8.029	-0.045
	FeCl+	3.522e-10	3.176e-10	-9.453	-9.498	-0.045
	MnCl2	3.105e-12	3.112e-12	-11.508	-11.507	0.001
	MnCl3-	7.244e-16	6.532e-16	-15.140	-15.185	-0.045
	FeCl+2	1.984e-19	1.312e-19	-18.702	-18.882	-0.180
	FeCl2+	7.724e-22	6.965e-22	-21.112	-21.157	-0.045
	FeCl3	5.294e-26	5.307e-26	-25.276	-25.275	0.001
Fe(2)		5.912e-07				
	Fe+2	4.474e-07	3.019e-07	-6.349	-6.520	-0.171
	FeHCO3+	1.010e-07	9.106e-08	-6.996	-7.041	-0.045
	FeSO4	4.087e-08	4.097e-08	-7.389	-7.387	0.001
	FeCO3	1.480e-09	1.483e-09	-8.830	-8.829	0.001
	FeCl+	3.522e-10	3.176e-10	-9.453	-9.498	-0.045
	FeOH+	7.404e-11	6.676e-11	-10.131	-10.175	-0.045
	FeHSO4+	1.469e-13	1.325e-13	-12.833	-12.878	-0.045
Fe(3)		2.436e-11				
	Fe(OH)2+	2.157e-11	1.945e-11	-10.666	-10.711	-0.045
	Fe(OH)3	2.705e-12	2.712e-12	-11.568	-11.567	0.001
	FeOH+2	7.584e-14	5.014e-14	-13.120	-13.300	-0.180
	Fe(OH)4-	3.113e-15	2.807e-15	-14.507	-14.552	-0.045
	FeSO4+	7.818e-17	7.049e-17	-16.107	-16.152	-0.045
	Fe+3	2.012e-17	8.893e-18	-16.696	-17.051	-0.355
	Fe(SO4)2-	1.597e-18	1.440e-18	-17.797	-17.842	-0.045
	FeCl+2	1.984e-19	1.312e-19	-18.702	-18.882	-0.180
	FeCl2+	7.724e-22	6.965e-22	-21.112	-21.157	-0.045
	FeHSO4+2	1.482e-22	9.799e-23	-21.829	-22.009	-0.180
	Fe2(OH)2+4	6.325e-25	1.208e-25	-24.199	-24.918	-0.719
	FeCl3	5.294e-26	5.307e-26	-25.276	-25.275	0.001
	Fe3(OH)4+5	2.380e-32	1.792e-33	-31.623	-32.747	-1.123
H(0)		8.288e-22				
	H2	4.144e-22	4.154e-22	-21.383	-21.381	0.001
K		7.676e-08				
	K+	7.635e-08	6.872e-08	-7.117	-7.163	-0.046
	KSO4-	4.134e-10	3.728e-10	-9.384	-9.429	-0.045
	KOH	4.741e-16	4.753e-16	-15.324	-15.323	0.001
Mg		9.877e-04				
	Mg+2	8.711e-04	5.875e-04	-3.060	-3.231	-0.171
	MgSO4	9.440e-05	9.463e-05	-4.025	-4.024	0.001
	MgHCO3+	2.209e-05	1.992e-05	-4.656	-4.701	-0.045
	MgCO3	9.321e-08	9.344e-08	-7.031	-7.029	0.001
	MgOH+	1.329e-09	1.199e-09	-8.876	-8.921	-0.045
Mn(2)		5.828e-06				
	Mn+2	4.467e-06	3.014e-06	-5.350	-5.521	-0.171
	MnHCO3+	8.984e-07	8.101e-07	-6.047	-6.091	-0.045
	MnSO4	4.035e-07	4.045e-07	-6.394	-6.393	0.001
	MnCO3	4.891e-08	4.903e-08	-7.311	-7.310	0.001
	MnCl+	1.038e-08	9.357e-09	-7.984	-8.029	-0.045
	MnOH+	5.461e-11	4.925e-11	-10.263	-10.308	-0.045
	MnCl2	3.105e-12	3.112e-12	-11.508	-11.507	0.001
	MnCl3-	7.244e-16	6.532e-16	-15.140	-15.185	-0.045
Mn(3)		2.026e-29				
	Mn+3	2.026e-29	7.985e-30	-28.693	-29.098	-0.404
Na		8.269e-04				
	Na+	8.219e-04	7.420e-04	-3.085	-3.130	-0.044
	NaSO4-	3.721e-06	3.355e-06	-5.429	-5.474	-0.045

```
        NaHCO3           1.255e-06   1.258e-06    -5.901    -5.900     0.001
        NaCO3-           1.546e-09   1.394e-09    -8.811    -8.856    -0.045
        NaOH             9.755e-12   9.779e-12   -11.011   -11.010     0.001
O(0)              0.000e+00
        O2               0.000e+00   0.000e+00   -54.239   -54.238     0.001
S(6)              1.771e-03
        SO4-2            1.479e-03   9.862e-04    -2.830    -3.006    -0.176
        CaSO4            1.925e-04   1.929e-04    -3.716    -3.715     0.001
        MgSO4            9.440e-05   9.463e-05    -4.025    -4.024     0.001
        NaSO4-           3.721e-06   3.355e-06    -5.429    -5.474    -0.045
        MnSO4            4.035e-07   4.045e-07    -6.394    -6.393     0.001
        BaSO4            6.068e-08   6.083e-08    -7.217    -7.216     0.001
        FeSO4            4.087e-08   4.097e-08    -7.389    -7.387     0.001
        HSO4-            4.046e-08   3.649e-08    -7.393    -7.438    -0.045
        CaHSO4+          5.437e-10   4.903e-10    -9.265    -9.310    -0.045
        KSO4-            4.134e-10   3.728e-10    -9.384    -9.429    -0.045
        FeHSO4+          1.469e-13   1.325e-13   -12.833   -12.878    -0.045
        FeSO4+           7.818e-17   7.049e-17   -16.107   -16.152    -0.045
        Fe(SO4)2-        1.597e-18   1.440e-18   -17.797   -17.842    -0.045
        FeHSO4+2         1.482e-22   9.799e-23   -21.829   -22.009    -0.180

------------------------------Saturation indices------------------------------

        Phase               SI log IAP  log KT

        Anhydrite        -1.62   -5.96   -4.33  CaSO4
        Aragonite        -1.38   -9.64   -8.26  CaCO3
        Barite            0.30   -9.92  -10.21  BaSO4
        Calcite          -1.22   -9.64   -8.42  CaCO3
        CO2(g)           -1.08   -2.37   -1.29  CO2
        Dolomite         -2.80  -19.56  -16.76  CaMg(CO3)2
        Fe(OH)3(a)       -3.04    1.85    4.89  Fe(OH)3
        Goethite          2.35    1.85   -0.50  FeOOH
        Gypsum           -1.37   -5.96   -4.59  CaSO4:2H2O
        H2(g)           -18.18   27.12   45.30  H2
        H2O(g)           -1.87   -0.00    1.87  H2O
        Halite           -7.80   -6.25    1.55  NaCl
        Hausmannite     -25.02   39.48   64.50  Mn3O4
        Hematite          6.64    3.70   -2.94  Fe2O3
        Jarosite-K      -18.40  -26.53   -8.13  KFe3(SO4)2(OH)6
        Manganite        -9.14   16.20   25.34  MnOOH
        Melanterite      -7.14   -9.53   -2.39  FeSO4:7H2O
        O2(g)           -51.46  -54.24   -2.78  O2
        Pyrochroite      -8.12    7.08   15.20  Mn(OH)2
        Pyrolusite      -18.30   25.32   43.63  MnO2:H2O
        Rhodochrosite    -1.13  -12.21  -11.08  MnCO3
        Siderite         -2.40  -13.21  -10.80  FeCO3
        Witherite        -4.98  -13.60   -8.62  BaCO3

Initial solution 7.     23/06/2008   MW1014A       6.3         0008

-----------------------------Solution composition------------------------------

        Elements           Molality       Moles

        Alkalinity       1.002e-02   1.002e-02
        Ca               7.501e-03   7.501e-03
        Cl               3.674e-04   3.674e-04
        Fe               2.153e-06   2.153e-06
        K                2.127e-07   2.127e-07
        Mg               4.534e-03   4.534e-03
```

```
      Mn                  3.648e-06   3.648e-06
      Na                  2.702e-03   2.702e-03
      S(6)                1.012e-02   1.012e-02

----------------------------Description of solution----------------------------

                                       pH  =   6.300
                                       pe  =   2.823
                        Activity of water  =   0.999
                           Ionic strength  =   3.872e-02
                       Mass of water (kg)  =   1.000e+00
                    Total carbon (mol/kg)  =   2.143e-02
                       Total CO2 (mol/kg)  =   2.143e-02
                      Temperature (deg C)  =  11.000
                  Electrical balance (eq)  =  -3.839e-03
 Percent error, 100*(Cat-|An|)/(Cat+|An|)  =  -8.48
                               Iterations  =  10
                                  Total H  = 1.110224e+02
                                  Total O  = 5.559957e+01

----------------------------Distribution of species----------------------------

                                                Log       Log         Log
      Species             Molality    Activity  Molality  Activity    Gamma

      H+                  5.783e-07   5.012e-07   -6.238    -6.300    -0.062
      OH-                 7.661e-09   6.371e-09   -8.116    -8.196    -0.080
      H2O                 5.551e+01   9.993e-01    1.744    -0.000     0.000
C(4)                 2.143e-02
      CO2                 1.142e-02   1.152e-02   -1.942    -1.938     0.004
      HCO3-               9.555e-03   8.080e-03   -2.020    -2.093    -0.073
      CaHCO3+             2.558e-04   2.163e-04   -3.592    -3.665    -0.073
      MgHCO3+             1.881e-04   1.579e-04   -3.726    -3.802    -0.076
      NaHCO3              1.003e-05   1.012e-05   -4.999    -4.995     0.004
      CaCO3               2.062e-06   2.081e-06   -5.686    -5.682     0.004
      CO3-2               1.055e-06   5.395e-07   -5.977    -6.268    -0.291
      MnHCO3+             9.459e-07   7.938e-07   -6.024    -6.100    -0.076
      MgCO3               7.158e-07   7.222e-07   -6.145    -6.141     0.004
      FeHCO3+             6.116e-07   5.133e-07   -6.214    -6.290    -0.076
      MnCO3               4.682e-08   4.724e-08   -7.330    -7.326     0.004
      NaCO3-              1.271e-08   1.067e-08   -7.896    -7.972    -0.076
      FeCO3               8.148e-09   8.221e-09   -8.089    -8.085     0.004
Ca                   7.501e-03
      Ca+2                5.471e-03   2.803e-03   -2.262    -2.552    -0.290
      CaSO4               1.771e-03   1.787e-03   -2.752    -2.748     0.004
      CaHCO3+             2.558e-04   2.163e-04   -3.592    -3.665    -0.073
      CaCO3               2.062e-06   2.081e-06   -5.686    -5.682     0.004
      CaHSO4+             5.383e-09   4.518e-09   -8.269    -8.345    -0.076
      CaOH+               1.105e-09   9.275e-10   -8.957    -9.033    -0.076
Cl                   3.674e-04
      Cl-                 3.674e-04   3.060e-04   -3.435    -3.514    -0.079
      MnCl+               1.637e-09   1.374e-09   -8.786    -8.862    -0.076
      FeCl+               3.197e-10   2.683e-10   -9.495    -9.571    -0.076
      MnCl2               1.819e-13   1.835e-13  -12.740   -12.736     0.004
      MnCl3-              1.843e-17   1.547e-17  -16.734   -16.811    -0.076
      FeCl+2              2.110e-19   1.047e-19  -18.676   -18.980    -0.305
      FeCl2+              2.716e-22   2.279e-22  -21.566   -21.642    -0.076
      FeCl3               6.912e-27   6.974e-27  -26.160   -26.157     0.004
Fe(2)                2.153e-06
      Fe+2                1.219e-06   6.352e-07   -5.914    -6.197    -0.283
      FeHCO3+             6.116e-07   5.133e-07   -6.214    -6.290    -0.076
```

	FeSO4	3.137e-07	3.165e-07	-6.503	-6.500	0.004
	FeCO3	8.148e-09	8.221e-09	-8.089	-8.085	0.004
	FeCl+	3.197e-10	2.683e-10	-9.495	-9.571	-0.076
	FeOH+	1.592e-10	1.336e-10	-9.798	-9.874	-0.076
	FeHSO4+	1.220e-12	1.024e-12	-11.914	-11.990	-0.076
Fe(3)	4.925e-11					
	Fe(OH)2+	4.409e-11	3.700e-11	-10.356	-10.432	-0.076
	Fe(OH)3	4.965e-12	5.009e-12	-11.304	-11.300	0.004
	FeOH+2	1.972e-13	9.782e-14	-12.705	-13.010	-0.305
	Fe(OH)4-	6.014e-15	5.047e-15	-14.221	-14.297	-0.076
	FeSO4+	6.243e-16	5.239e-16	-15.205	-15.281	-0.076
	Fe+3	6.541e-17	1.804e-17	-16.184	-16.744	-0.559
	Fe(SO4)2-	4.727e-17	3.967e-17	-16.325	-16.402	-0.076
	FeCl+2	2.110e-19	1.047e-19	-18.676	-18.980	-0.305
	FeHSO4+2	1.473e-21	7.306e-22	-20.832	-21.136	-0.305
	FeCl2+	2.716e-22	2.279e-22	-21.566	-21.642	-0.076
	Fe2(OH)2+4	7.809e-24	4.726e-25	-23.107	-24.325	-1.218
	FeCl3	6.912e-27	6.974e-27	-26.160	-26.157	0.004
	Fe3(OH)4+5	1.134e-30	1.417e-32	-29.945	-31.849	-1.903
H(0)	8.248e-22					
	H2	4.124e-22	4.161e-22	-21.385	-21.381	0.004
K	2.127e-07					
	K+	2.086e-07	1.737e-07	-6.681	-6.760	-0.079
	KSO4-	4.125e-09	3.462e-09	-8.385	-8.461	-0.076
	KOH	1.190e-15	1.201e-15	-14.924	-14.921	0.004
Mg	4.534e-03					
	Mg+2	3.330e-03	1.739e-03	-2.478	-2.760	-0.282
	MgSO4	1.015e-03	1.024e-03	-2.994	-2.990	0.004
	MgHCO3+	1.881e-04	1.579e-04	-3.726	-3.802	-0.076
	MgCO3	7.158e-07	7.222e-07	-6.145	-6.141	0.004
	MgOH+	3.982e-09	3.342e-09	-8.400	-8.476	-0.076
Mn(2)	3.648e-06					
	Mn+2	2.116e-06	1.102e-06	-5.675	-5.958	-0.283
	MnHCO3+	9.459e-07	7.938e-07	-6.024	-6.100	-0.076
	MnSO4	5.381e-07	5.429e-07	-6.269	-6.265	0.004
	MnCO3	4.682e-08	4.724e-08	-7.330	-7.326	0.004
	MnCl+	1.637e-09	1.374e-09	-8.786	-8.862	-0.076
	MnOH+	2.033e-11	1.706e-11	-10.692	-10.768	-0.076
	MnCl2	1.819e-13	1.835e-13	-12.740	-12.736	0.004
	MnCl3-	1.843e-17	1.547e-17	-16.734	-16.811	-0.076
Mn(3)	1.285e-29					
	Mn+3	1.285e-29	2.652e-30	-28.891	-29.576	-0.685
Na	2.702e-03					
	Na+	2.648e-03	2.227e-03	-2.577	-2.652	-0.075
	NaSO4-	4.442e-05	3.728e-05	-4.352	-4.429	-0.076
	NaHCO3	1.003e-05	1.012e-05	-4.999	-4.995	0.004
	NaCO3-	1.271e-08	1.067e-08	-7.896	-7.972	-0.076
	NaOH	2.908e-11	2.934e-11	-10.536	-10.533	0.004
O(0)	0.000e+00					
	O2	0.000e+00	0.000e+00	-54.460	-54.456	0.004
S(6)	1.012e-02					
	SO4-2	7.287e-03	3.665e-03	-2.137	-2.436	-0.298
	CaSO4	1.771e-03	1.787e-03	-2.752	-2.748	0.004
	MgSO4	1.015e-03	1.024e-03	-2.994	-2.990	0.004
	NaSO4-	4.442e-05	3.728e-05	-4.352	-4.429	-0.076
	MnSO4	5.381e-07	5.429e-07	-6.269	-6.265	0.004
	FeSO4	3.137e-07	3.165e-07	-6.503	-6.500	0.004
	HSO4-	1.597e-07	1.341e-07	-6.797	-6.873	-0.076
	CaHSO4+	5.383e-09	4.518e-09	-8.269	-8.345	-0.076
	KSO4-	4.125e-09	3.462e-09	-8.385	-8.461	-0.076
	FeHSO4+	1.220e-12	1.024e-12	-11.914	-11.990	-0.076

FeSO4+	6.243e-16	5.239e-16	-15.205	-15.281	-0.076
Fe(SO4)2-	4.727e-17	3.967e-17	-16.325	-16.402	-0.076
FeHSO4+2	1.473e-21	7.306e-22	-20.832	-21.136	-0.305

------------------------------Saturation indices------------------------------

Phase	SI	log IAP	log KT	
Anhydrite	-0.65	-4.99	-4.33	CaSO4
Aragonite	-0.56	-8.82	-8.26	CaCO3
Calcite	-0.41	-8.82	-8.41	CaCO3
CO2(g)	-0.65	-1.94	-1.28	CO2
Dolomite	-1.10	-17.85	-16.75	CaMg(CO3)2
Fe(OH)3(a)	-2.74	2.16	4.89	Fe(OH)3
Goethite	2.63	2.16	-0.48	FeOOH
Gypsum	-0.40	-4.99	-4.59	CaSO4:2H2O
H2(g)	-18.18	27.23	45.41	H2
H2O(g)	-1.89	-0.00	1.89	H2O
Halite	-7.72	-6.17	1.55	NaCl
Hausmannite	-26.49	38.17	64.66	Mn3O4
Hematite	7.21	4.31	-2.89	Fe2O3
Jarosite-K	-15.98	-24.06	-8.08	KFe3(SO4)2(OH)6
Manganite	-9.58	15.76	25.34	MnOOH
Melanterite	-6.24	-8.64	-2.40	FeSO4:7H2O
O2(g)	-51.68	-54.46	-2.78	O2
Pyrochroite	-8.56	6.64	15.20	Mn(OH)2
Pyrolusite	-18.84	24.89	43.73	MnO2:H2O
Rhodochrosite	-1.15	-12.23	-11.08	MnCO3
Siderite	-1.66	-12.47	-10.80	FeCO3

Initial solution 8. 23/06/2008 MW1014B 6.3 0009

----------------------------Solution composition----------------------------

Elements	Molality	Moles
Alkalinity	1.022e-02	1.022e-02
Ca	1.301e-02	1.301e-02
Cl	1.499e-03	1.499e-03
Fe	5.925e-07	5.925e-07
K	3.077e-07	3.077e-07
Mg	5.361e-03	5.361e-03
Mn	2.373e-04	2.373e-04
Na	1.090e-03	1.090e-03
S	1.357e-02	1.357e-02
Zn	1.687e-05	1.687e-05

----------------------------Description of solution----------------------------

```
                                       pH  =   6.300
                                       pe  =   3.415
                        Activity of water  =   0.999
                           Ionic strength  =   5.119e-02
                       Mass of water (kg)  =   1.000e+00
                 Total carbon (mol/kg)  =   2.131e-02
                    Total CO2 (mol/kg)  =   2.131e-02
                   Temperature (deg C)  =  11.200
               Electrical balance (eq)  =  -5.169e-04
Percent error, 100*(Cat-|An|)/(Cat+|An|)  =  -0.90
                               Iterations  =  10
                                  Total H  = 1.110226e+02
```

Total O = 5.561333e+01

----------------------------Distribution of species----------------------------

	Species	Molality	Activity	Log Molality	Log Activity	Log Gamma
	H+	5.858e-07	5.012e-07	-6.232	-6.300	-0.068
	OH-	7.969e-09	6.483e-09	-8.099	-8.188	-0.090
	H2O	5.551e+01	9.991e-01	1.744	-0.000	0.000
C(4)		2.131e-02				
	CO2	1.110e-02	1.123e-02	-1.955	-1.949	0.005
	HCO3-	9.524e-03	7.911e-03	-2.021	-2.102	-0.081
	CaHCO3+	4.090e-04	3.397e-04	-3.388	-3.469	-0.081
	MgHCO3+	2.050e-04	1.688e-04	-3.688	-3.773	-0.084
	MnHCO3+	5.775e-05	4.756e-05	-4.238	-4.323	-0.084
	ZnHCO3+	4.640e-06	3.821e-06	-5.334	-5.418	-0.084
	NaHCO3	3.869e-06	3.915e-06	-5.412	-5.407	0.005
	CaCO3	3.235e-06	3.273e-06	-5.490	-5.485	0.005
	MnCO3	2.813e-06	2.846e-06	-5.551	-5.546	0.005
	CO3-2	1.116e-06	5.312e-07	-5.952	-6.275	-0.323
	MgCO3	7.698e-07	7.789e-07	-6.114	-6.109	0.005
	ZnCO3	4.019e-07	4.066e-07	-6.396	-6.391	0.005
	FeHCO3+	1.583e-07	1.303e-07	-6.801	-6.885	-0.084
	Zn(CO3)2-2	1.004e-08	4.618e-09	-7.998	-8.336	-0.337
	NaCO3-	5.094e-09	4.196e-09	-8.293	-8.377	-0.084
	FeCO3	2.075e-09	2.099e-09	-8.683	-8.678	0.005
Ca		1.301e-02				
	Ca+2	9.364e-03	4.472e-03	-2.029	-2.350	-0.321
	CaSO4	3.232e-03	3.270e-03	-2.491	-2.485	0.005
	CaHCO3+	4.090e-04	3.397e-04	-3.388	-3.469	-0.081
	CaCO3	3.235e-06	3.273e-06	-5.490	-5.485	0.005
	CaHSO4+	1.006e-08	8.282e-09	-7.998	-8.082	-0.084
	CaOH+	1.796e-09	1.479e-09	-8.746	-8.830	-0.084
Cl		1.499e-03				
	Cl-	1.499e-03	1.221e-03	-2.824	-2.913	-0.089
	MnCl+	4.075e-07	3.356e-07	-6.390	-6.474	-0.084
	ZnCl+	8.090e-09	6.663e-09	-8.092	-8.176	-0.084
	FeCl+	3.373e-10	2.778e-10	-9.472	-9.556	-0.084
	MnCl2	1.768e-10	1.789e-10	-9.752	-9.747	0.005
	ZnCl2	7.945e-12	8.039e-12	-11.100	-11.095	0.005
	MnCl3-	7.307e-14	6.018e-14	-13.136	-13.221	-0.084
	ZnCl3-	1.226e-14	1.010e-14	-13.911	-13.996	-0.084
	ZnCl4-2	1.198e-17	5.513e-18	-16.921	-17.259	-0.337
	FeCl+2	9.383e-19	4.317e-19	-18.028	-18.365	-0.337
	FeCl2+	4.523e-21	3.725e-21	-20.345	-20.429	-0.084
	FeCl3	4.496e-25	4.550e-25	-24.347	-24.342	0.005
Fe(2)		5.924e-07				
	Fe+2	3.384e-07	1.648e-07	-6.471	-6.783	-0.313
	FeHCO3+	1.583e-07	1.303e-07	-6.801	-6.885	-0.084
	FeSO4	9.326e-08	9.437e-08	-7.030	-7.025	0.005
	FeCO3	2.075e-09	2.099e-09	-8.683	-8.678	0.005
	FeCl+	3.373e-10	2.778e-10	-9.472	-9.556	-0.084
	FeOH+	4.278e-11	3.523e-11	-10.369	-10.453	-0.084
	FeHSO4+	3.706e-13	3.052e-13	-12.431	-12.515	-0.084
	Fe(HS)2	0.000e+00	0.000e+00	-99.051	-99.046	0.005
	Fe(HS)3-	0.000e+00	0.000e+00	-147.531	-147.615	-0.084
Fe(3)		5.254e-11				
	Fe(OH)2+	4.707e-11	3.877e-11	-10.327	-10.412	-0.084
	Fe(OH)3	5.237e-12	5.299e-12	-11.281	-11.276	0.005
	FeOH+2	2.210e-13	1.017e-13	-12.656	-12.993	-0.337

	Fe(OH)4-	6.540e-15	5.386e-15	-14.184	-14.269	-0.084
	FeSO4+	7.509e-16	6.184e-16	-15.124	-15.209	-0.084
	Fe+3	7.539e-17	1.852e-17	-16.123	-16.732	-0.610
	Fe(SO4)2-	6.514e-17	5.365e-17	-16.186	-16.270	-0.084
	FeCl+2	9.383e-19	4.317e-19	-18.028	-18.365	-0.337
	FeCl2+	4.523e-21	3.725e-21	-20.345	-20.429	-0.084
	FeHSO4+2	1.872e-21	8.614e-22	-20.728	-21.065	-0.337
	Fe2(OH)2+4	1.130e-23	5.059e-25	-22.947	-24.296	-1.349
	FeCl3	4.496e-25	4.550e-25	-24.347	-24.342	0.005
	Fe3(OH)4+5	1.995e-30	1.557e-32	-29.700	-31.808	-2.108
H(0)	5.381e-23					
	H2	2.691e-23	2.722e-23	-22.570	-22.565	0.005
K	3.077e-07					
	K+	3.009e-07	2.452e-07	-6.522	-6.610	-0.089
	KSO4-	6.820e-09	5.617e-09	-8.166	-8.251	-0.084
	KOH	1.675e-15	1.695e-15	-14.776	-14.771	0.005
Mg	5.361e-03					
	Mg+2	3.884e-03	1.900e-03	-2.411	-2.721	-0.311
	MgSO4	1.272e-03	1.287e-03	-2.895	-2.890	0.005
	MgHCO3+	2.050e-04	1.688e-04	-3.688	-3.773	-0.084
	MgCO3	7.698e-07	7.789e-07	-6.114	-6.109	0.005
	MgOH+	4.520e-09	3.722e-09	-8.345	-8.429	-0.084
Mn(2)	2.373e-04					
	Mn+2	1.386e-04	6.745e-05	-3.858	-4.171	-0.313
	MnHCO3+	5.775e-05	4.756e-05	-4.238	-4.323	-0.084
	MnSO4	3.774e-05	3.819e-05	-4.423	-4.418	0.005
	MnCO3	2.813e-06	2.846e-06	-5.551	-5.546	0.005
	MnCl+	4.075e-07	3.356e-07	-6.390	-6.474	-0.084
	MnOH+	1.290e-09	1.063e-09	-8.889	-8.974	-0.084
	MnCl2	1.768e-10	1.789e-10	-9.752	-9.747	0.005
	MnCl3-	7.307e-14	6.018e-14	-13.136	-13.221	-0.084
Mn(3)	3.758e-27					
	Mn+3	3.758e-27	6.550e-28	-26.425	-27.184	-0.759
Na	1.090e-03					
	Na+	1.066e-03	8.801e-04	-2.972	-3.055	-0.083
	NaSO4-	2.050e-05	1.689e-05	-4.688	-4.772	-0.084
	NaHCO3	3.869e-06	3.915e-06	-5.412	-5.407	0.005
	NaCO3-	5.094e-09	4.196e-09	-8.293	-8.377	-0.084
	NaOH	1.146e-11	1.159e-11	-10.941	-10.936	0.005
O(0)	0.000e+00					
	O2	0.000e+00	0.000e+00	-52.021	-52.016	0.005
S(-2)	0.000e+00					
	H2S	0.000e+00	0.000e+00	-49.765	-49.760	0.005
	HS-	0.000e+00	0.000e+00	-50.517	-50.606	-0.090
	S-2	0.000e+00	0.000e+00	-57.325	-57.655	-0.329
	Fe(HS)2	0.000e+00	0.000e+00	-99.051	-99.046	0.005
	Fe(HS)3-	0.000e+00	0.000e+00	-147.531	-147.615	-0.084
S(6)	1.357e-02					
	SO4-2	9.002e-03	4.196e-03	-2.046	-2.377	-0.332
	CaSO4	3.232e-03	3.270e-03	-2.491	-2.485	0.005
	MgSO4	1.272e-03	1.287e-03	-2.895	-2.890	0.005
	MnSO4	3.774e-05	3.819e-05	-4.423	-4.418	0.005
	NaSO4-	2.050e-05	1.689e-05	-4.688	-4.772	-0.084
	ZnSO4	3.337e-06	3.376e-06	-5.477	-5.472	0.005
	Zn(SO4)2-2	2.798e-07	1.287e-07	-6.553	-6.890	-0.337
	HSO4-	1.871e-07	1.541e-07	-6.728	-6.812	-0.084
	FeSO4	9.326e-08	9.437e-08	-7.030	-7.025	0.005
	CaHSO4+	1.006e-08	8.282e-09	-7.998	-8.082	-0.084
	KSO4-	6.820e-09	5.617e-09	-8.166	-8.251	-0.084
	FeHSO4+	3.706e-13	3.052e-13	-12.431	-12.515	-0.084
	FeSO4+	7.509e-16	6.184e-16	-15.124	-15.209	-0.084

	Fe(SO4)2-	6.514e-17	5.365e-17	-16.186	-16.270	-0.084
	FeHSO4+2	1.872e-21	8.614e-22	-20.728	-21.065	-0.337
Zn	1.687e-05					
	Zn+2	8.193e-06	3.837e-06	-5.087	-5.416	-0.329
	ZnHCO3+	4.640e-06	3.821e-06	-5.334	-5.418	-0.084
	ZnSO4	3.337e-06	3.376e-06	-5.477	-5.472	0.005
	ZnCO3	4.019e-07	4.066e-07	-6.396	-6.391	0.005
	Zn(SO4)2-2	2.798e-07	1.287e-07	-6.553	-6.890	-0.337
	Zn(CO3)2-2	1.004e-08	4.618e-09	-7.998	-8.336	-0.337
	ZnCl+	8.090e-09	6.663e-09	-8.092	-8.176	-0.084
	ZnOH+	3.398e-09	2.798e-09	-8.469	-8.553	-0.084
	Zn(OH)2	1.897e-10	1.920e-10	-9.722	-9.717	0.005
	ZnCl2	7.945e-12	8.039e-12	-11.100	-11.095	0.005
	ZnCl3-	1.226e-14	1.010e-14	-13.911	-13.996	-0.084
	Zn(OH)3-	1.469e-15	1.210e-15	-14.833	-14.917	-0.084
	ZnCl4-2	1.198e-17	5.513e-18	-16.921	-17.259	-0.337
	Zn(OH)4-2	8.311e-22	3.824e-22	-21.080	-21.418	-0.337

-----------------------------Saturation indices-----------------------------

Phase	SI	log IAP	log KT	
Anhydrite	-0.39	-4.73	-4.33	CaSO4
Aragonite	-0.36	-8.62	-8.26	CaCO3
Calcite	-0.21	-8.62	-8.41	CaCO3
CO2(g)	-0.66	-1.95	-1.29	CO2
Dolomite	-0.87	-17.62	-16.75	CaMg(CO3)2
Fe(OH)3(a)	-2.72	2.17	4.89	Fe(OH)3
FeS(ppt)	-47.17	-51.09	-3.92	FeS
Goethite	2.65	2.17	-0.48	FeOOH
Gypsum	-0.14	-4.73	-4.59	CaSO4:2H2O
H2(g)	-19.37	26.01	45.37	H2
H2O(g)	-1.88	-0.00	1.88	H2O
H2S(g)	-48.88	-56.91	-8.03	H2S
Halite	-7.52	-5.97	1.55	NaCl
Hausmannite	-19.89	44.72	64.61	Mn3O4
Hematite	7.24	4.33	-2.91	Fe2O3
Jarosite-K	-15.67	-23.76	-8.10	KFe3(SO4)2(OH)6
Mackinawite	-46.44	-51.09	-4.65	FeS
Manganite	-7.20	18.14	25.34	MnOOH
Melanterite	-6.77	-9.16	-2.39	FeSO4:7H2O
O2(g)	-49.24	-52.02	-2.78	O2
Pyrite	-69.68	-88.57	-18.88	FeS2
Pyrochroite	-6.77	8.43	15.20	Mn(OH)2
Pyrolusite	-15.84	27.86	43.70	MnO2:H2O
Rhodochrosite	0.63	-10.45	-11.08	MnCO3
Siderite	-2.26	-13.06	-10.80	FeCO3
Smithsonite	-1.85	-11.69	-9.84	ZnCO3
Sphalerite	-37.81	-49.72	-11.91	ZnS
Sulfur	-35.55	-30.33	5.22	S
Zn(OH)2(e)	-4.32	7.18	11.50	Zn(OH)2

Initial solution 9. 23/06/2008 MW1014C 6.6 0010

-----------------------------Solution composition-----------------------------

Elements	Molality	Moles
Alkalinity	6.003e-03	6.003e-03
Ba	1.895e-07	1.895e-07
Ca	3.746e-03	3.746e-03

```
        Cl                 1.496e-03   1.496e-03
        Fe                 8.961e-05   8.961e-05
        K                  9.215e-08   9.215e-08
        Mg                 1.441e-03   1.441e-03
        Mn                 2.915e-05   2.915e-05
        Na                 3.701e-04   3.701e-04
        S                  2.709e-03   2.709e-03
        Zn                 5.512e-06   5.512e-06

----------------------------Description of solution---------------------------

                                       pH  =   6.600
                                       pe  =   0.879
                        Activity of water  =   1.000
                           Ionic strength  =   1.717e-02
                       Mass of water (kg)  =   1.000e+00
                    Total carbon (mol/kg)  =   9.638e-03
                       Total CO2 (mol/kg)  =   9.638e-03
                      Temperature (deg C)  =  11.200
                  Electrical balance (eq)  =  -1.925e-03
 Percent error, 100*(Cat-|An|)/(Cat+|An|)  =  -9.12
                               Iterations  =   9
                                  Total H  = 1.110184e+02
                                  Total O  = 5.554233e+01

----------------------------Distribution of species----------------------------

                                                    Log       Log       Log
        Species          Molality    Activity  Molality  Activity     Gamma

        H+              2.800e-07   2.512e-07    -6.553    -6.600    -0.047
        OH-             1.475e-08   1.294e-08    -7.831    -7.888    -0.057
        H2O             5.551e+01   9.997e-01     1.744    -0.000     0.000
Ba               1.895e-07
        Ba+2            1.342e-07   8.178e-08    -6.872    -7.087    -0.215
        BaSO4           5.226e-08   5.246e-08    -7.282    -7.280     0.002
        BaHCO3+         2.961e-09   2.608e-09    -8.529    -8.584    -0.055
        BaCO3           2.195e-11   2.204e-11   -10.659   -10.657     0.002
        BaOH+           1.252e-14   1.103e-14   -13.902   -13.957    -0.055
C(4)             9.638e-03
        HCO3-           5.804e-03   5.136e-03    -2.236    -2.289    -0.053
        CO2             3.639e-03   3.653e-03    -2.439    -2.437     0.002
        CaHCO3+         1.093e-04   9.674e-05    -3.961    -4.014    -0.053
        MgHCO3+         5.005e-05   4.408e-05    -4.301    -4.356    -0.055
        FeHCO3+         2.186e-05   1.926e-05    -4.660    -4.715    -0.055
        MnHCO3+         6.403e-06   5.639e-06    -5.194    -5.249    -0.055
        CaCO3           1.853e-06   1.860e-06    -5.732    -5.730     0.002
        ZnHCO3+         1.449e-06   1.276e-06    -5.839    -5.894    -0.055
        CO3-2           1.122e-06   6.881e-07    -5.950    -6.162    -0.212
        NaHCO3          9.313e-07   9.350e-07    -6.031    -6.029     0.002
        MnCO3           6.706e-07   6.733e-07    -6.174    -6.172     0.002
        FeCO3           6.164e-07   6.188e-07    -6.210    -6.208     0.002
        MgCO3           4.041e-07   4.057e-07    -6.393    -6.392     0.002
        ZnCO3           2.700e-07   2.710e-07    -6.569    -6.567     0.002
        Zn(CO3)2-2      6.628e-09   3.987e-09    -8.179    -8.399    -0.221
        BaHCO3+         2.961e-09   2.608e-09    -8.529    -8.584    -0.055
        NaCO3-          2.270e-09   1.999e-09    -8.644    -8.699    -0.055
        BaCO3           2.195e-11   2.204e-11   -10.659   -10.657     0.002
Ca               3.746e-03
        Ca+2            3.199e-03   1.961e-03    -2.495    -2.707    -0.212
        CaSO4           4.359e-04   4.376e-04    -3.361    -3.359     0.002
```

	CaHCO3+	1.093e-04	9.674e-05	-3.961	-4.014	-0.053
	CaCO3	1.853e-06	1.860e-06	-5.732	-5.730	0.002
	CaOH+	1.471e-09	1.296e-09	-8.832	-8.888	-0.055
	CaHSO4+	6.307e-10	5.554e-10	-9.200	-9.255	-0.055
Cl		1.496e-03				
	Cl-	1.496e-03	1.313e-03	-2.825	-2.882	-0.057
	FeCl+	7.718e-08	6.797e-08	-7.113	-7.168	-0.055
	MnCl+	7.484e-08	6.591e-08	-7.126	-7.181	-0.055
	ZnCl+	4.186e-09	3.687e-09	-8.378	-8.433	-0.055
	MnCl2	3.764e-11	3.779e-11	-10.424	-10.423	0.002
	ZnCl2	4.765e-12	4.784e-12	-11.322	-11.320	0.002
	MnCl3-	1.552e-14	1.367e-14	-13.809	-13.864	-0.055
	ZnCl3-	7.339e-15	6.464e-15	-14.134	-14.190	-0.055
	ZnCl4-2	6.307e-18	3.794e-18	-17.200	-17.421	-0.221
	FeCl+2	5.111e-19	3.074e-19	-18.292	-18.512	-0.221
	FeCl2+	3.240e-21	2.854e-21	-20.489	-20.545	-0.055
	FeCl3	3.733e-25	3.748e-25	-24.428	-24.426	0.002
Fe(2)		8.961e-05				
	Fe+2	6.051e-05	3.749e-05	-4.218	-4.426	-0.208
	FeHCO3+	2.186e-05	1.926e-05	-4.660	-4.715	-0.055
	FeSO4	6.524e-06	6.550e-06	-5.186	-5.184	0.002
	FeCO3	6.164e-07	6.188e-07	-6.210	-6.208	0.002
	FeCl+	7.718e-08	6.797e-08	-7.113	-7.168	-0.055
	FeOH+	1.817e-08	1.600e-08	-7.741	-7.796	-0.055
	FeHSO4+	1.205e-11	1.062e-11	-10.919	-10.974	-0.055
	Fe(HS)2	0.000e+00	0.000e+00	-62.548	-62.546	0.002
	Fe(HS)3-	0.000e+00	0.000e+00	-93.989	-94.044	-0.055
Fe(3)		1.443e-10				
	Fe(OH)2+	1.162e-10	1.023e-10	-9.935	-9.990	-0.055
	Fe(OH)3	2.781e-11	2.792e-11	-10.556	-10.554	0.002
	FeOH+2	2.234e-13	1.344e-13	-12.651	-12.872	-0.221
	Fe(OH)4-	6.433e-14	5.665e-14	-13.192	-13.247	-0.055
	FeSO4+	1.419e-16	1.249e-16	-15.848	-15.903	-0.055
	Fe+3	3.259e-17	1.226e-17	-16.487	-16.911	-0.424
	Fe(SO4)2-	3.754e-18	3.306e-18	-17.425	-17.481	-0.055
	FeCl+2	5.111e-19	3.074e-19	-18.292	-18.512	-0.221
	FeCl2+	3.240e-21	2.854e-21	-20.489	-20.545	-0.055
	FeHSO4+2	1.450e-22	8.722e-23	-21.839	-22.059	-0.221
	Fe2(OH)2+4	6.752e-24	8.843e-25	-23.171	-24.053	-0.883
	FeCl3	3.733e-25	3.748e-25	-24.428	-24.426	0.002
	Fe3(OH)4+5	1.721e-30	7.185e-32	-29.764	-31.144	-1.379
H(0)		1.608e-18				
	H2	8.040e-19	8.072e-19	-18.095	-18.093	0.002
K		9.215e-08				
	K+	9.151e-08	8.034e-08	-7.039	-7.095	-0.057
	KSO4-	6.374e-10	5.613e-10	-9.196	-9.251	-0.055
	KOH	1.104e-15	1.109e-15	-14.957	-14.955	0.002
Mg		1.441e-03				
	Mg+2	1.233e-03	7.638e-04	-2.909	-3.117	-0.208
	MgSO4	1.572e-04	1.579e-04	-3.803	-3.802	0.002
	MgHCO3+	5.005e-05	4.408e-05	-4.301	-4.356	-0.055
	MgCO3	4.041e-07	4.057e-07	-6.393	-6.392	0.002
	MgOH+	3.393e-09	2.988e-09	-8.469	-8.525	-0.055
Mn(2)		2.915e-05				
	Mn+2	1.988e-05	1.232e-05	-4.702	-4.909	-0.208
	MnHCO3+	6.403e-06	5.639e-06	-5.194	-5.249	-0.055
	MnSO4	2.119e-06	2.127e-06	-5.674	-5.672	0.002
	MnCO3	6.706e-07	6.733e-07	-6.174	-6.172	0.002
	MnCl+	7.484e-08	6.591e-08	-7.126	-7.181	-0.055
	MnOH+	4.399e-10	3.874e-10	-9.357	-9.412	-0.055
	MnCl2	3.764e-11	3.779e-11	-10.424	-10.423	0.002

```
        MnCl3-            1.552e-14   1.367e-14   -13.809   -13.864    -0.055
Mn(3)                1.092e-30
        Mn+3              1.092e-30   3.481e-31   -29.962   -30.458    -0.497
Na                   3.701e-04
        Na+               3.670e-04   3.237e-04    -3.435    -3.490    -0.054
        NaSO4-            2.151e-06   1.895e-06    -5.667    -5.722    -0.055
        NaHCO3            9.313e-07   9.350e-07    -6.031    -6.029     0.002
        NaCO3-            2.270e-09   1.999e-09    -8.644    -8.699    -0.055
        NaOH              8.478e-12   8.512e-12   -11.072   -11.070     0.002
O(0)                 0.000e+00
        O2                0.000e+00   0.000e+00   -60.961   -60.959     0.002
S(-2)                1.355e-33
        H2S               1.022e-33   1.026e-33   -32.990   -32.989     0.002
        HS-               3.326e-34   2.918e-34   -33.478   -33.535    -0.057
        S-2               0.000e+00   0.000e+00   -40.068   -40.283    -0.215
        Fe(HS)2           0.000e+00   0.000e+00   -62.548   -62.546     0.002
        Fe(HS)3-          0.000e+00   0.000e+00   -93.989   -94.044    -0.055
S(6)                 2.709e-03
        SO4-2             2.104e-03   1.280e-03    -2.677    -2.893    -0.216
        CaSO4             4.359e-04   4.376e-04    -3.361    -3.359     0.002
        MgSO4             1.572e-04   1.579e-04    -3.803    -3.802     0.002
        FeSO4             6.524e-06   6.550e-06    -5.186    -5.184     0.002
        NaSO4-            2.151e-06   1.895e-06    -5.667    -5.722    -0.055
        MnSO4             2.119e-06   2.127e-06    -5.674    -5.672     0.002
        ZnSO4             5.278e-07   5.299e-07    -6.278    -6.276     0.002
        BaSO4             5.226e-08   5.246e-08    -7.282    -7.280     0.002
        HSO4-             2.674e-08   2.355e-08    -7.573    -7.628    -0.055
        Zn(SO4)2-2        1.024e-08   6.162e-09    -7.990    -8.210    -0.221
        KSO4-             6.374e-10   5.613e-10    -9.196    -9.251    -0.055
        CaHSO4+           6.307e-10   5.554e-10    -9.200    -9.255    -0.055
        FeHSO4+           1.205e-11   1.062e-11   -10.919   -10.974    -0.055
        FeSO4+            1.419e-16   1.249e-16   -15.848   -15.903    -0.055
        Fe(SO4)2-         3.754e-18   3.306e-18   -17.425   -17.481    -0.055
        FeHSO4+2          1.450e-22   8.722e-23   -21.839   -22.059    -0.221
Zn                   5.512e-06
        Zn+2              3.240e-06   1.974e-06    -5.489    -5.705    -0.215
        ZnHCO3+           1.449e-06   1.276e-06    -5.839    -5.894    -0.055
        ZnSO4             5.278e-07   5.299e-07    -6.278    -6.276     0.002
        ZnCO3             2.700e-07   2.710e-07    -6.569    -6.567     0.002
        Zn(SO4)2-2        1.024e-08   6.162e-09    -7.990    -8.210    -0.221
        Zn(CO3)2-2        6.628e-09   3.987e-09    -8.179    -8.399    -0.221
        ZnCl+             4.186e-09   3.687e-09    -8.378    -8.433    -0.055
        ZnOH+             3.264e-09   2.874e-09    -8.486    -8.541    -0.055
        Zn(OH)2           3.921e-10   3.936e-10    -9.407    -9.405     0.002
        ZnCl2             4.765e-12   4.784e-12   -11.322   -11.320     0.002
        ZnCl3-            7.339e-15   6.464e-15   -14.134   -14.190    -0.055
        Zn(OH)3-          5.625e-15   4.954e-15   -14.250   -14.305    -0.055
        ZnCl4-2           6.307e-18   3.794e-18   -17.200   -17.421    -0.221
        Zn(OH)4-2         5.194e-21   3.125e-21   -20.285   -20.505    -0.221

------------------------------Saturation indices-------------------------------

        Phase               SI log IAP  log KT

        Anhydrite        -1.27   -5.60   -4.33  CaSO4
        Aragonite        -0.61   -8.87   -8.26  CaCO3
        Barite            0.24   -9.98  -10.22  BaSO4
        Calcite          -0.45   -8.87   -8.41  CaCO3
        CO2(g)           -1.15   -2.44   -1.29  CO2
        Dolomite         -1.39  -18.15  -16.75  CaMg(CO3)2
        Fe(OH)3(a)       -2.00    2.89    4.89  Fe(OH)3
```

```
          FeS(ppt)        -27.45  -31.36   -3.92  FeS
          Goethite          3.37    2.89   -0.48  FeOOH
          Gypsum           -1.01   -5.60   -4.59  CaSO4:2H2O
          H2(g)           -14.89   30.48   45.37  H2
          H2O(g)           -1.88   -0.00    1.88  H2O
          H2S(g)          -32.11  -40.13   -8.03  H2S
          Halite           -7.92   -6.37    1.55  NaCl
          Hausmannite     -24.78   39.83   64.61  Mn3O4
          Hematite          8.69    5.78   -2.91  Fe2O3
          Jarosite-K      -15.92  -24.02   -8.10  KFe3(SO4)2(OH)6
          Mackinawite     -26.71  -31.36   -4.65  FeS
          Manganite        -9.57   15.77   25.34  MnOOH
          Melanterite      -4.93   -7.32   -2.39  FeSO4:7H2O
          O2(g)           -58.18  -60.96   -2.78  O2
          Pyrite          -37.66  -56.54  -18.88  FeS2
          Pyrochroite      -6.91    8.29   15.20  Mn(OH)2
          Pyrolusite      -20.45   23.25   43.70  MnO2:H2O
          Rhodochrosite     0.01  -11.07  -11.08  MnCO3
          Siderite          0.21  -10.59  -10.80  FeCO3
          Smithsonite      -2.02  -11.87   -9.84  ZnCO3
          Sphalerite      -20.73  -32.64  -11.91  ZnS
          Sulfur          -23.25  -18.03    5.22  S
          Witherite        -4.63  -13.25   -8.62  BaCO3
          Zn(OH)2(e)       -4.00    7.50   11.50  Zn(OH)2

------------------
End of simulation.
------------------

------------------------------------
Reading input data for simulation 2.
------------------------------------

-----------
End of run.
-----------

No memory leaks
```

Foth

Memorandum

February 3, 2010

TO: Jana Murphy, Flambeau Mining Co.

CC: Jim Hutchison, Foth Infrastructure & Environment, LLC
Steve Donohue, Foth Infrastructure & Environment, LLC

FR: Stephen Lehrke, Ph.D., Foth Infrastructure & Environment, LLC
Sharon Kozicki, C.E.M., P.G., Foth Infrastructure & Environment, LLC

RE: Flambeau Mining Company - 2009 Annual Report Groundwater and Surface Water Trends

Background

Groundwater and surface water sample results collected for the 2009 monitoring program were added to the analytical monitoring historical database. These results were statistically tested and graphically displayed to determine whether any significant increasing or decreasing trends are occurring in the groundwater or surface water chemistry. Groundwater quality results, trend graphs and statistical test results are included as Attachment 1 for the quarterly monitoring parameters and Attachment 2 for the annual monitoring parameters. Surface water quality results, trend graphs and statistical test results are included as Attachment 3. Hydrographs are included as Attachment 4.

Intervention boundary wells included in the trend analyses are MW-1000PR, MW-1002, MW-1002G, MW-1004P, MW-1004S, MW-1005, MW-1005P, MW-1005S, and MW-1010P. The in-pit wells included in the trend analyses are MW-1013, MW-1013A, MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B and MW-1014C. Wells MW-1015A and MW-1015B (also included in the analyses) were constructed in January 2001 approximately 1000 ft. northwest of the backfilled pit and adjacent to the compliance boundary.

Statistical Methods

Trends in the groundwater and surface water data are tested statistically utilizing two distinct start dates. Long-term trends encompass the results from October of 1997 through December of 2009. October of 1997 was selected as the start date for long-term trend tests since it is the beginning of the post-mining period. Short-term trends encompass the results of January 2005 through December of 2009, i.e., the previous five years.

Note that the long-term trend analyses begin in February, 1999 for the in-pit wells MW-1013B, MW-1013C, MW-1014A, MW-1014B and MW-1014C, and April, 2001 for wells MW-1015A

2737 South Ridge Road, Suite 600 • P.O. Box 12326 • Green Bay, WI 54307-2326 • (920) 497-2500 • Fax: (920) 497-8516

and MW-1015B, which is when monitoring began. Trend analyses are also included for wells MW-1013, MW-1013A and MW-1014 beginning in October, 2005, at which time sufficient groundwater recovery occurred to collect samples.

For the annual monitoring parameters of barium, cadmium, calcium, chloride, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium and zinc, the long-term trend analyses begin with July 1999 since this was the recent start date of monitoring for these parameters.

The non-parametric Mann-Kendall test for trend was used to statistically determine existing trends in both the long-term and recent (5-year) data sets. This test indicates whether any general increasing or decreasing trends have occurred during these time frames. The results of the trend tests are best used in conjunction with the trend graphs of Attachments 1, 2 and 3 to properly evaluate trend conditions in the context of the broader site hydrology. It should be noted that a statistically increasing or decreasing trend does not necessarily indicate a substantial increase or decrease in actual parameter concentrations. There are situations where variation in the data is small, allowing slight consecutive concentration changes to be detected as a statistically significant trend. Although these minor trends may occur, they should not be construed as an indication of a broader impact on water quality.

The procedure for the Mann-Kendall test is given in Gilbert (1987)[1]. The Type I error for each test was set to 0.01 (two-tailed), with the exception of the 5-year trend tests for the annual parameters. In that case the type I error (two-tailed) was set to 0.05 to increase the power of the test (power of detecting existing trends) to counteract the decrease in power due to small sample sizes. All non-detected values were replaced with a common value below the lowest detected value.

In the trend test results of Attachments 1, 2 and 3, a "+" indicates a statistically increasing trend and a "-" indicates a statistically decreasing trend. If neither a "+" or "-" is given, no statistically significant trend is present.

Trend Results

Quarterly Parameters (Attachment 1)

The majority of observable trends, increasing and/or decreasing, were exhibited in the groundwater results for the quarterly parameters of alkalinity, copper, hardness, iron, manganese, sulfate, TDS, conductivity and redox. A number of the observed trends are similar to those noted in the previous annual report.

Trends reflecting either more recent concentration changes or greater changes in actual concentration levels are noted in the intervention boundary wells MW-1000PR, MW-1004S, MW-1005, MW-1010P and MW1015B, and the in-pit wells MW-1013B, MW-1013C, MW-1014A, MW-1014B and MW-1014C. Many trends indicated as statistically significant in other

[1]Gilbert, R.O., 1987. A Statistical Methods for Environmental Pollution Monitoring@, Van Nostrand Reinhold, New York.

wells are the result of only small consecutive concentration changes over the post-mining period, with overall concentration change being very low.

The following narrative provides a more detailed discussion of the statistical trend results for each well, utilizing the historical trend graphs of Attachment 1 to interpret the results.

Intervention Boundary Wells

- MW-1000PR: Several parameters exhibited an immediate increase in concentrations at the beginning of the post-mining period. These are alkalinity, hardness, iron, manganese, sulfate, TDS and conductivity. Of these, hardness, manganese, sulfate, TDS and conductivity quickly began to again decrease. Long-term statistically decreasing trends continue to be indicated for these parameters, with short-term (5-year) statistically decreasing trends indicated for hardness and sulfate.

  A statistically increasing long-term trend continues to be indicated for alkalinity. However, the rate of increase slowed considerably following 2002 and no current statistically significant trend is indicated for the short-term results.

  Iron concentrations, while elevated between 1999 and 2004, significantly dropped between 2005 and the third quarter of 2007. Concentrations increased briefly again during the fourth quarter of 2007 then significantly dropped during 2008 and continue to remain at pre-mining concentrations. No statistically increasing or decreasing trend is noted for iron in the short-term or long-term data.

- MW-1002: No recent (5-year) trends exist. Long-term statistically decreasing trends are indicated for iron and conductivity, but reflect only small consecutive changes in actual low concentrations.

- MW-1002G: A short-term statistically increasing trend is indicated for conductivity, but reflects only smaller concentration changes. Conductivity levels are currently similar to pre-mining concentrations. Long-term decreasing trends are indicated for iron and sulfate, but also reflect relatively small concentration changes.

- MW-1004P: A long-term statistically increasing trend is indicated for iron and manganese. Iron and manganese concentrations in this well initially decreased in 1993 following the onset of the mining period. Concentrations remained lower than pre-1993 levels until a general increase began around 2002. Between January of 2005 and June of 2009 concentrations fluctuated randomly still at concentrations near or below pre-1993 levels. The latest two sampling events of October and December of 2009 show increased concentrations of these two parameters; however re-testing results indicate large variation within the results of even the same sampling event.

  A short-term statistically increasing trend is indicated for conductivity, but reflects only smaller concentration changes.

A long-term statistically decreasing trend is indicated for copper, reflecting an isolated period of increased concentrations during 1997 and 1998.

- MW-1004S: Alkalinity, hardness, sulfate and conductivity have statistically increasing long-term trends, but as can be seen in the trend graphs of Attachment 1 these are small increasing trends since 2002 where concentrations remain generally low with alkalinity and hardness below pre-mining (pre-1993) concentrations. Long-term statistical decreasing trends were noted for copper and iron but reflect only slight changes in already low concentrations.

- MW-1005: Moderate long-term decreasing trends have occurred for alkalinity, iron, and manganese. Of these, alkalinity continues to have a decreasing trend in the recent (5-year) data.

  While hardness, TDS and conductivity have no statistical trends, observable concentration decreases occurred from 1993 through 2002, then increases during 2003 with stabilized readings thereafter. Note this follows a moderate short term increase in groundwater elevation during 2002.

- MW-1005P: Copper and sulfate have long-term decreasing statistical trends, but reflect only slight concentration changes. Conductivity has had a recent (5-year) statistically increasing trend and iron, a long-term statistically increasing trend, but both are at or below pre-1993 levels.

- MW-1005S: Alkalinity, hardness, manganese and conductivity observed increasing trends, but reflect only small changes in actual concentration levels which are near or below pre-1993 results. A short-term statistically decreasing trend of sulfate was indicated, but also reflects only small changes in actual concentration levels.

- MW-1010P: Long-term statistically increasing trends are denoted for alkalinity, hardness, manganese and sulfate, however, current concentrations have stabilized with no existing recent trends and levels still similar to, or below, pre-mining (pre-1993) conditions. While long-term statistically increasing trends are denoted for conductivity and redox, current concentrations are similar to pre-2002 levels with no short-term trend indicated for redox. A short-term statistically increasing trend is indicated for TDS, but again, current concentrations are similar to pre-2002 levels.

  A long-term statistically decreasing trend is indicated for copper, reflecting an isolated period of increased concentrations during 1996 through 1998.

- MW-1015A: Various statistical trends (both increasing and decreasing) were noted for alkalinity, manganese, sulfate and conductivity which reflect very small consecutive concentration changes. Concentrations remain generally stable and at lower levels.

- MW-1015B: Statistically increasing short and long-term trends are indicated for redox and conductivity. Redox has generally increased from 2004 through 2009. Conductivity on the other hand increased in January of 2007, with levels remaining relatively consistent both prior to and following that date.

  Long-term statistically increasing trends are also indicated for hardness and iron, however, the trend for hardness reflects only very small concentration changes. Iron concentrations increased during 2002 to 2003, but have been generally consistent or decreasing since then.

  A short-term statistically increasing trend is indicated for TDS, which results from decreased concentrations observed during 2004 through 2006. Current TDS concentrations are similar to those observed prior to 2004.

  A statistically decreasing short-term trend is indicated for manganese. Manganese concentrations continue to decrease after an increase observed during 2003.

In-Pit Wells

- MW-1013: No statistically significant trends were noted for the quarterly monitoring parameters in the available data, however, groundwater elevation generally increased between 2000 and 2004.

- MW-1013A: Moderate statistically decreasing trends (trend data beginning in October of 2005) were observed for conductivity and redox.

- MW-1013B: A long-term statistically increasing trend is denoted for copper, which had increasing concentrations from 2002 through 2008. No statistical short-term trend is indicated for copper due to decreased concentrations during 2009.

  Iron was also following a significantly increasing trend until 2004, when concentrations suddenly fell to non-detectable levels and have remained ever since (now reflecting a long-term statistically decreasing trend).

  TDS has had a moderately decreasing trend since 2002. A short-term (5-year) statistically decreasing trend is also denoted for conductivity.

- MW-1013C: Long-term statistically increasing trends were observed for alkalinity, iron and manganese, with iron continuing a statistically increasing trend in the recent (5-year) results. The 2009 iron concentrations, however, appear to have stabilized. No current statistical trends are observed in the recent 5-year results for alkalinity and manganese.

  Conductivity has a short-term statistically decreasing trend.

- MW-1014: Manganese, sulfate and pH have statistically decreasing trends (trend data beginning in October of 2005). The decreasing trends of manganese and pH are moderate; however the trend for sulfate reflects only very small concentration changes.

- MW-1014A: Strong decreasing trends were noted for iron in the long-term results and manganese in both the long and short-term results. Prior to 2002 iron was observed at concentrations over 1 mg/L, but has generally been at non-detectable levels or slightly over since 2004. From 2000 to 2009 manganese concentrations reduced by over a factor of 10, currently at less than 400 ug/L.

  A short-term (5-year) statistically decreasing trend was noted for redox. Redox concentrations rose between 2000 and 2005, then began a general decreasing trend which continues through the present.

  A long-term statistically decreasing trend was noted for conductivity, but reflects smaller concentration changes.

  A long-term statistically increasing trend was noted for alkalinity and a short-term statistically increasing trend for TDS. These both reflect relatively smaller concentration changes.

- MW-1014B: Moderate long-term decreasing trends were observed for hardness, manganese and TDS and conductivity. No recent trends are occurring with hardness, TDS and conductivity, but the decreasing trend continues with manganese in the recent data. A decreasing trend was also noted for redox in the short-term results.

- MW-1014C: Moderate long-term decreasing trends were observed for hardness, iron, manganese, sulfate, TDS and conductivity, with the decreasing trends continuing in the short-term results for each of these but TDS.

  Statistical long-term increasing trends are noted for arsenic and pH, and a long-term decreasing trend for alkalinity, but these reflect relatively smaller concentration changes with no trends noted in the short-term tests.

Annual Parameters (Attachment 2)

Similar to past trend results, the annual groundwater parameters of barium, cadmium, calcium, chloride, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium, and zinc illustrated few statistically significant trends, and of those that are noted, most generally reflect relatively small consecutive concentration changes. The discussion below is limited to statistical trends reflecting more moderate concentration changes. These trends are:

- MW-1000PR has had long-term statistically decreasing trends of calcium, magnesium and zinc, with the decreasing trends continuing in the short terms results for magnesium and zinc.

- MW-1013A has a decreasing trend noted for barium in the short-term results.

- MW-1014B has had a statistically decreasing trend denoted in the long-term results of cadmium, calcium, magnesium and zinc. The relative concentration changes for cadmium, calcium and magnesium are small, with the relative concentration changes for zinc more moderate. No trend in the recent short-term data is observed for these parameters.

- MW-1014C has had recent and long-term decreasing trends of calcium, magnesium and zinc. A long-term increasing trend of barium was also detected in MW-1014C; however, this trend is an artifact of the higher method detection limits utilized prior to 2003 than those currently in use.

<u>Surface Water (Attachment 3)</u>
Parameters currently included in the surface water monitoring are copper, hardness, iron, manganese, sulfate, zinc, pH and conductivity. No statistically significant trends were observed in either the upstream or downstream surface water monitoring results, with the exception of a statistically increasing trend of sulfate in the long-term results for SW-2. This trend, however, reflects relatively smaller consecutive changes in actual concentration.

<u>Hydrographs (Attachment 4)</u>
As observed in the hydrographs, all wells illustrating significant drawdown during the production period of 1993 to 1997 now appear to be substantially stabilized. The wells include MW-1000P-R, MW-1001, MW-1001G, MW-1001P, MW-1003, MW-1003P, MW-1004, MW-1004P, MW-1004S, MW-1010P, OW-7, OW-39, OW-42, PZ-1006G, PZ-1006S, PZ-1007S, PZ-1008, PZ-1008G, PZ-1012, PZ-R1, PZ-S1, PZ-S3, ST-9-23 and ST-9-26. Water elevations in these wells, however, again decreased somewhat from 2008 through 2009.

Groundwater elevations increased steadily from 1999 through 2002 for the in-pit wells of MW-1013A, MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B and MW-1014C, but stabilized and began a decreasing trend in 2003. This trend once again reversed during 2008 with increasing elevations, but then decreased again in 2009. Elevations for MW-1013 rose through 2004, but appear to have stabilized during 2005 and remained consistent since then.

Conclusions

Many of the concentration trends noted from the statistical trend tests reflected small but consecutive changes in actual concentration. The more significant trends occurred mainly with the quarterly monitoring parameters in the intervention boundary wells MW-1000PR, MW-1004P, MW-1005 and MW1015B, and the in-pit wells MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B and MW-1014C. Of the trend results listed above, the following are the main conclusions:

Intervention Boundary Wells

- Several parameters in MW-1000PR (alkalinity, hardness, iron, manganese, sulfate, TDS and conductivity) exhibited an immediate increase in concentrations at the beginning of the post-mining period. Of these, hardness, manganese, sulfate, TDS and conductivity quickly began to again decrease, and long-term statistically decreasing trends continue to be indicated for these parameters. A statistically increasing long-term trend is indicated for alkalinity, however, the rate of increase slowed considerably following 2002 and no current statistically significant trend is indicated for the short-term results.

- A long-term statistically increasing trend is indicated for iron and manganese in MW-1004P with concentration increases beginning generally around 2002. This followed a longer period of decreased concentrations which initiated in 1993. No statistically significant short-term (5-year) trend is indicated since the results between January of 2005 and June of 2009 fluctuate randomly (at concentrations near or below pre-1993 levels). The latest two sampling events of October and December of 2009 show increased concentrations of these two parameters; however re-testing results indicate large variation within the results of even the same sampling event.

- Alkalinity continues a moderately decreasing trend in MW-1005.

- Statistically increasing trends are indicated for redox and conductivity in MW-1015B. Redox has generally increased from 2004 through 2009. Conductivity on the other hand increased in January of 2007, with levels remaining relatively consistent both prior to and following that date. A statistically decreasing short-term trend is indicated for manganese, with concentrations continuing to decrease after an increase observed during 2003.

In-Pit Wells

- A long-term statistically increasing trend is denoted for copper in MW-1013B, which had increasing concentrations from 2002 through 2008. No short-term trend is indicated, however, since copper decreased in concentration during 2009.

- Long-term and 5-year increasing trends are observed for iron in MW-1013C. The 2009 iron concentrations, however, appear to have stabilized.

- MW-1014 has had moderate decreasing trends of manganese and pH.

- Long-term decreasing trends were noted for iron and manganese in MW-1014A. Prior to 2002 iron was observed at concentrations over 1 mg/L, but has generally been at non-detectable levels or slightly over since 2004. From 2000 to 2009 manganese concentrations reduced by over a factor of 10, currently at less than 400 ug/L.

- Moderate long-term decreasing trends were observed for hardness, manganese and TDS and conductivity in MW-1014B. A decreasing trend was also noted for redox in the short-term results.

- Decreasing trends continue in MW-1014C for hardness, iron, manganese, sulfate, TDS and conductivity.

Few significant trends were noted for the annual groundwater parameters of barium, cadmium, calcium, chloride, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium, and zinc. Of the somewhat moderate trends, MW-1000PR has had a decreasing trend of calcium, magnesium and zinc, MW-1013A has had a decreasing trend for barium, and MW-1014B and MW-1014C have had decreasing trends of zinc.

No statistically significant trends were observed in the surface water monitoring results, with the exception of a statistically increasing trend of sulfate for SW-2. This trend, however, reflects relatively smaller consecutive changes in actual concentration, currently only a little above the detection limit.

Attachment 1

Statistical Results

Trend Graphs

Historical Data

(Groundwater - Quarterly Parameters)

Trend Analysis Results - Groundwater (Quarterly Parameters)
Year Ending 2009

	Alkalinity	Arsenic	Copper	Hardness	Iron	Manganese	Sulfate	TDS	Field pH (su)	Field Cond (umho)	Redox (mV)	Grd Water El (Feet)
MW-1000PR												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	53	45	-66	-91	-67	-71	-112	-5	-17	-77	13	-50
p-Level	0.092	0.155	0.034	0.003	0.031	0.022	0.000	0.898	0.608	0.013	0.701	0.112
Trend				-			-					
Trend Results for All Data Since Oct. 1997												
Sample Size	49	30	49	49	49	49	49	49	49	49	35	49
Mann-Kendall S	974	127	-126	-564	-207	-546	-707	-534	268	-723	-90	24
p-Level	0.000	0.024	0.274	0.000	0.076	0.000	0.000	0.000	0.021	0.000	0.208	0.843
Trend	+			-		-	-	-		-		
MW-1002												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	0	20
Mann-Kendall S	-1	4	0	-15	-9	19	55	47	-53	78	0	-37
p-Level	0.987	0.924	1.000	0.654	0.798	0.564	0.080	0.137	0.092	0.012		0.247
Trend												
Trend Results for All Data Since Oct. 1997												
Sample Size	49	27	49	49	49	49	49	49	49	49	0	49
Mann-Kendall S	-5	25	-180	-98	-407	-191	-187	-277	-51	-313	0	-202
p-Level	0.972	0.620	0.028	0.402	0.000	0.020	0.108	0.017	0.665	0.007		0.083
Trend					-					-		
MW-1002G												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	0	20
Mann-Kendall S	-77	-1	0	-14	-9	11	-55	45	-43	119	0	-34
p-Level	0.013	0.987	1.000	0.678	0.798	0.749	0.080	0.155	0.175	0.000		0.288
Trend										+		
Trend Results for All Data Since Oct. 1997												
Sample Size	49	27	49	49	49	49	49	49	49	49	0	49
Mann-Kendall S	97	-21	-59	216	-252	6	-527	-294	5	-22	0	-219
p-Level	0.403	0.680	0.143	0.053	0.004	0.943	0.000	0.011	0.972	0.856		0.060
Trend					-		-					
MW-1004P												
Trend Results for Most Recent 5 Years												
Sample Size	21	21	21	21	21	21	21	21	21	21	21	21
Mann-Kendall S	-39	16	-8	13	72	69	9	52	41	130	-10	-46
p-Level	0.255	0.654	0.834	0.720	0.030	0.039	0.811	0.124	0.230	0.000	0.788	0.176
Trend										+		
Trend Results for All Data Since Oct. 1997												
Sample Size	50	30	50	50	50	50	50	50	50	50	37	50
Mann-Kendall S	92	43	-437	192	466	599	-228	-207	125	79	-14	117
p-Level	0.274	0.456	0.000	0.070	0.000	0.000	0.021	0.083	0.298	0.514	0.866	0.332
Trend			-		+	+						
MW-1004S												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	90	1	-4	60	20	16	93	68	-52	107	-29	-30
p-Level	0.004	0.987	0.924	0.054	0.542	0.630	0.002	0.028	0.098	0.000	0.369	0.352
Trend	+						+			+		
Trend Results for All Data Since Oct. 1997												
Sample Size	49	29	49	49	49	49	49	49	49	49	35	49
Mann-Kendall S	505	19	-294	694	-276	-185	846	71	72	423	-79	122
p-Level	0.000	0.738	0.002	0.000	0.003	0.056	0.000	0.544	0.538	0.000	0.270	0.297
Trend	+		-	+	-		+			+		

Trend Analysis Results - Groundwater (Quarterly Parameters)
Year Ending 2009

	Alkalinity	Arsenic	Copper	Hardness	Iron	Manganese	Sulfate	TDS	Field pH (su)	Field Cond (umho)	Redox (mV)	Grd Water El (Feet)
MW-1005												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	0	20
Mann-Kendall S	-102	-15	31	-16	-54	-66	30	59	-44	12	0	-60
p-Level	0.000	0.654	0.335	0.630	0.086	0.034	0.352	0.059	0.164	0.724		0.054
Trend	-											
Trend Results for All Data Since Oct. 1997												
Sample Size	49	27	49	49	49	49	49	49	49	49	0	49
Mann-Kendall S	-807	-4	51	-135	-535	-447	106	-192	-2	-129	0	-130
p-Level	0.000	0.951	0.447	0.246	0.000	0.000	0.343	0.099	0.993	0.270		0.266
Trend	-				-	-						
MW-1005P												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	-1	17	0	-25	77	5	11	68	63	118	-17	-81
p-Level	0.987	0.608	1.000	0.441	0.013	0.898	0.749	0.028	0.043	0.000	0.608	0.009
Trend										+		-
Trend Results for All Data Since Oct. 1997												
Sample Size	49	27	49	49	49	49	49	49	49	49	37	49
Mann-Kendall S	-6	15	-189	16	394	115	-241	-260	-59	23	-165	-212
p-Level	0.963	0.772	0.002	0.892	0.001	0.326	0.002	0.025	0.616	0.849	0.031	0.069
Trend			-		+		-					
MW-1005S												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	0	20
Mann-Kendall S	77	16	0	4	-31	-57	-115	74	76	132	0	-66
p-Level	0.013	0.630	1.000	0.924	0.335	0.069	0.000	0.016	0.014	0.000		0.034
Trend							-			+		
Trend Results for All Data Since Oct. 1997												
Sample Size	49	27	49	49	49	49	49	49	49	49	0	49
Mann-Kendall S	355	53	-42	309	68	365	-237	-108	63	-29	0	-126
p-Level	0.000	0.282	0.147	0.004	0.559	0.001	0.029	0.354	0.591	0.809		0.281
Trend	+			+		+						
MW-1010P												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	27	48	-7	21	-17	-33	46	90	49	129	53	-44
p-Level	0.404	0.128	0.847	0.521	0.608	0.303	0.146	0.004	0.120	0.000	0.092	0.164
Trend								+		+		
Trend Results for All Data Since Oct. 1997												
Sample Size	49	30	49	49	49	49	49	49	49	49	35	49
Mann-Kendall S	413	25	-586	664	158	370	573	-81	152	424	264	-17
p-Level	0.000	0.672	0.000	0.000	0.175	0.001	0.000	0.487	0.192	0.000	0.000	0.890
Trend	+		-	+		+	+			+	+	
MW-1013												
Trend Results for Most Recent 5 Years												
Sample Size	17	17	17	17	17	17	17	17	17	17	17	20
Mann-Kendall S	40	-8	17	14	2	-6	-40	33	-5	0	-31	34
p-Level	0.108	0.776	0.516	0.598	0.968	0.840	0.108	0.190	0.872	1.000	0.220	0.288
Trend												
Trend Results for All Data Since Oct. 1997												
Sample Size	17	17	17	17	17	17	17	17	17	17	18	42
Mann-Kendall S	40	-8	17	14	2	-6	-40	33	-5	0	-44	523
p-Level	0.108	0.776	0.516	0.598	0.968	0.840	0.108	0.190	0.872	1.000	0.104	0.000
Trend												+

Trend Analysis Results - Groundwater (Quarterly Parameters)
Year Ending 2009

	Alkalinity	Arsenic	Copper	Hardness	Iron	Manganese	Sulfate	TDS	Field pH (su)	Field Cond (umho)	Redox (mV)	Grd Water El (Feet)
MW-1013A												
Trend Results for Most Recent 5 Years												
Sample Size	17	17	17	17	17	17	17	17	17	17	17	20
Mann-Kendall S	-16	-10	-9	-53	39	-36	-54	-30	-2	-85	-76	-65
p-Level	0.542	0.716	0.746	0.031	0.118	0.152	0.028	0.236	0.968	0.000	0.002	0.037
Trend										-	-	
Trend Results for All Data Since Oct. 1997												
Sample Size	17	17	17	17	17	17	17	17	17	17	18	42
Mann-Kendall S	-16	-10	-9	-53	39	-36	-54	-30	-2	-85	-71	43
p-Level	0.542	0.716	0.746	0.031	0.118	0.152	0.028	0.236	0.968	0.000	0.006	0.649
Trend										-	-	
MW-1013B												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	-19	-19	33	-64	19	-66	-7	35	-31	-96	-32	-52
p-Level	0.564	0.564	0.303	0.040	0.564	0.034	0.847	0.274	0.335	0.002	0.318	0.098
Trend										-		
Trend Results for All Data Since Oct. 1997												
Sample Size	44	32	44	44	44	44	44	44	44	44	37	44
Mann-Kendall S	44	-37	653	-112	-361	-224	134	-419	-29	-100	154	77
p-Level	0.662	0.563	0.000	0.224	0.000	0.024	0.146	0.000	0.774	0.316	0.044	0.442
Trend			+		-			-				
MW-1013C												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	19	19	20
Mann-Kendall S	-3	31	-7	-51	117	-26	-10	5	-8	-84	-7	-54
p-Level	0.949	0.335	0.847	0.105	0.000	0.422	0.774	0.898	0.822	0.003	0.836	0.086
Trend					+					-		
Trend Results for All Data Since Oct. 1997												
Sample Size	44	32	44	44	44	44	44	44	44	43	36	44
Mann-Kendall S	346	119	-171	-39	810	576	190	-152	-41	10	39	39
p-Level	0.000	0.056	0.007	0.684	0.000	0.000	0.040	0.117	0.682	0.925	0.607	0.701
Trend	+		-		+	+						
MW-1014												
Trend Results for Most Recent 5 Years												
Sample Size	17	17	17	17	17	17	17	17	17	17	17	18
Mann-Kendall S	12	-13	1	-50	0	-83	-62	3	-66	-9	-47	-25
p-Level	0.656	0.627	0.984	0.042	1.000	0.000	0.010	0.936	0.006	0.746	0.058	0.368
Trend						-			-			
Trend Results for All Data Since Oct. 1997												
Sample Size	17	17	17	17	17	17	17	17	17	17	18	38
Mann-Kendall S	12	-13	1	-50	0	-83	-62	3	-66	-9	-32	176
p-Level	0.656	0.627	0.984	0.042	1.000	0.000	0.010	0.936	0.006	0.746	0.245	0.027
Trend						-	-		-			
MW-1014A												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	57	-13	25	-10	32	-133	-14	81	-71	-55	-102	-35
p-Level	0.069	0.701	0.441	0.774	0.318	0.000	0.678	0.009	0.022	0.080	0.000	0.274
Trend						-		+			-	
Trend Results for All Data Since Oct. 1997												
Sample Size	39	29	39	39	39	39	39	39	39	39	37	43
Mann-Kendall S	368	-22	121	-175	-366	-652	46	-120	-15	-228	129	226
p-Level	0.000	0.696	0.148	0.034	0.000	0.000	0.588	0.151	0.866	0.006	0.094	0.019
Trend	+				-	-				-		

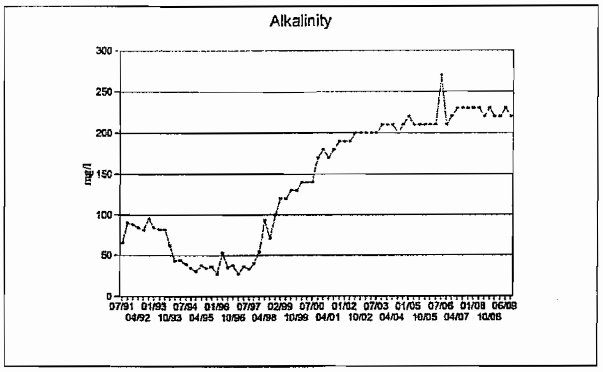
Trend Analysis Results - Groundwater (Quarterly Parameters)
Year Ending 2009

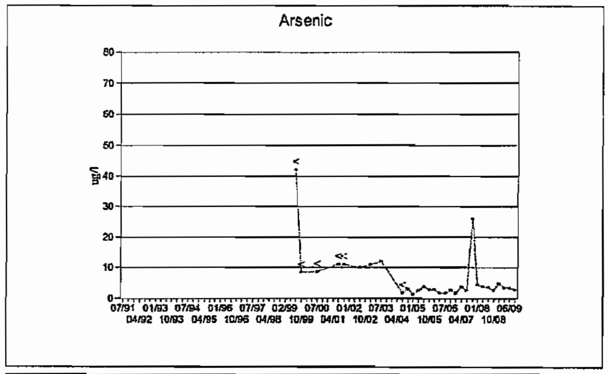
	Alkalinity	Arsenic	Copper	Hardness	Iron	Manganese	Sulfate	TDS	Field pH (su)	Field Cond (umho)	Redox (mV)	Grd Water El (Feet)
MW-1014B												
Trend Results for Most Recent 5 Years												
Sample Size	20	16	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	1	-14	5	-56	19	-102	-31	14	-49	-4	-99	-64
p-Level	0.987	0.564	0.898	0.074	0.564	0.000	0.335	0.678	0.120	0.924	0.001	0.040
Trend						-					-	
Trend Results for All Data Since Oct. 1997												
Sample Size	44	28	44	44	44	44	44	44	44	44	37	44
Mann-Kendall S	134	59	68	-442	-119	-737	-176	-444	224	-385	-145	130
p-Level	0.176	0.254	0.497	0.000	0.030	0.000	0.065	0.000	0.022	0.000	0.060	0.192
Trend				-		-		-		-		
MW-1014C												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	-73	69	-7	-137	-159	-138	-101	-33	0	-139	19	-58
p-Level	0.018	0.026	0.847	0.000	0.000	0.000	0.000	0.303	1.000	0.000	0.564	0.064
Trend				-	-	-	-			-		
Trend Results for All Data Since Oct. 1997												
Sample Size	44	32	44	44	44	44	44	44	44	44	37	44
Mann-Kendall S	-358	236	-39	-827	-884	-854	-732	-681	304	-858	164	68
p-Level	0.000	0.000	0.377	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.032	0.498
Trend	-	+		-	-	-	-	-	+	-		
MW-1015A												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	19	20
Mann-Kendall S	25	-1	2	-24	0	-140	130	74	-11	121	3	-50
p-Level	0.441	0.987	0.974	0.460	1.000	0.000	0.000	0.016	0.749	0.000	0.946	0.112
Trend						-	+			+		
Trend Results for All Data Since Oct. 1997												
Sample Size	43	36	43	43	44	44	43	43	44	44	21	44
Mann-Kendall S	273	-23	94	105	-124	-281	324	-102	151	481	-4	-378
p-Level	0.003	0.766	0.052	0.273	0.012	0.005	0.001	0.287	0.128	0.000	0.928	0.000
Trend	+					-	+			+		-
MW-1015B												
Trend Results for Most Recent 5 Years												
Sample Size	20	20	20	20	20	20	20	20	20	20	20	20
Mann-Kendall S	-5	-7	0	37	-45	-133	-5	85	70	131	130	-41
p-Level	0.898	0.847	1.000	0.247	0.155	0.000	0.898	0.005	0.024	0.000	0.000	0.197
Trend						-		+		+	+	
Trend Results for All Data Since Oct. 1997												
Sample Size	43	36	43	43	44	44	43	43	44	44	22	44
Mann-Kendall S	-70	25	0	241	292	32	-57	29	93	451	171	-358
p-Level	0.192	0.746	1.000	0.007	0.003	0.754	0.182	0.768	0.350	0.000	0.000	0.000
Trend				+	+					+	+	-

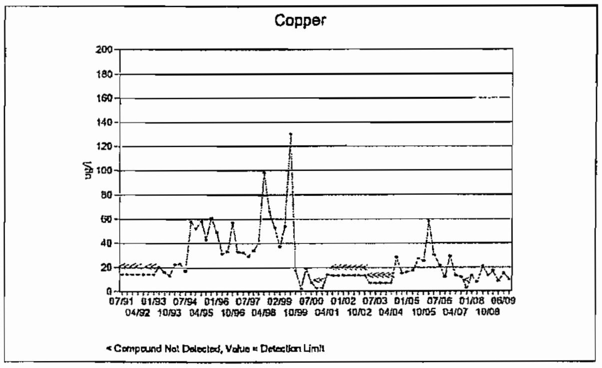
Notes: Overall increasing trend denoted by "+".
Overall decreasing trend denoted by "-"
All trend tests performed at a Type I (two-tailed) error rate of 0.01.

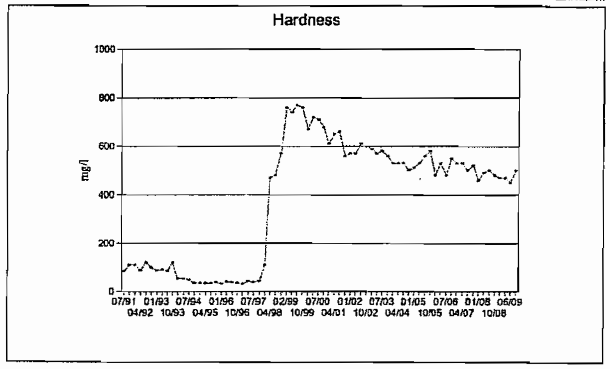
Flambeau Mining Company
Groundwater Quality Results

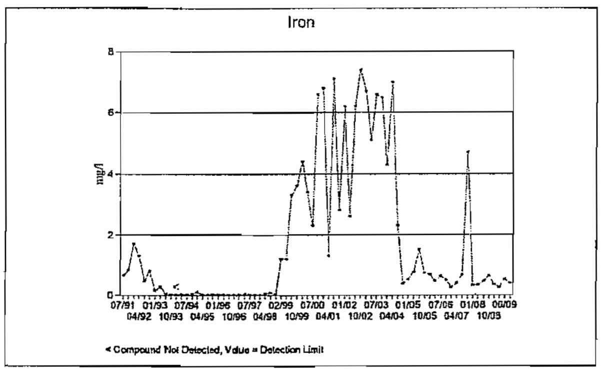
MW-1000P-R

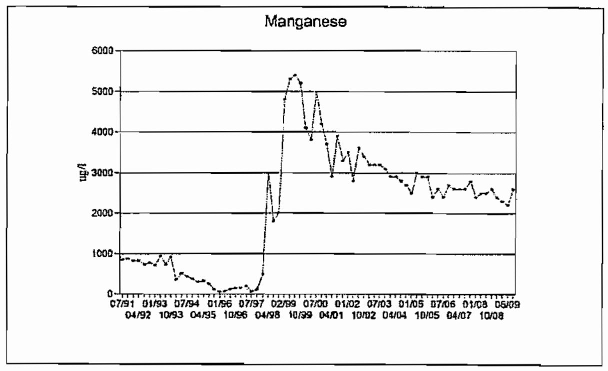


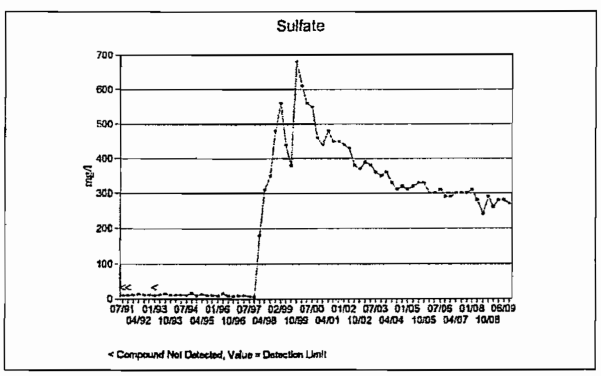


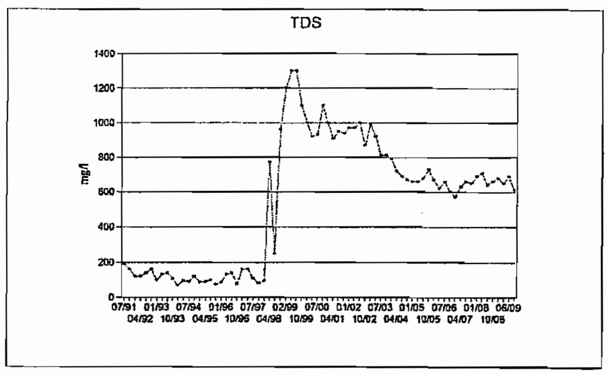








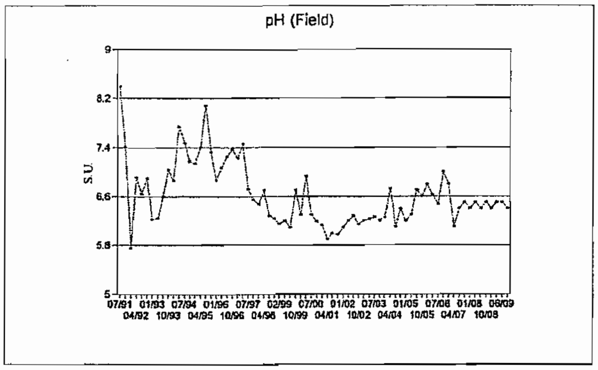


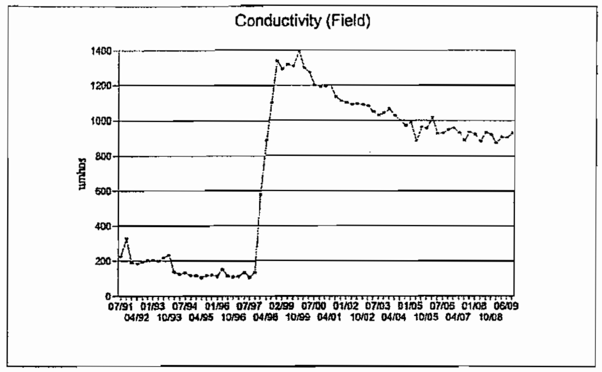


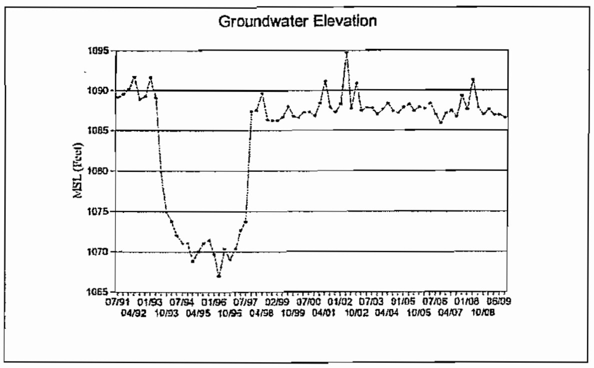
Created By: SGL Checked By: DAT

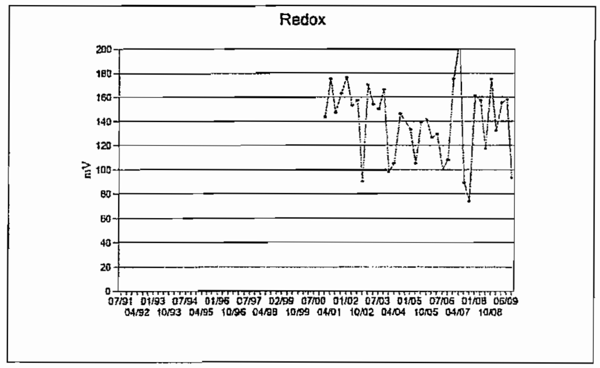
Flambeau Mining Company
Groundwater Quality Results

MW-1000P-R





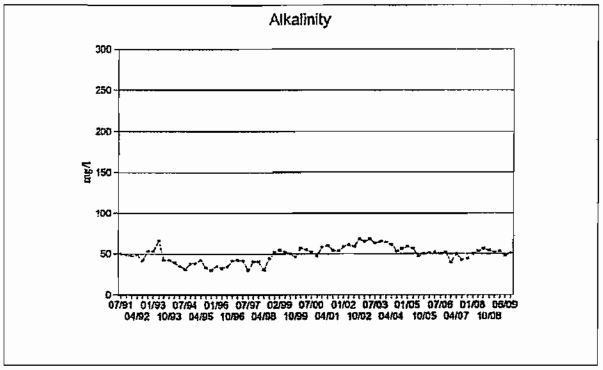


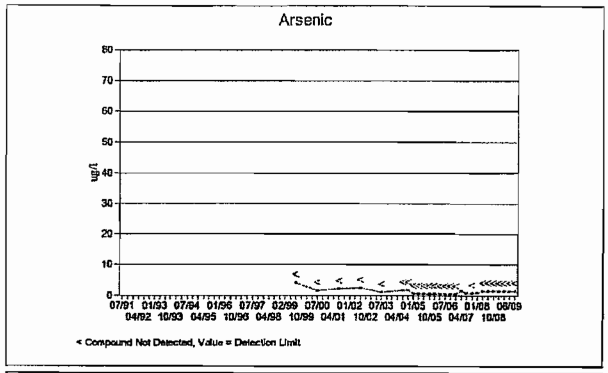


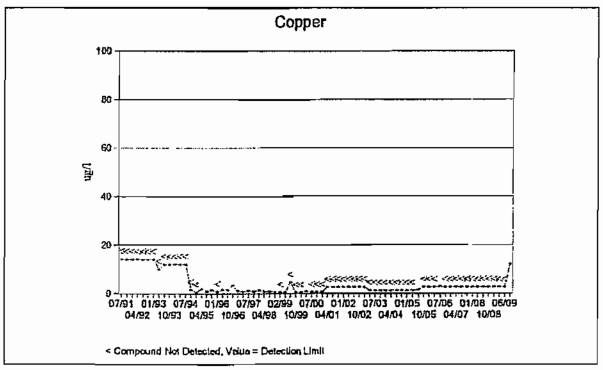
Created By: SGL Checked By: DAT

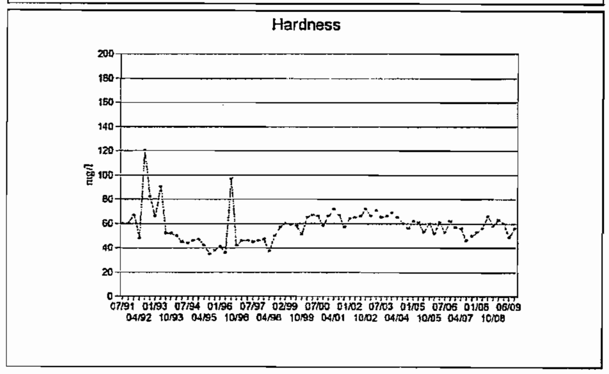
Flambeau Mining Company
Groundwater Quality Results

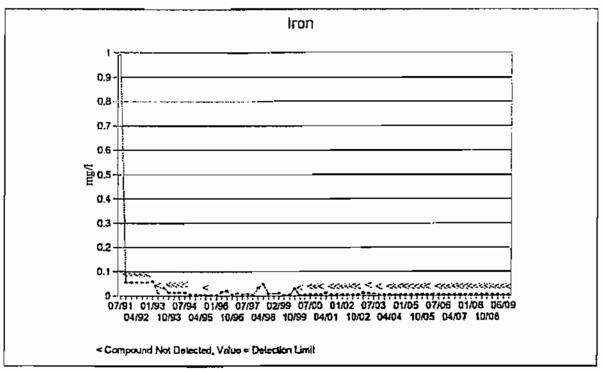
MW-1002

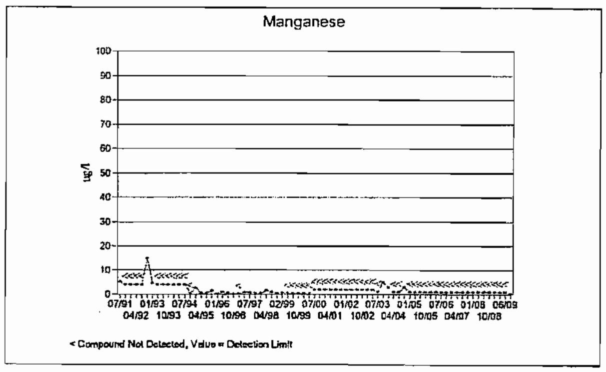


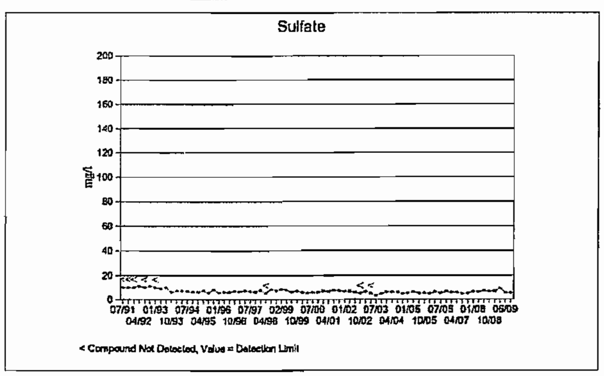


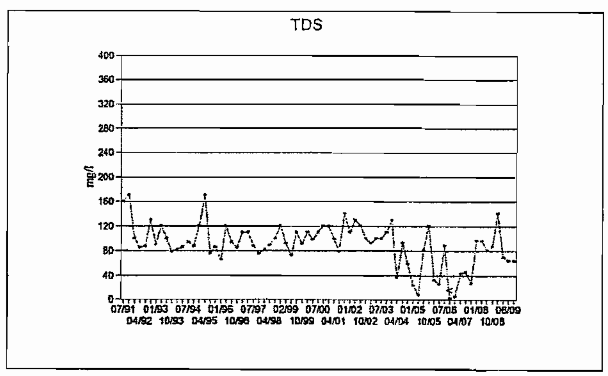








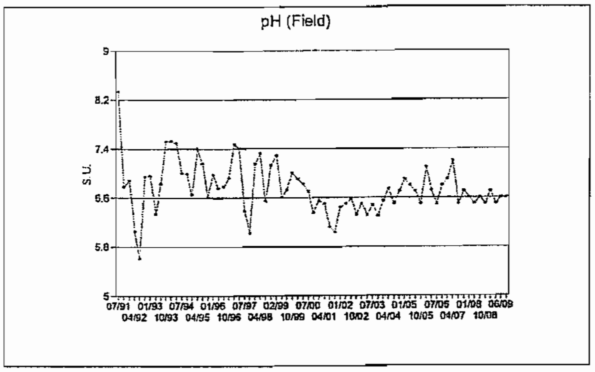


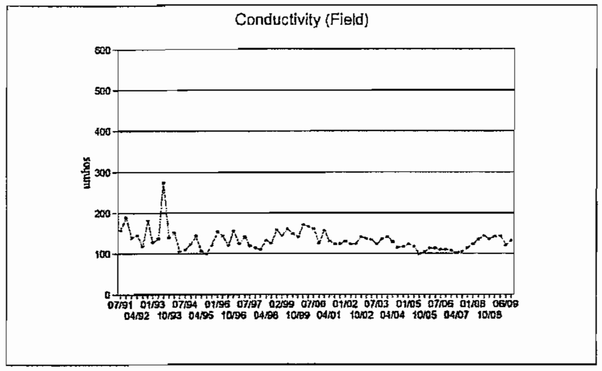


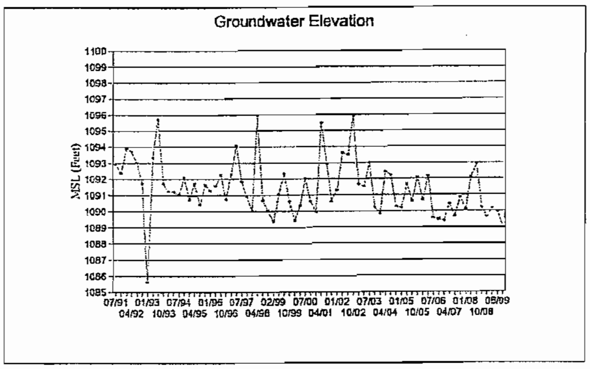
Created By: SGL Checked By: DAT

Flambeau Mining Company
Groundwater Quality Results

MW-1002



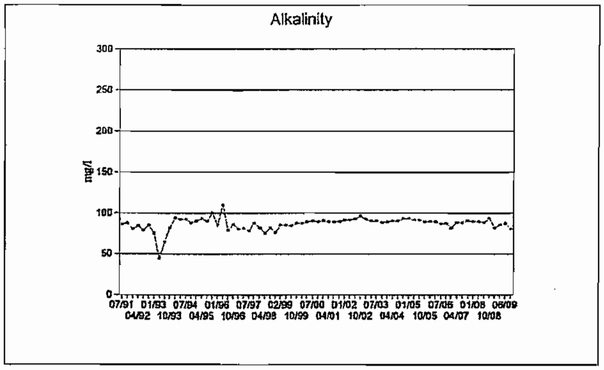


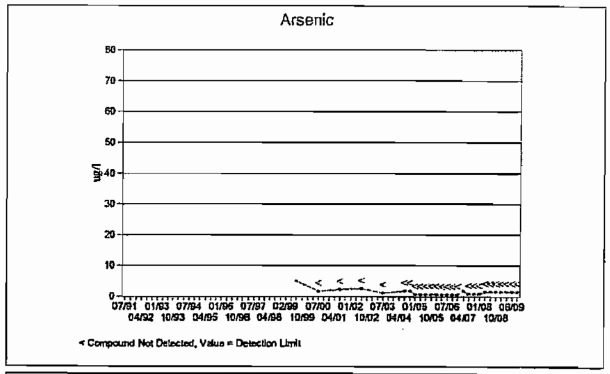


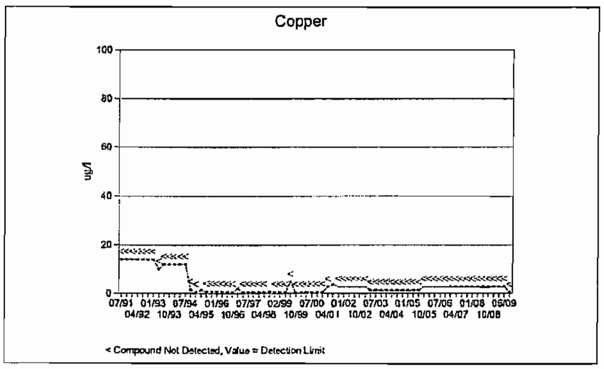
Created By: SGL Checked By: DAT

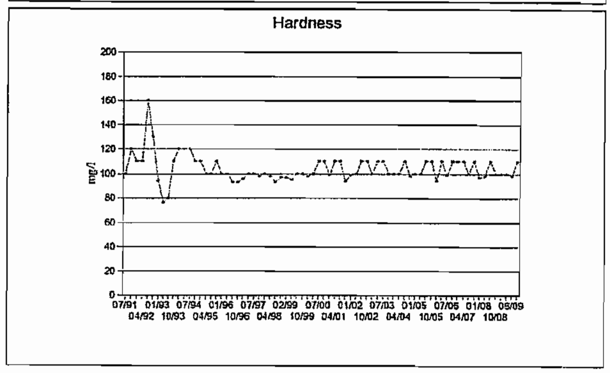
Flambeau Mining Company
Groundwater Quality Results

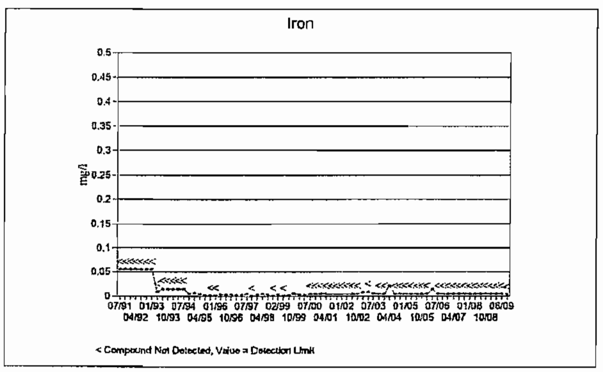
MW-1002G

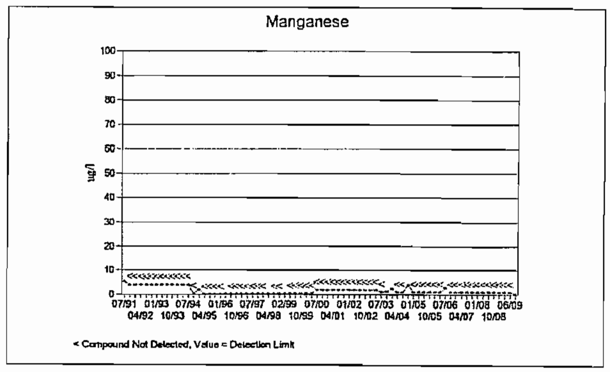


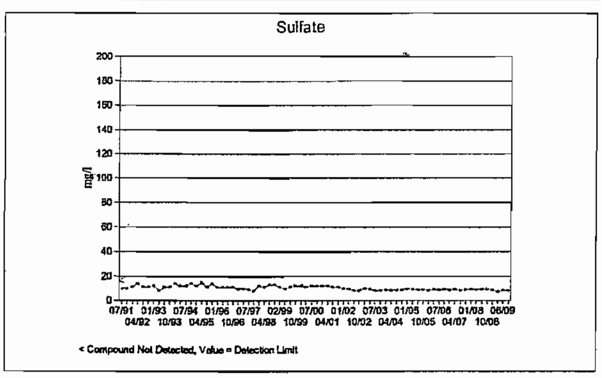


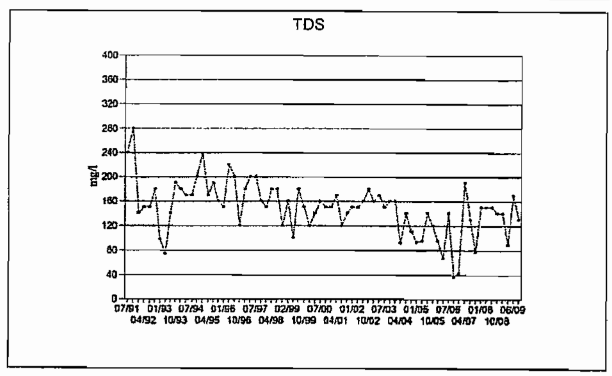








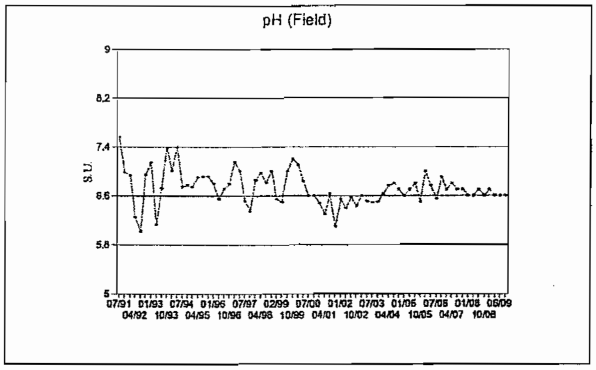


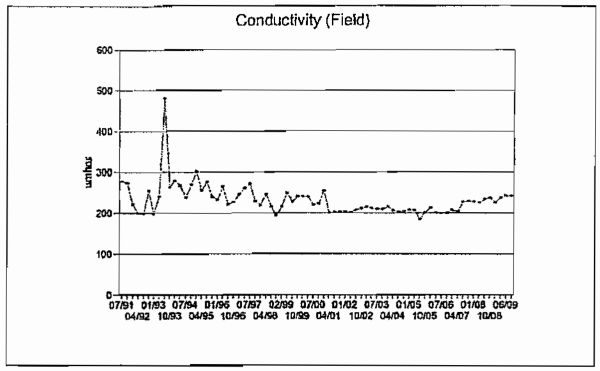


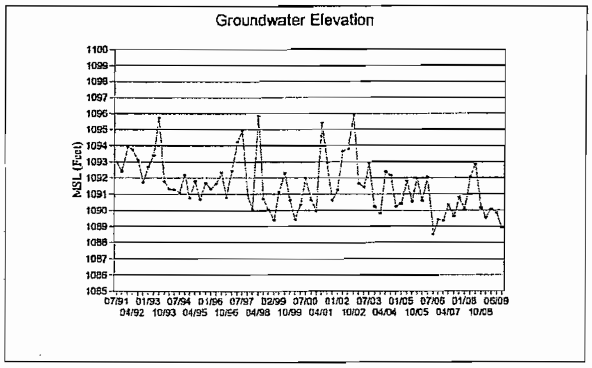
Created By: SGL   Checked By: DAT

Flambeau Mining Company
Groundwater Quality Results

MW-1002G



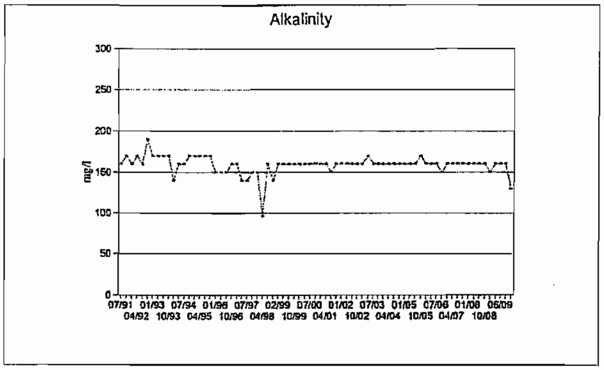


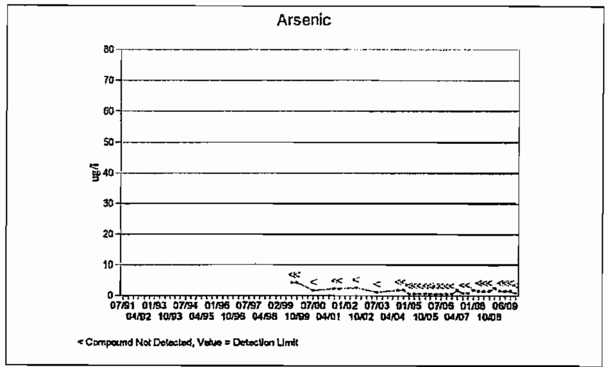


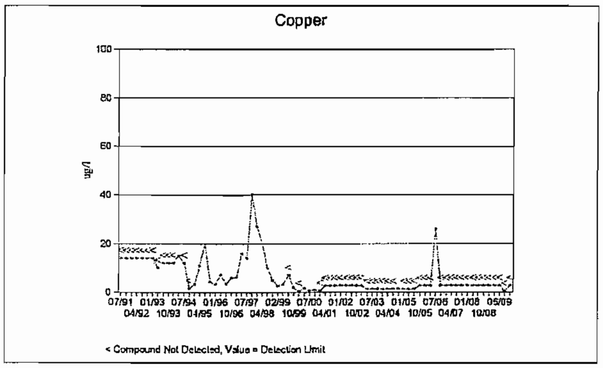
Created By: SGL Checked By: DAT

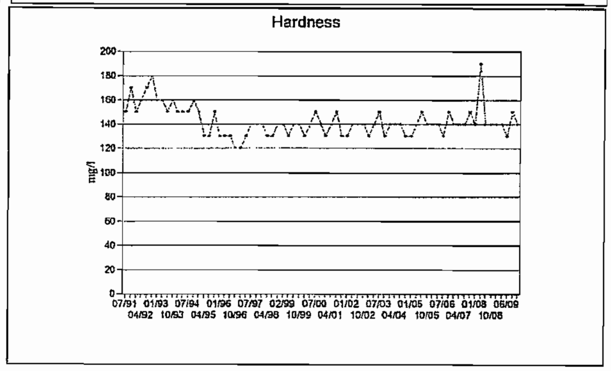
Flambeau Mining Company
Groundwater Quality Results

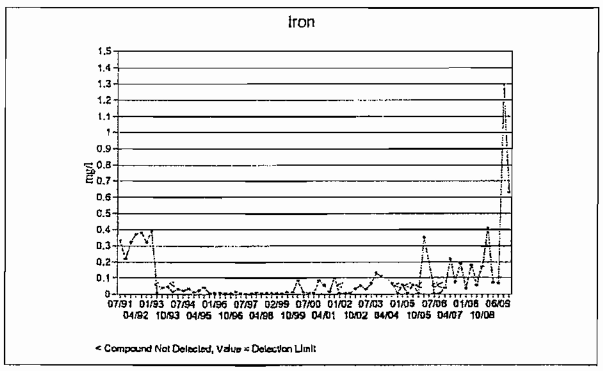
MW-1004P

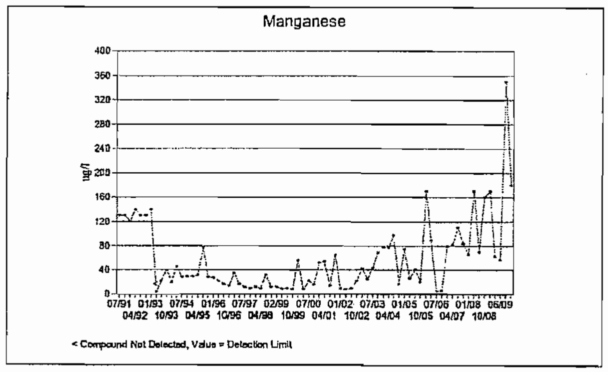


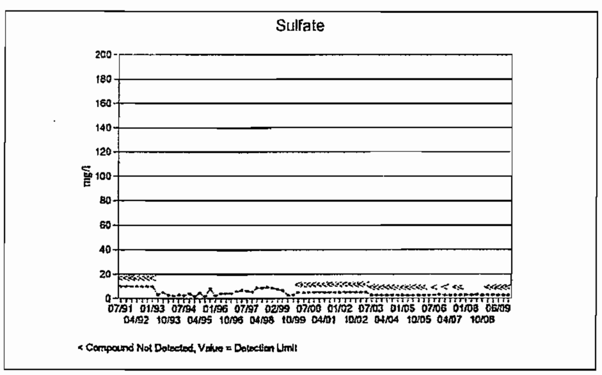


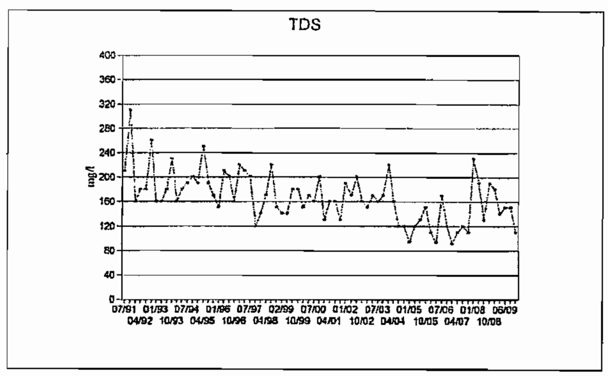








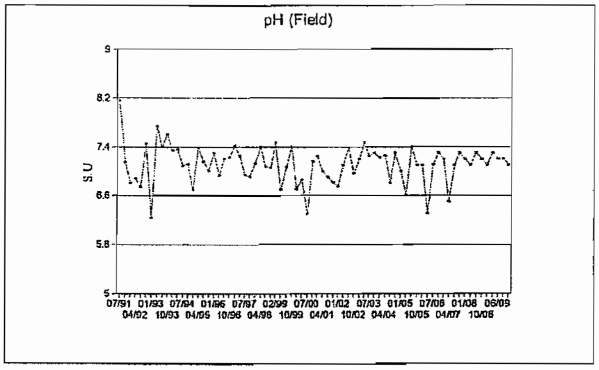


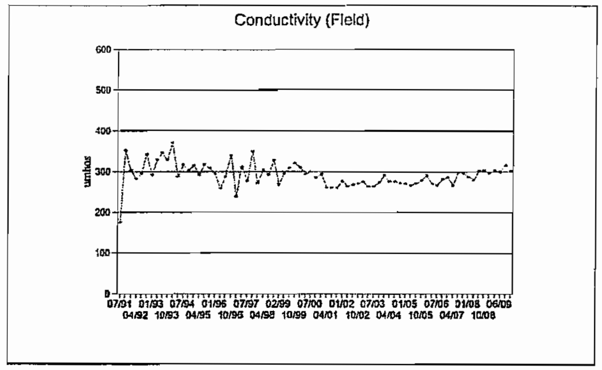


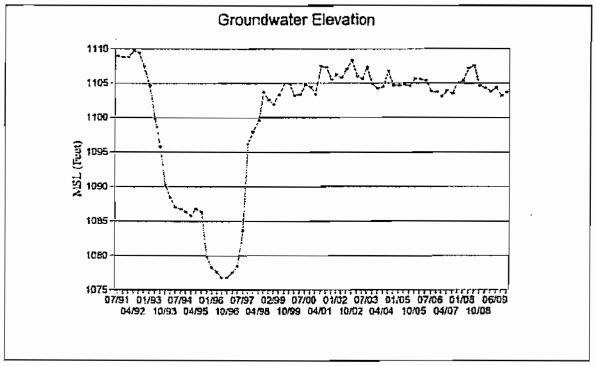
Created By: SGL Checked By: DAT

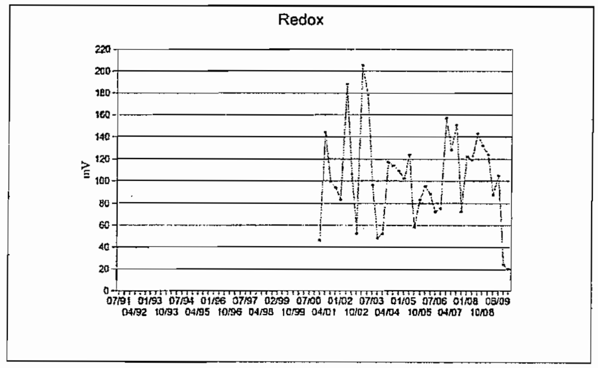
Flambeau Mining Company
Groundwater Quality Results

MW-1004P





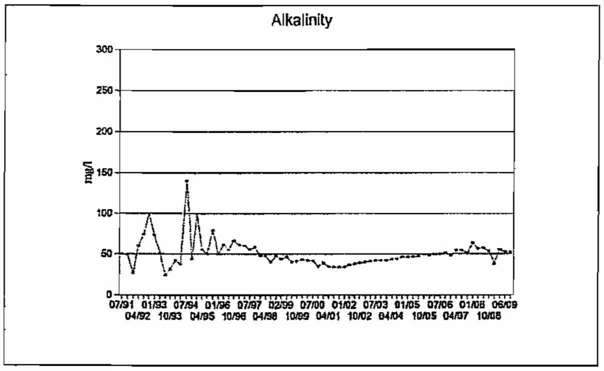


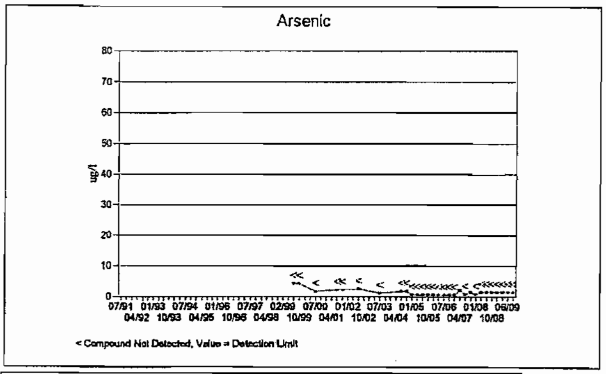


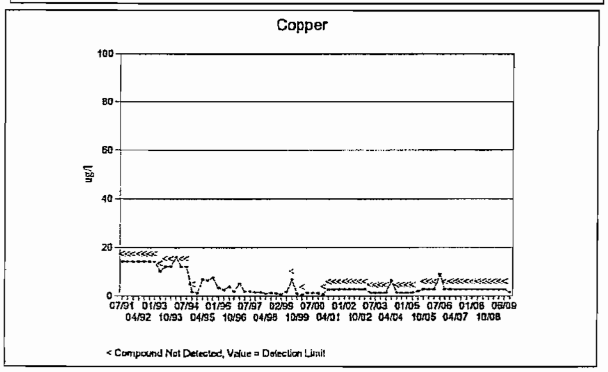
Created By: SGL Checked By: DAT

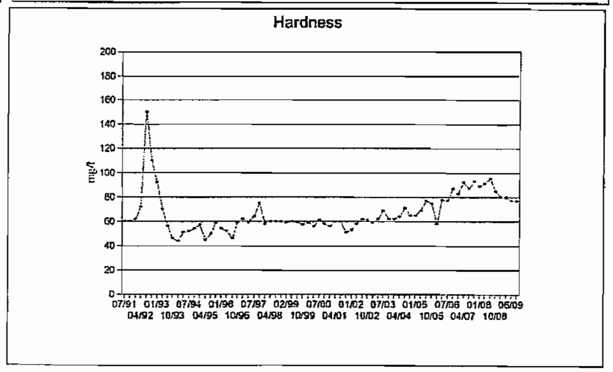
Flambeau Mining Company
Groundwater Quality Results

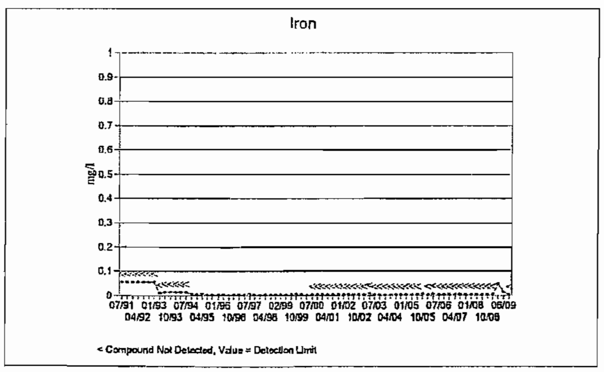
MW-1004S

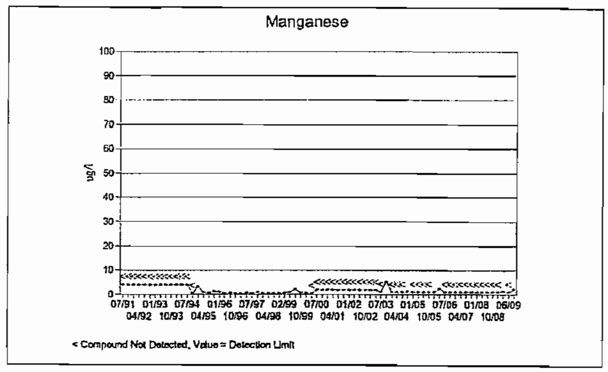


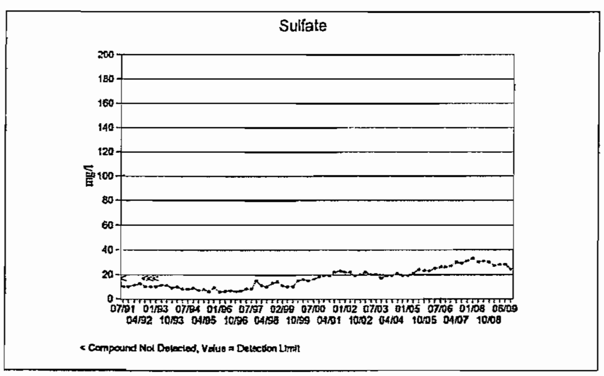


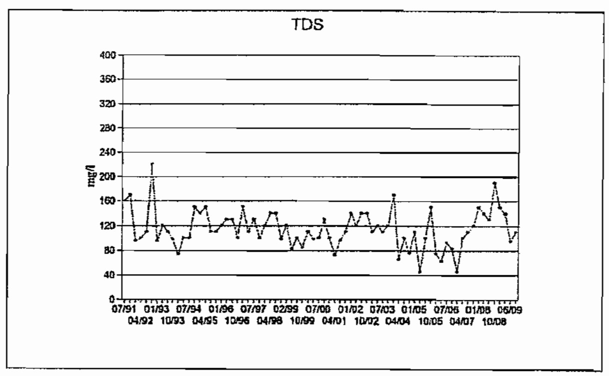








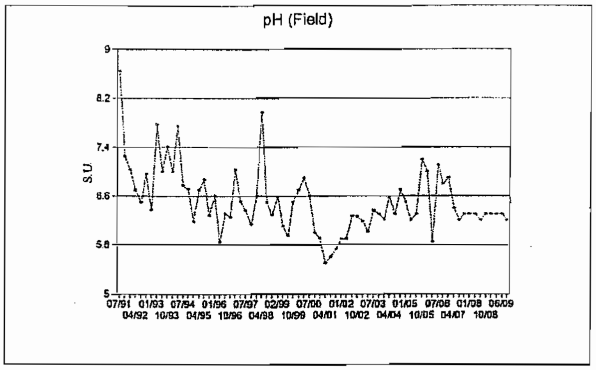


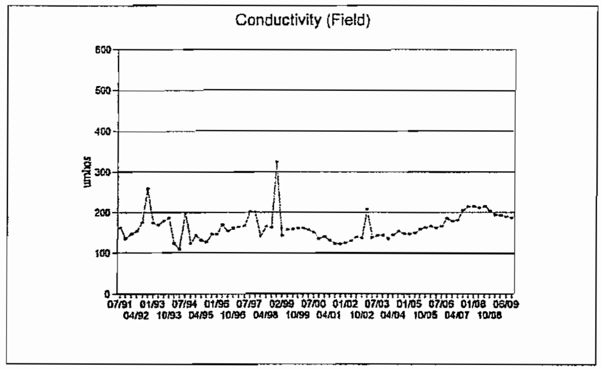


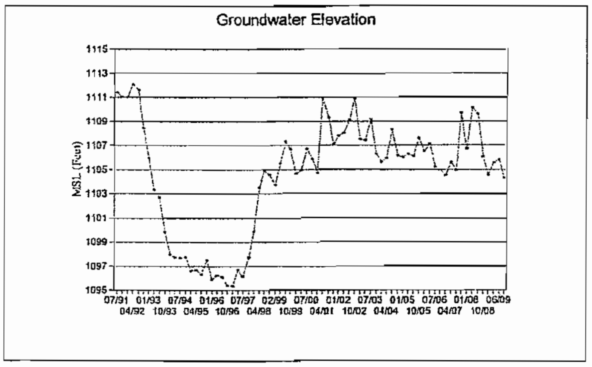
Created By: SGL Checked By: DAT

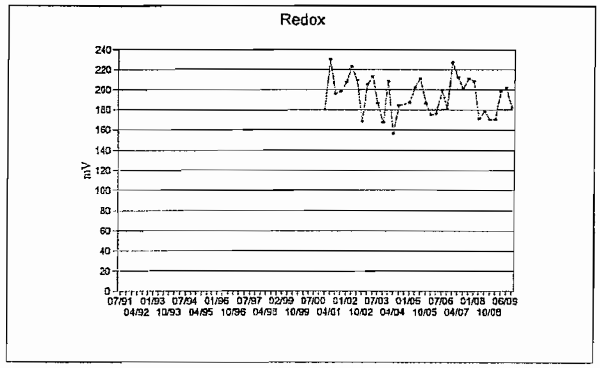
Flambeau Mining Company
Groundwater Quality Results

MW-1004S





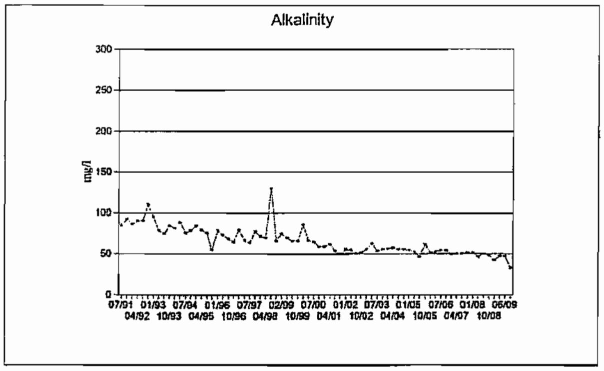


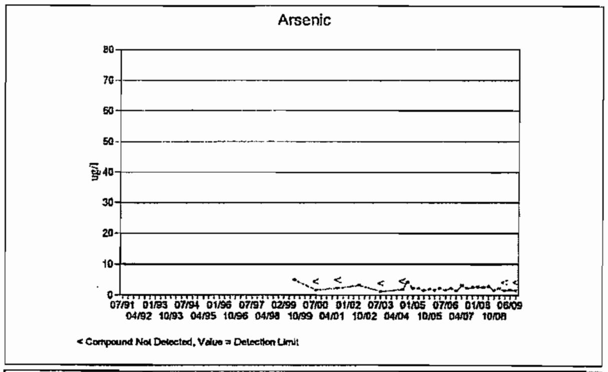


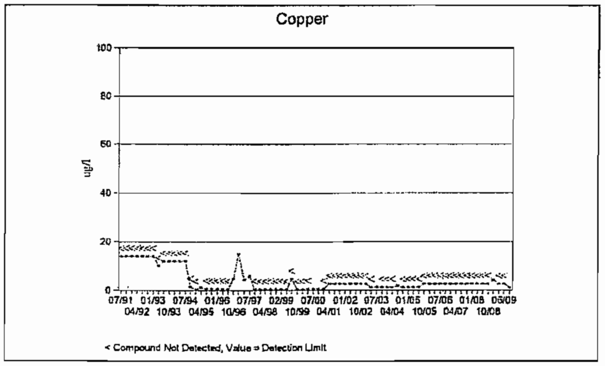
Created By: SGL Checked By: DAT

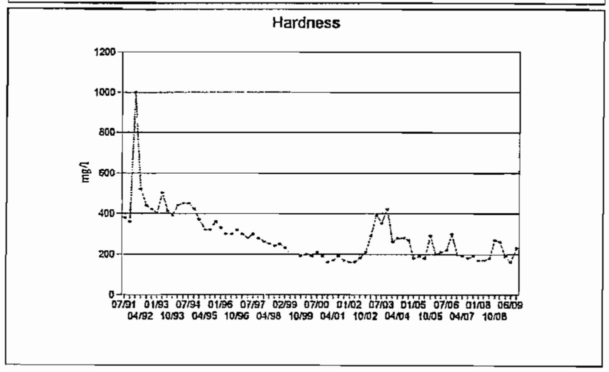
Flambeau Mining Company
Groundwater Quality Results

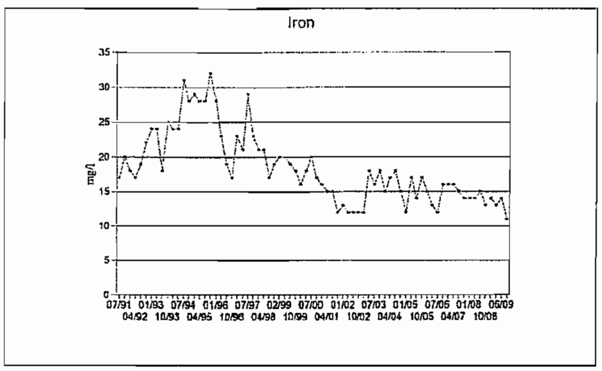
MW-1005

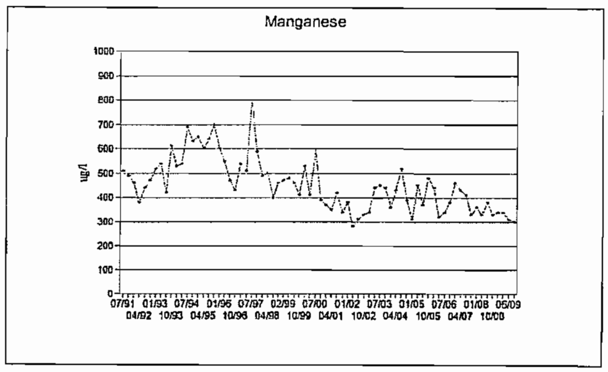


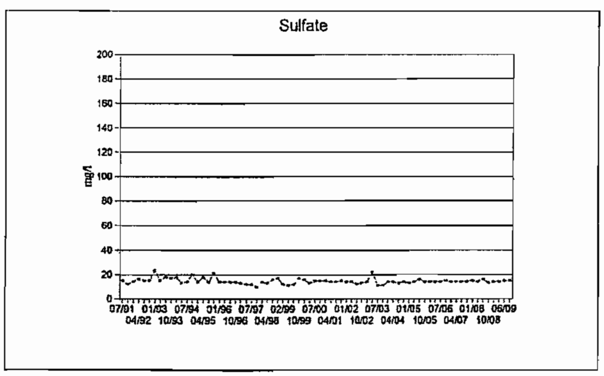


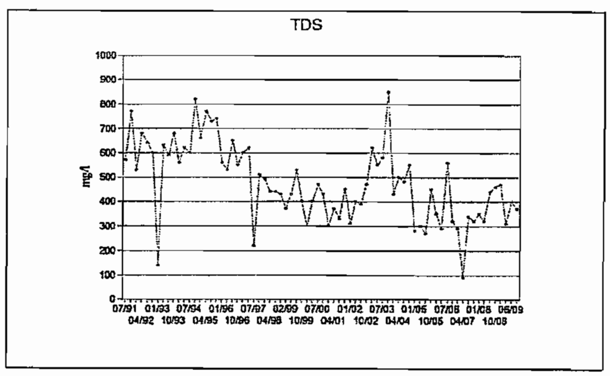








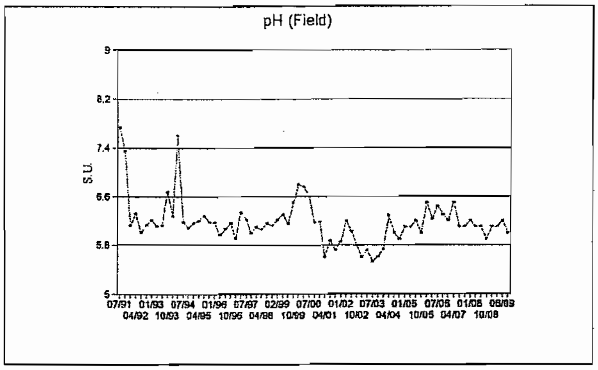


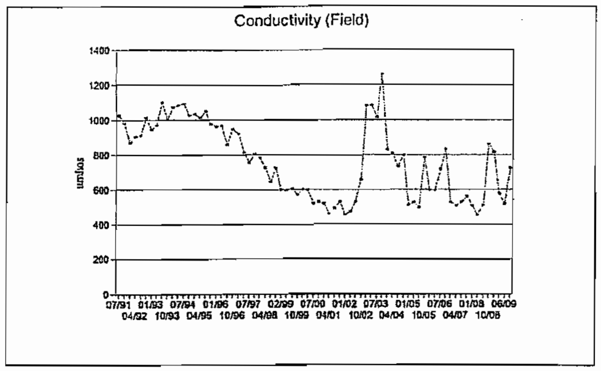


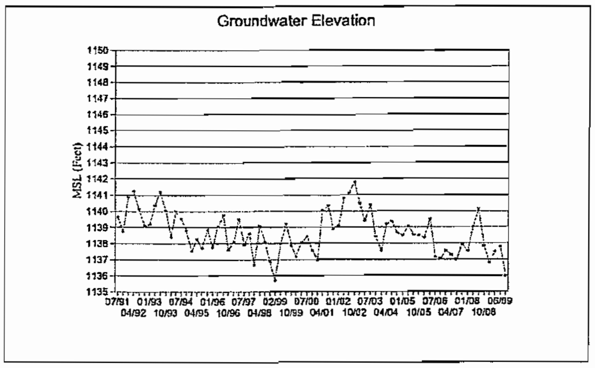
Created By: SGL Checked By: DAT

Flambeau Mining Company
Groundwater Quality Results

MW-1005



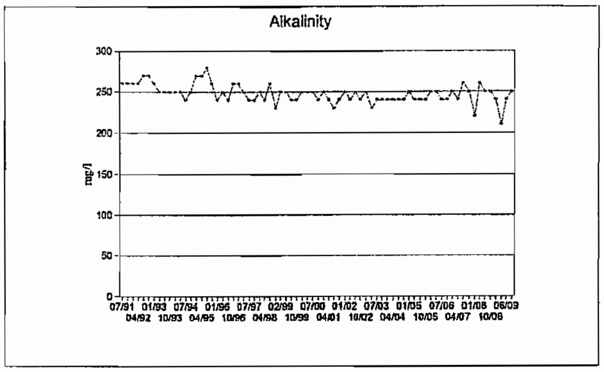


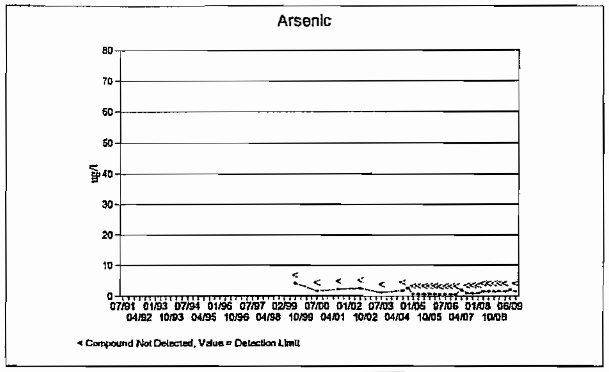


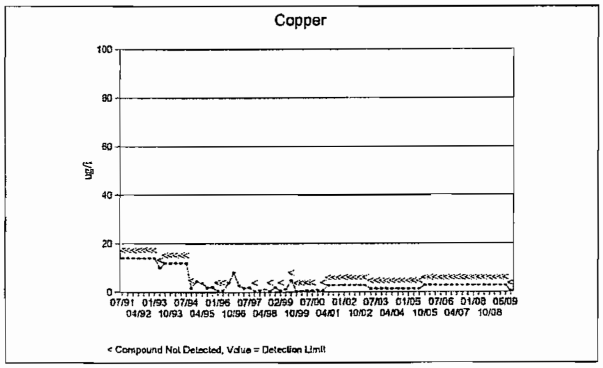
Created By: SGL Checked By: DAT

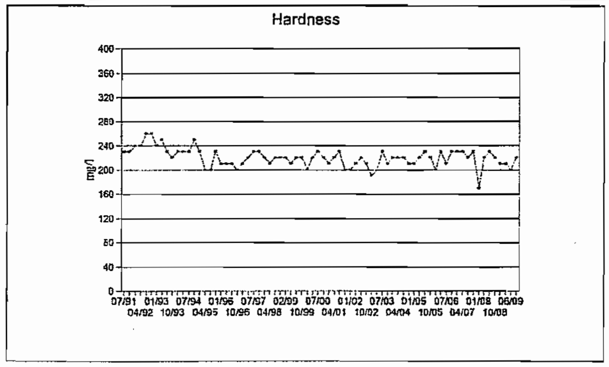
Flambeau Mining Company
Groundwater Quality Results

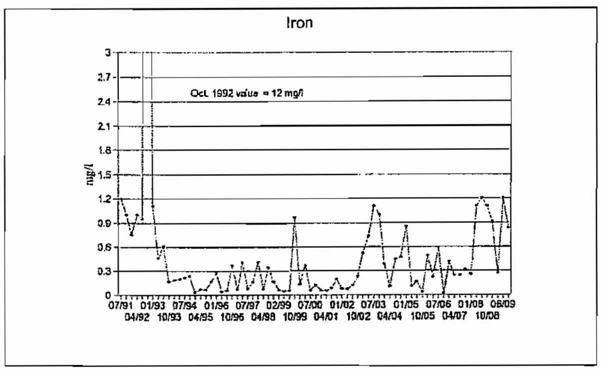
MW-1005P

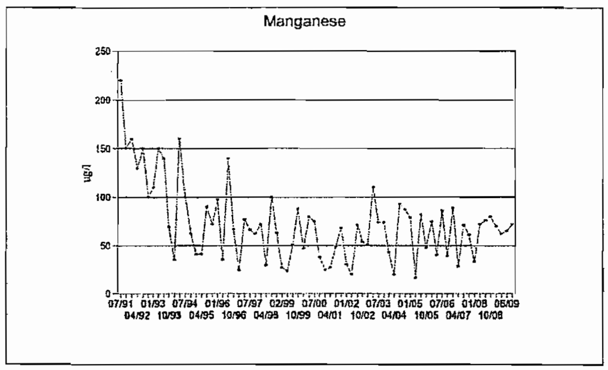


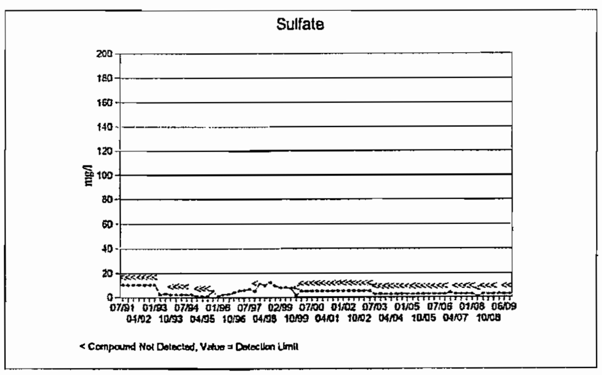


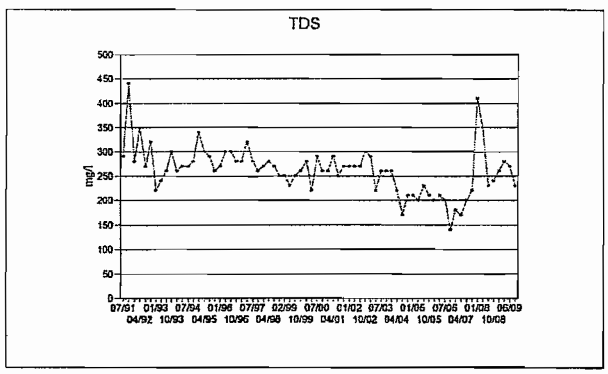








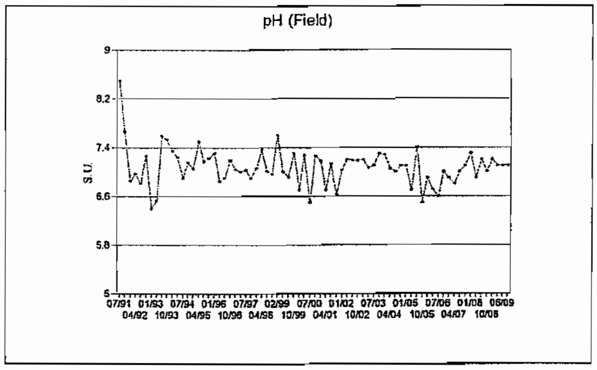


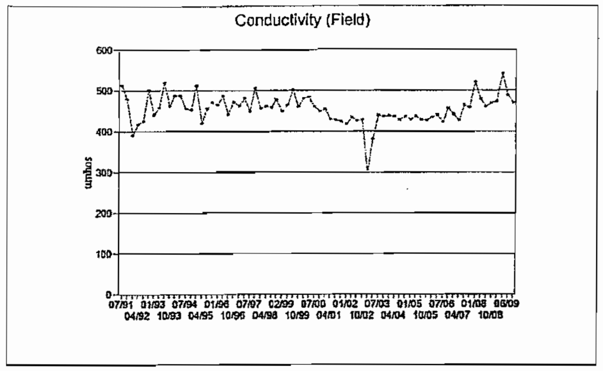


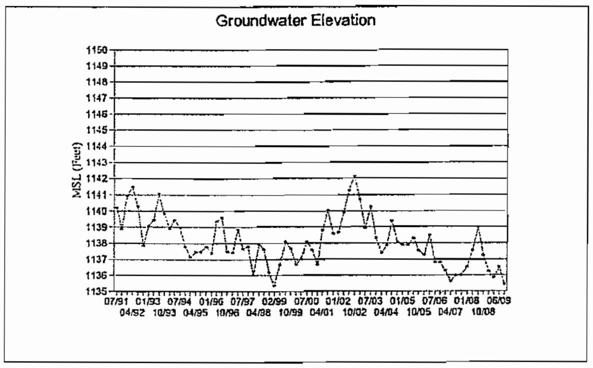
Created By: SGL Checked By: DAT

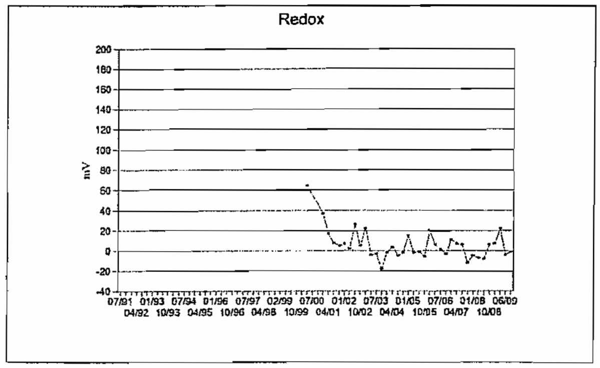
Flambeau Mining Company
Groundwater Quality Results

MW-1005P



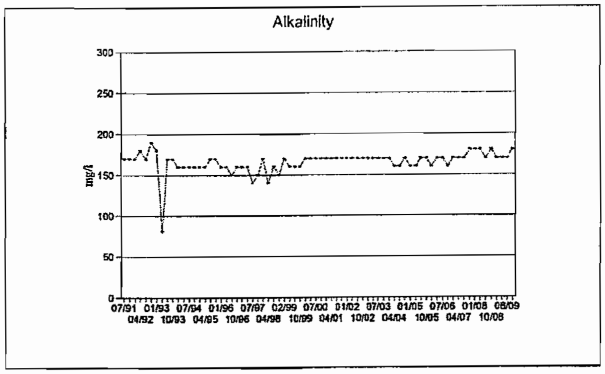


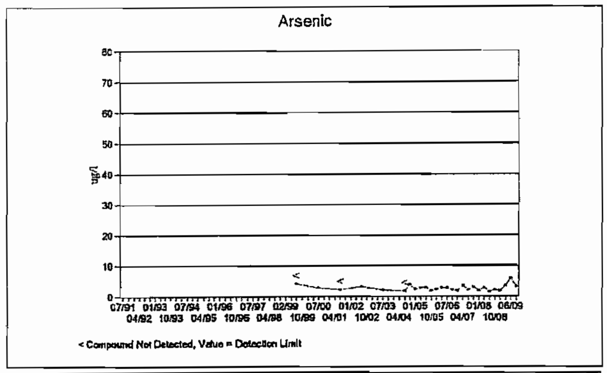


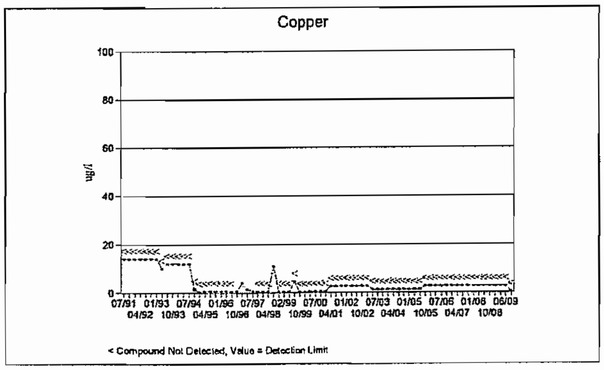


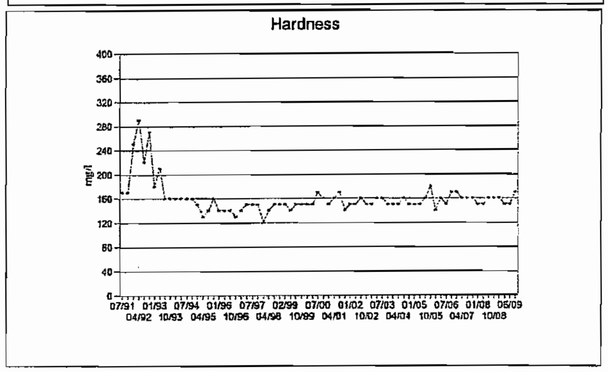
Created By: SGL Checked By: DAT

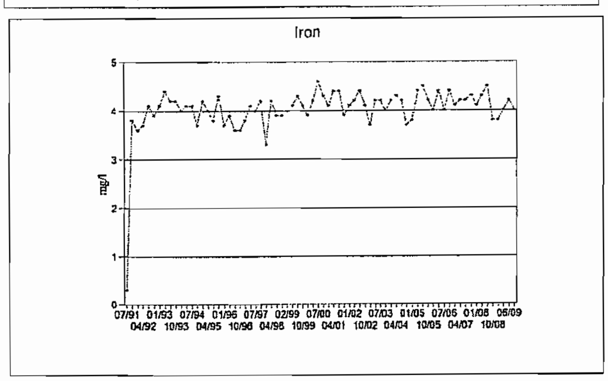
MW-1005S

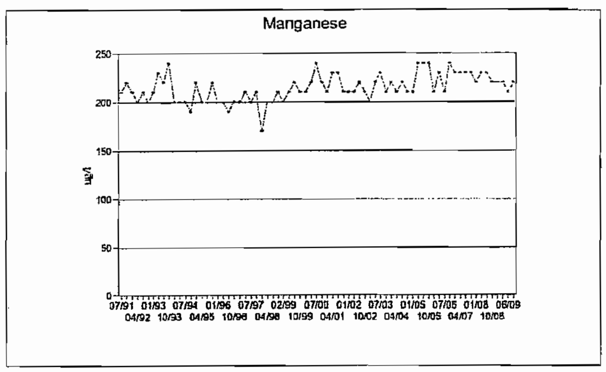


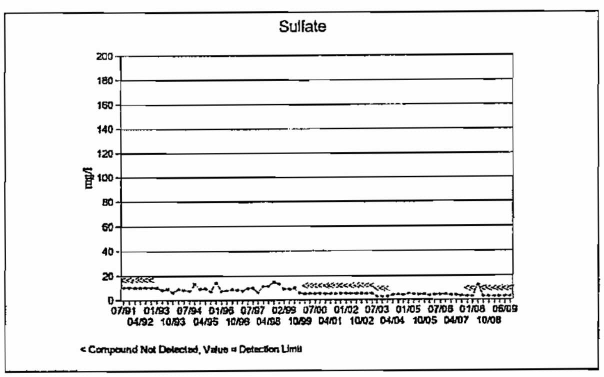


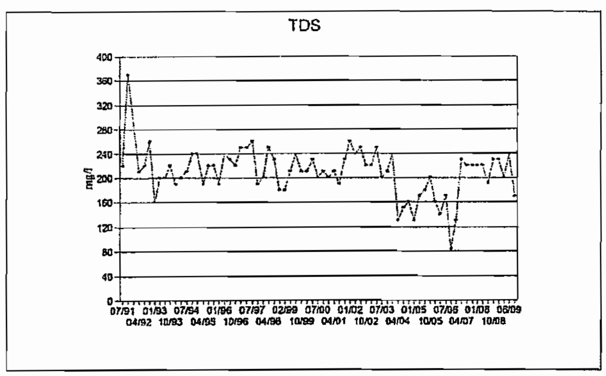








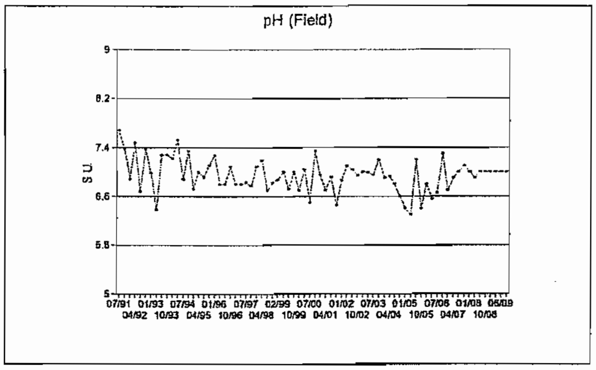


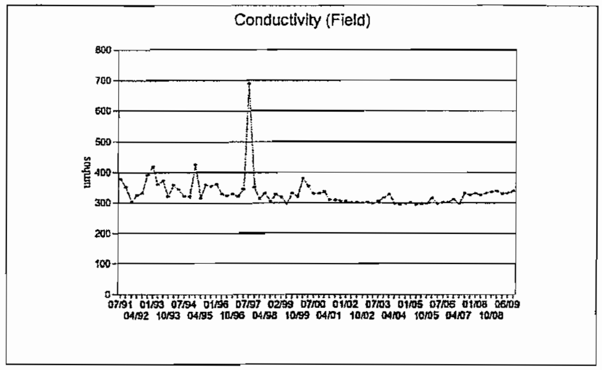


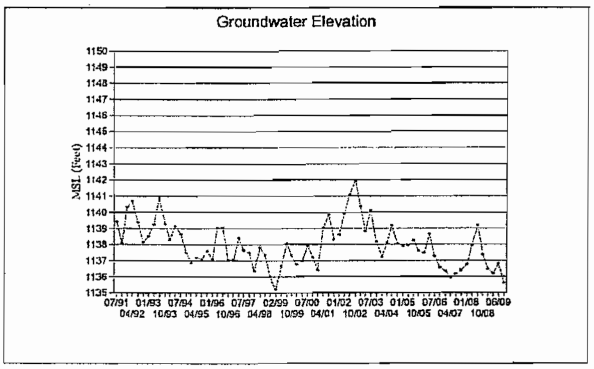
Created By: SGL Checked By: DAT

Flambeau Mining Company
Groundwater Quality Results

MW-1005S





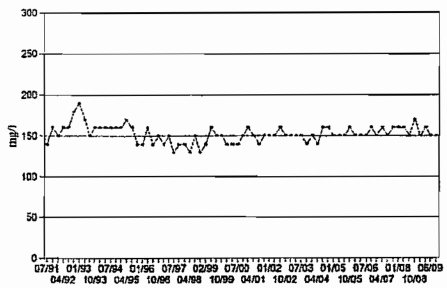


Created By: SGL Checked By: DAT

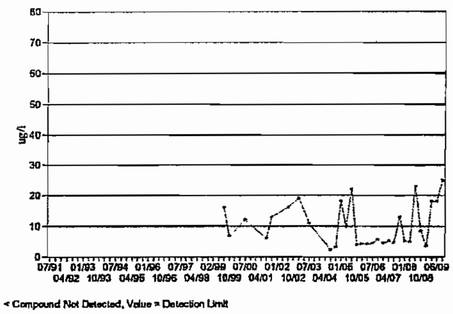
Flambeau Mining Company
Groundwater Quality Results

MW-1010P

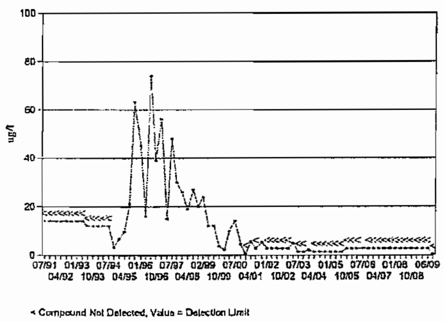
Alkalinity



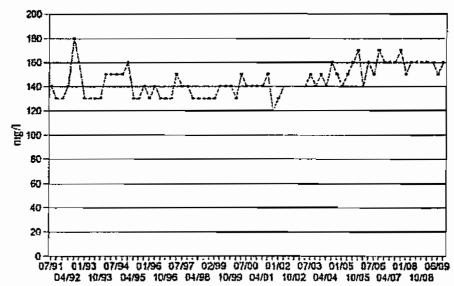
Arsenic



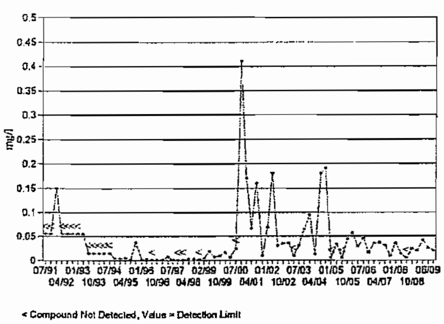
Copper



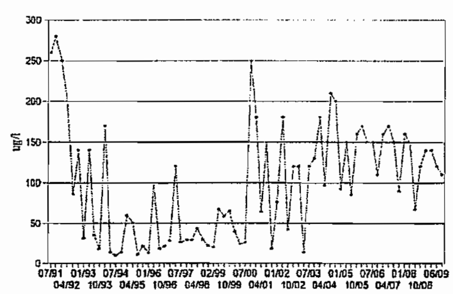
Hardness



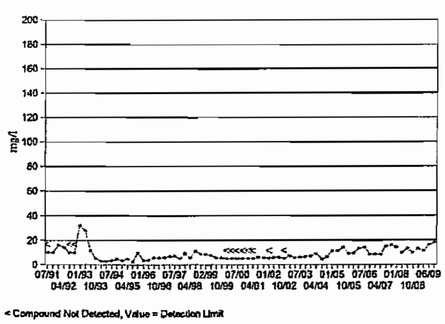
Iron



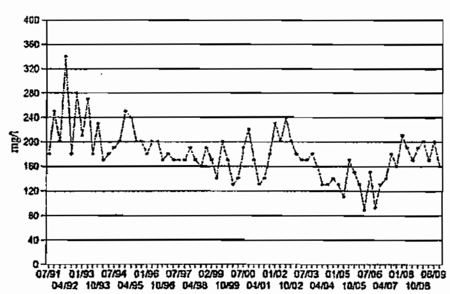
Manganese



Sulfate



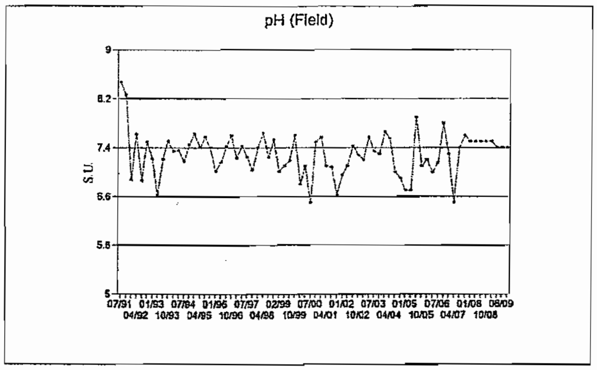
TDS

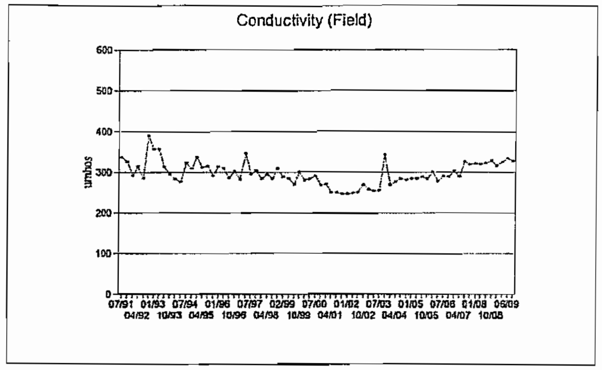


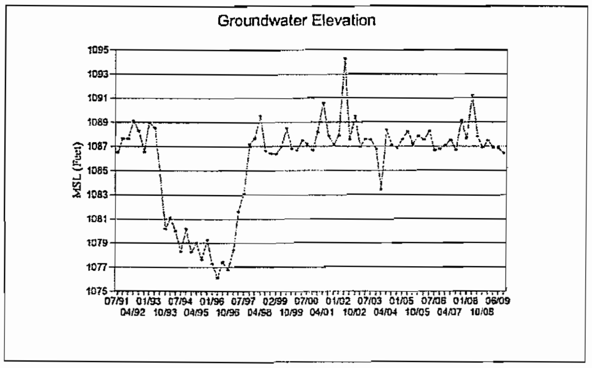
Created By: SGL Checked By: DAT

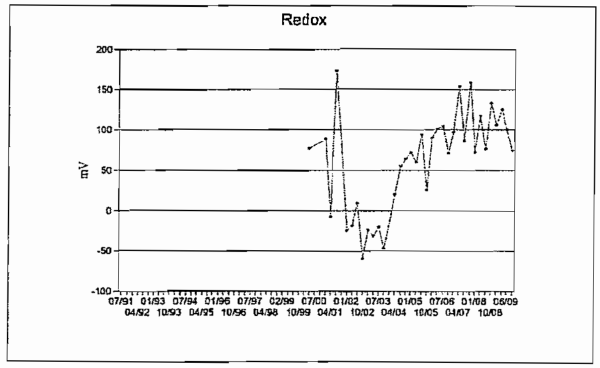
Flambeau Mining Company
Groundwater Quality Results

MW-1010P





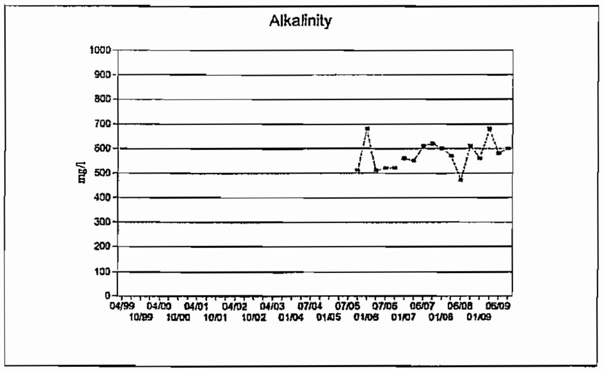


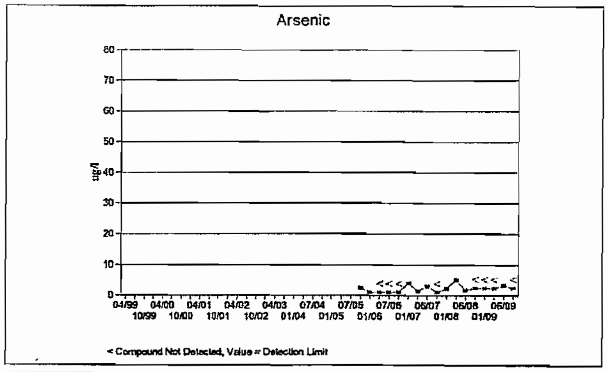


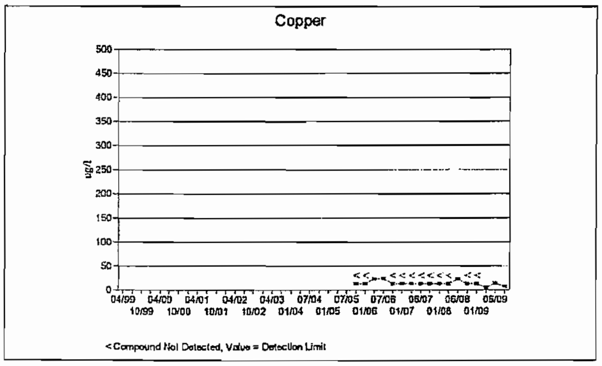
Created By: SGL Checked By: DAT

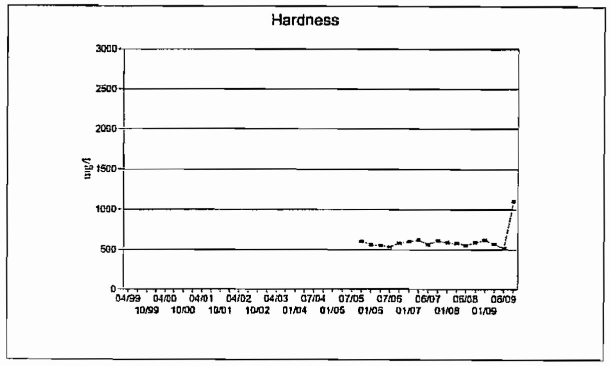
Flambeau Mining Company
Groundwater Quality Results

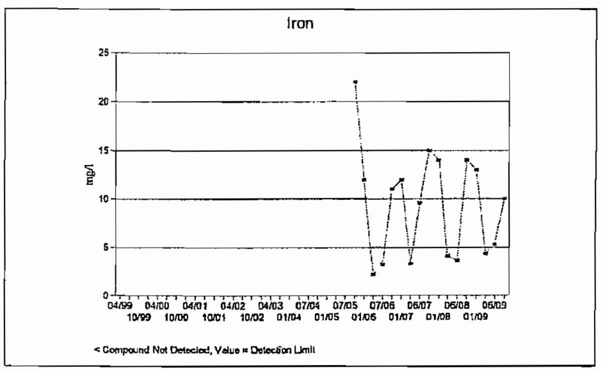
MW-1013 (In-Pit Well)

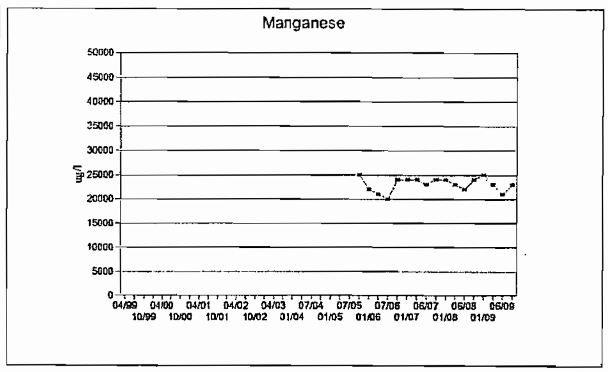


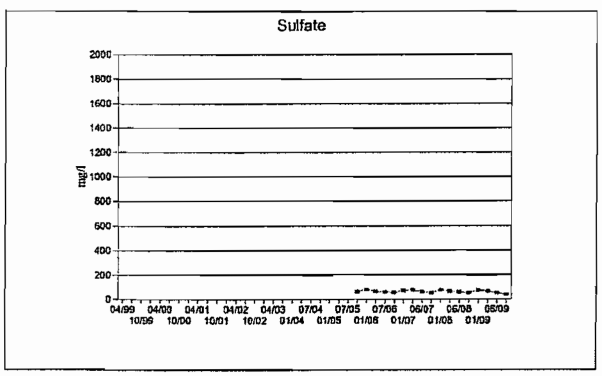


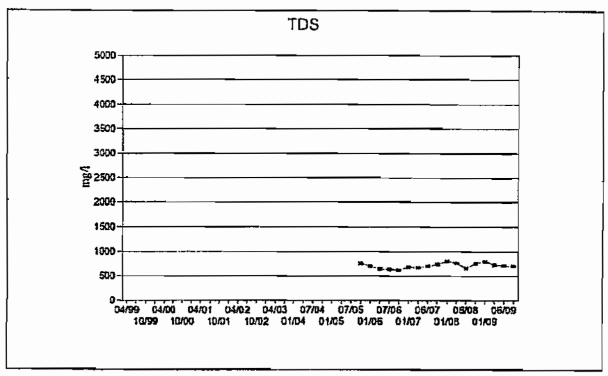








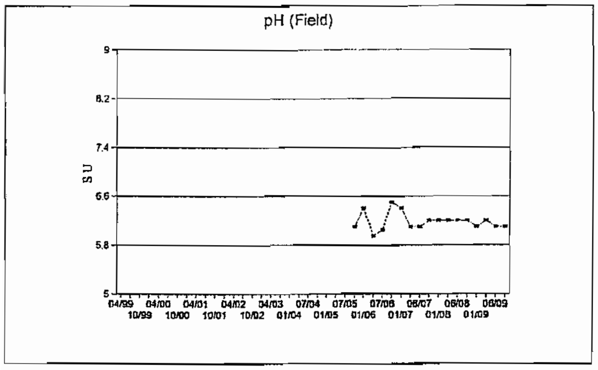


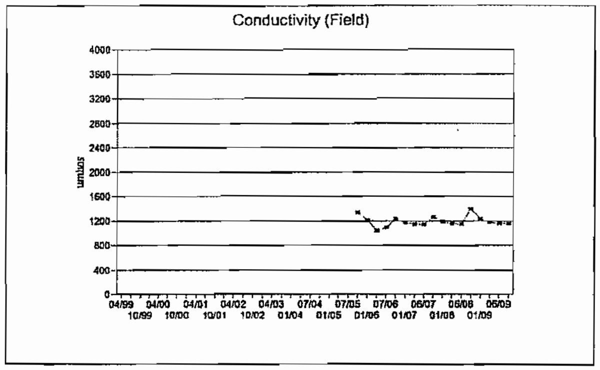


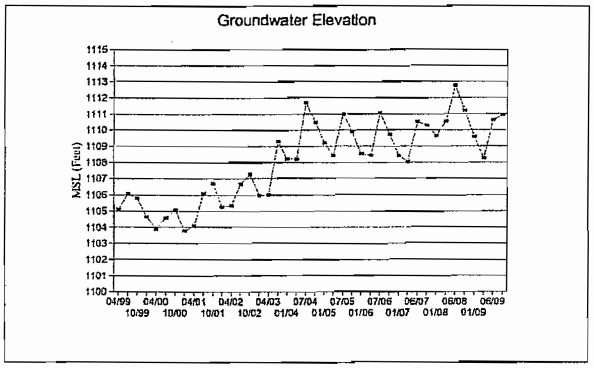
Created By: SGL Checked By: DAT

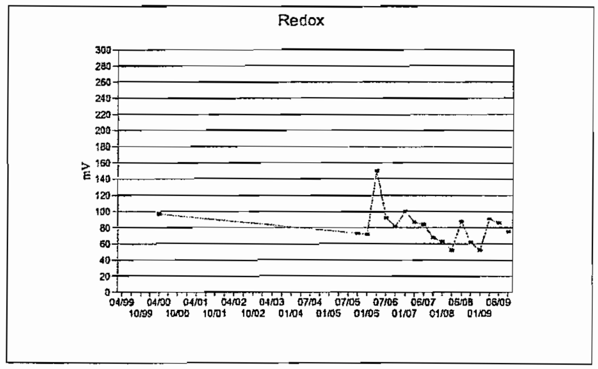
Flambeau Mining Company
Groundwater Quality Results

MW-1013 (In-Pit Well)





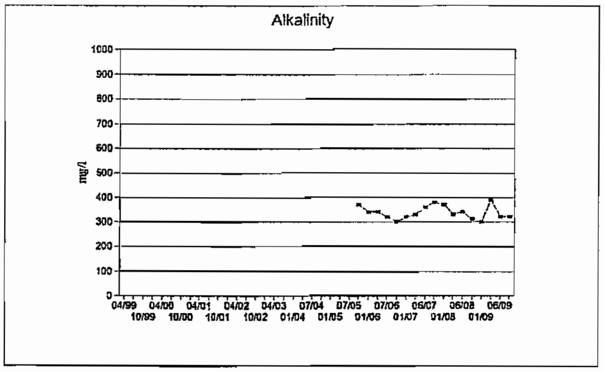


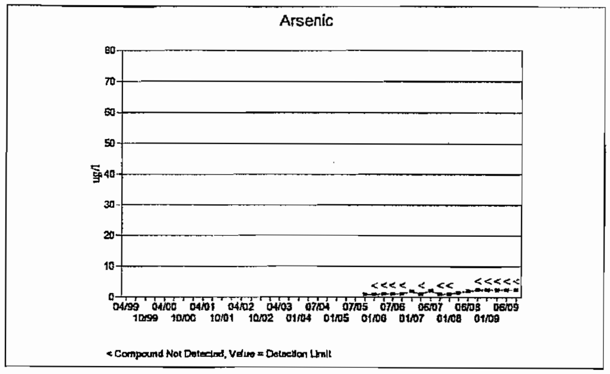


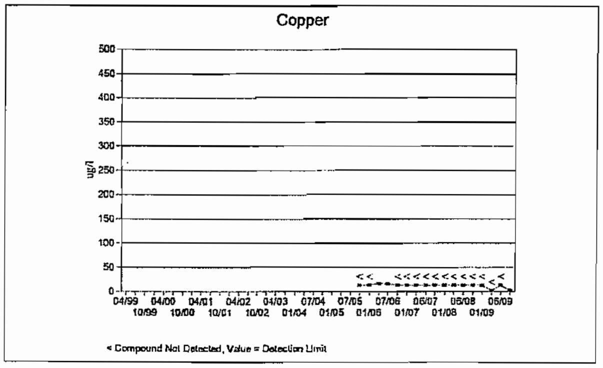
Created By: SGL Checked By: DAT

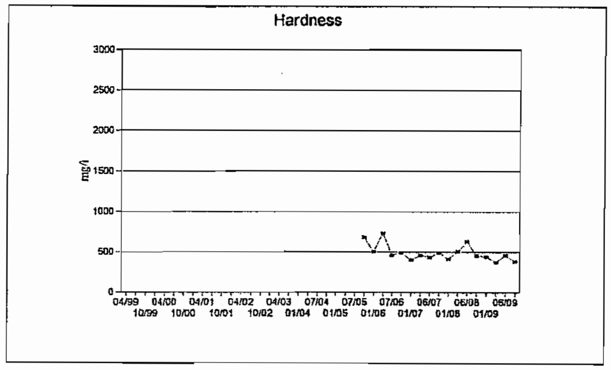
Flambeau Mining Company
Groundwater Quality Results

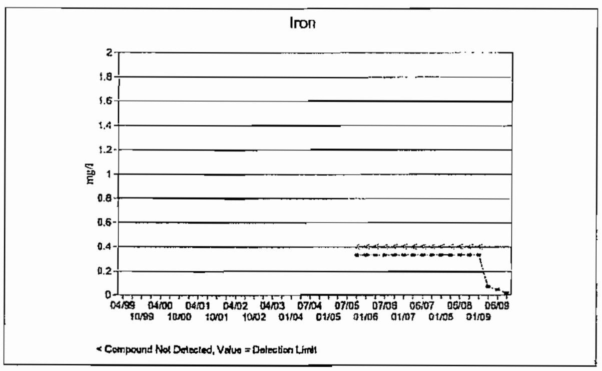
MW-1013A (In-Pit Well)

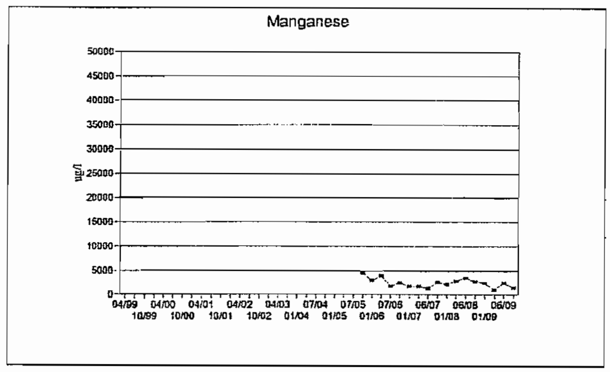


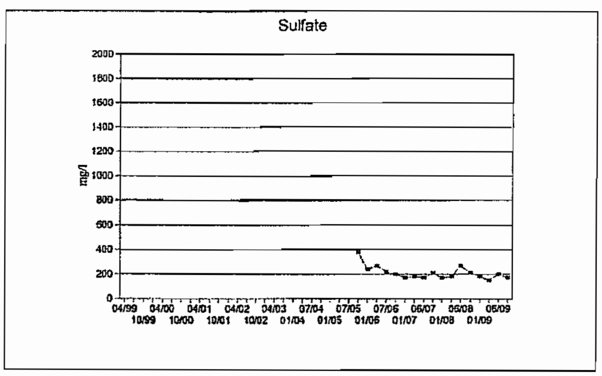


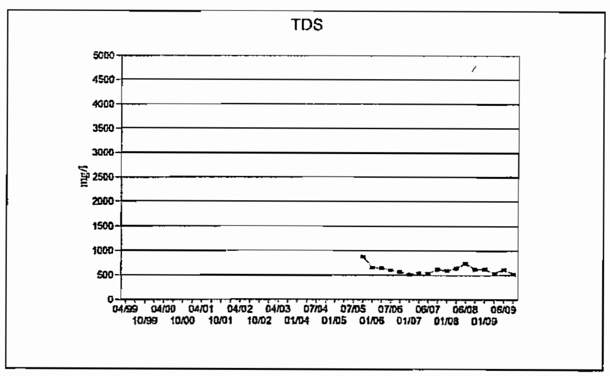








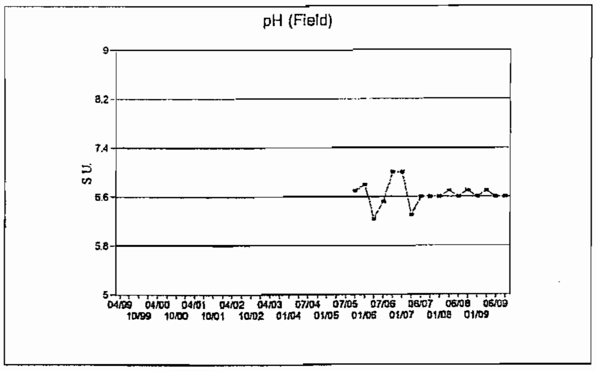


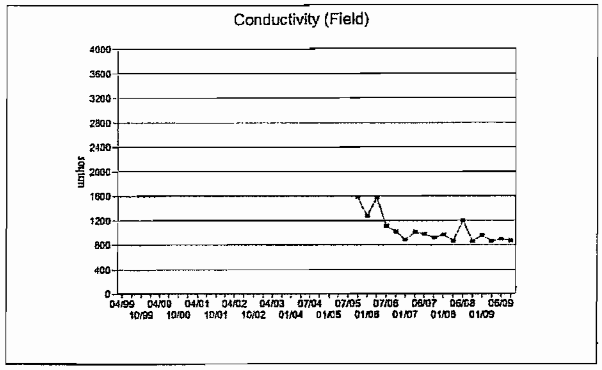


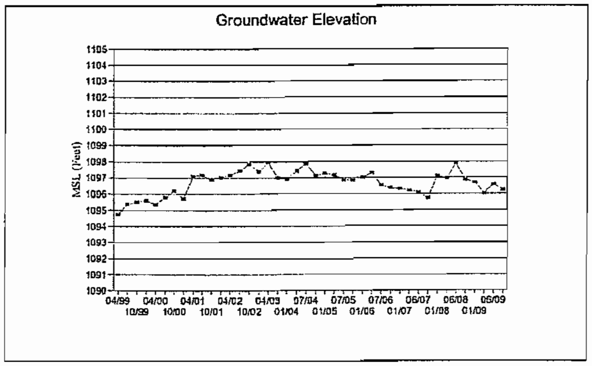
Created By: SGL Checked By: DAT

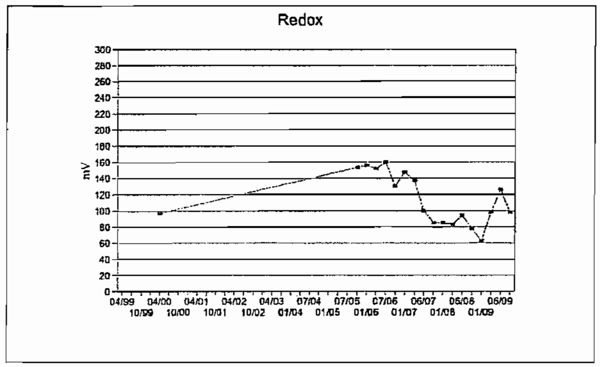
Flambeau Mining Company
Groundwater Quality Results

MW-1013A (In-Pit Well)





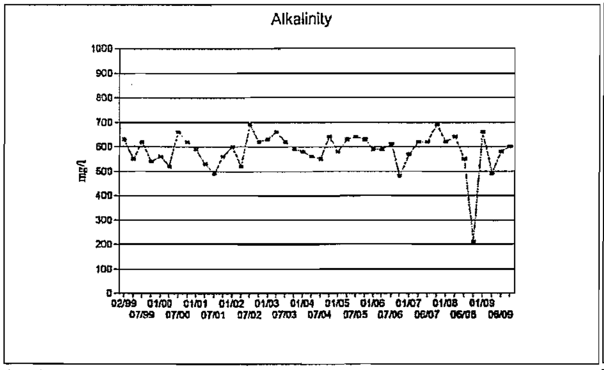


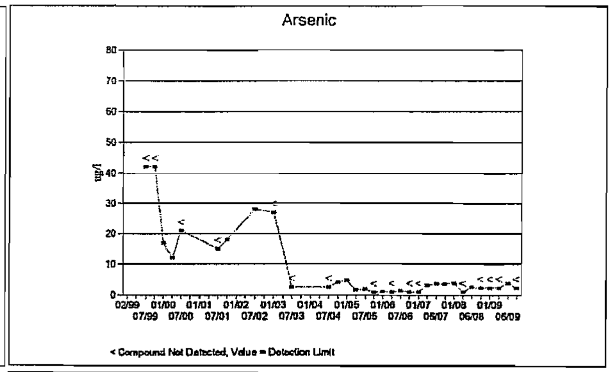


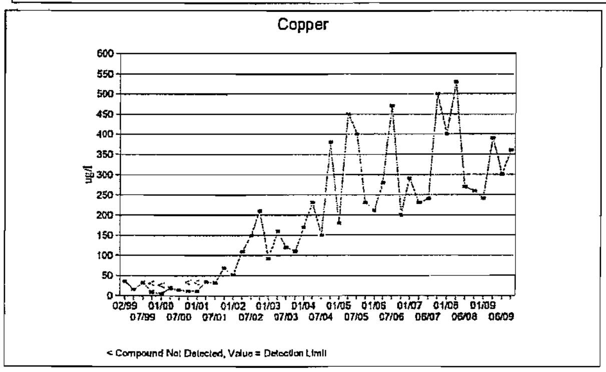
Created By: SGL Checked By: DAT

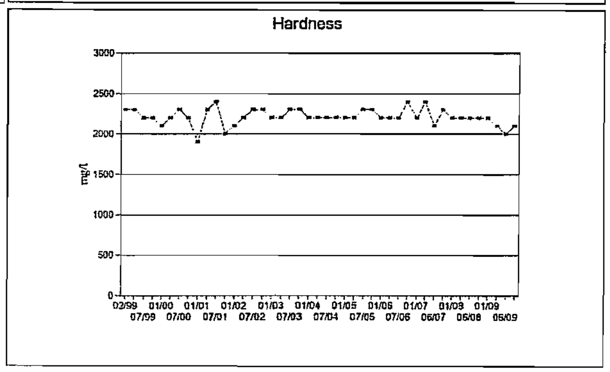
Flambeau Mining Company
Groundwater Quality Results

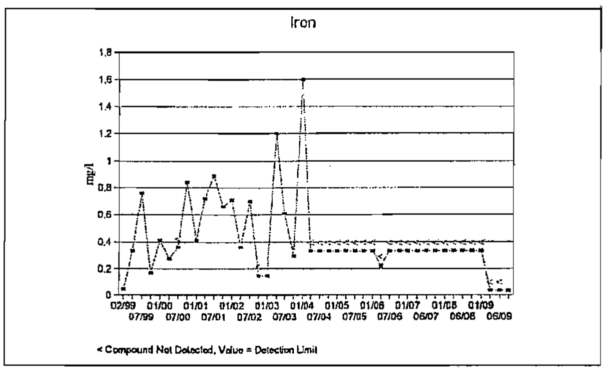
MW-1013B (In-Pit Well)

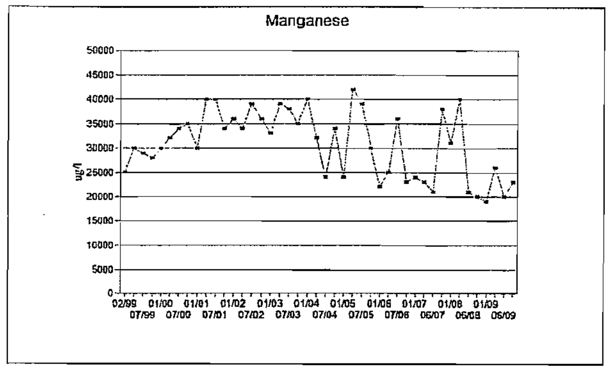


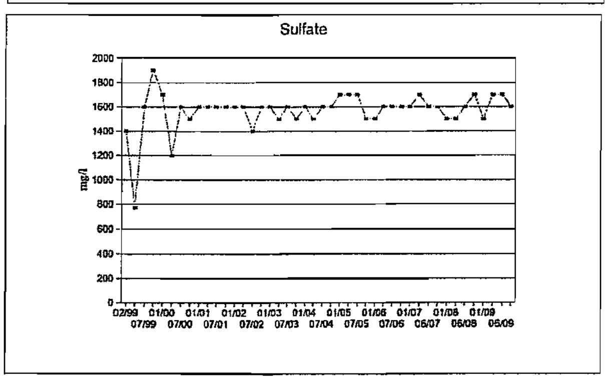


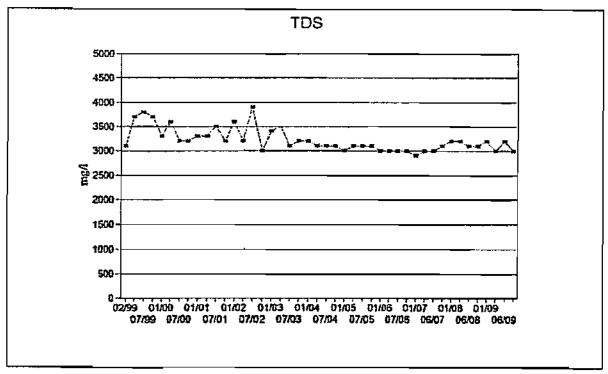








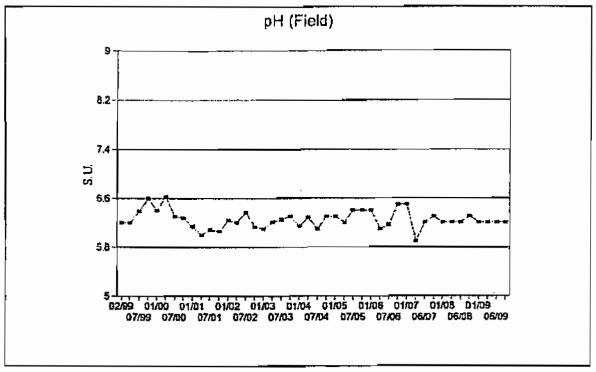


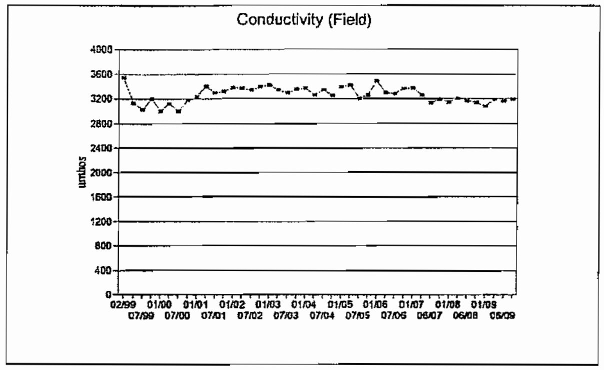


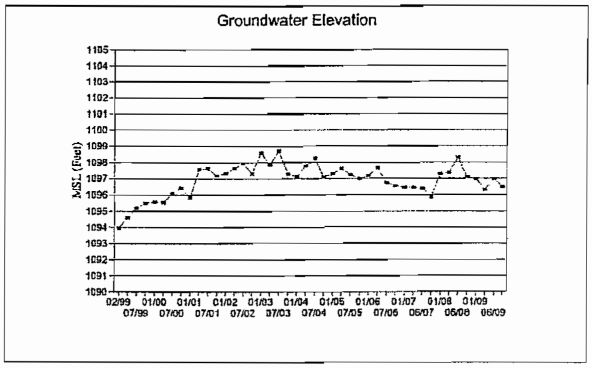
Created By: SGL Checked By: DAT

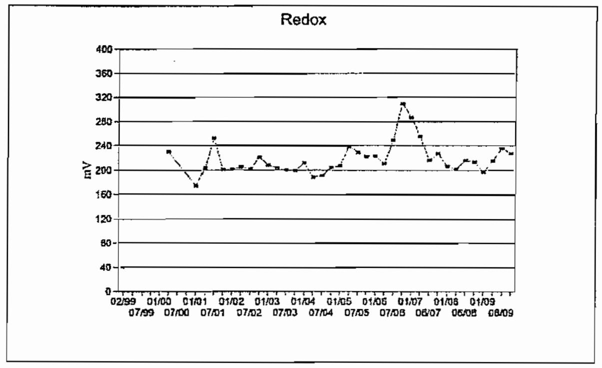
Flambeau Mining Company
Groundwater Quality Results

MW-1013B (In-Pit Well)





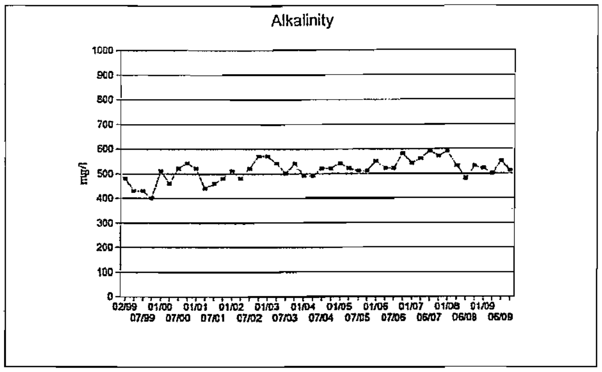


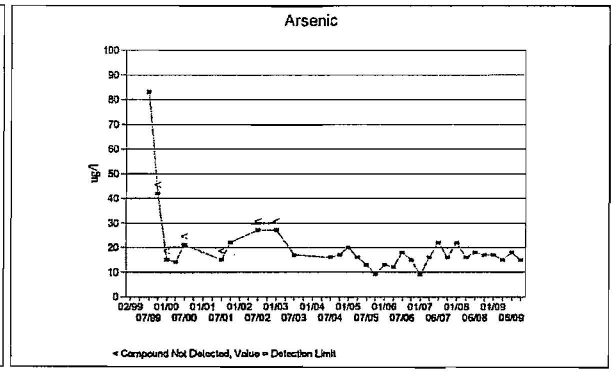


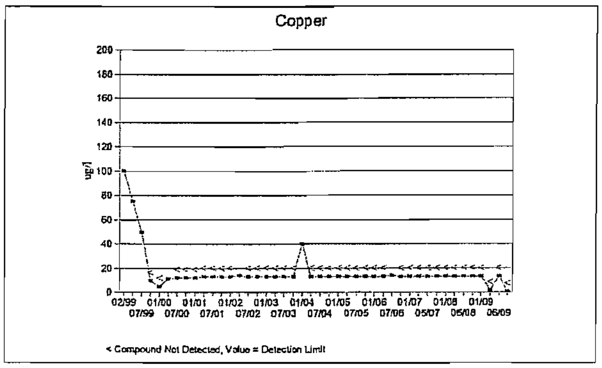
Created By: SGL Checked By: DAT

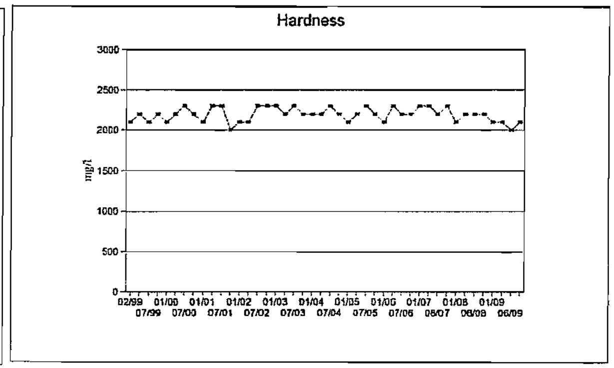
Flambeau Mining Company
Groundwater Quality Results

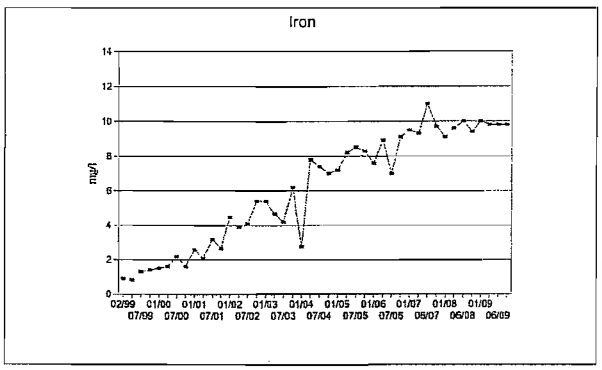
MW-1013C (In-Pit Well)

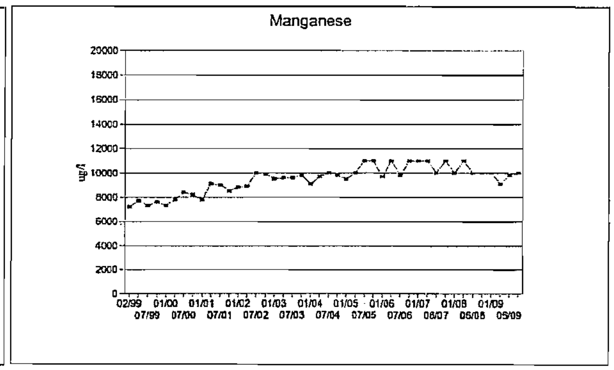


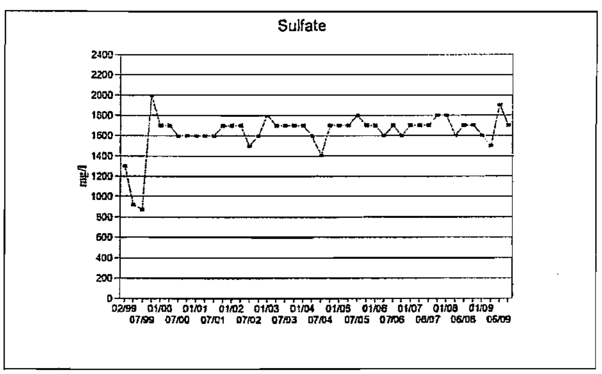


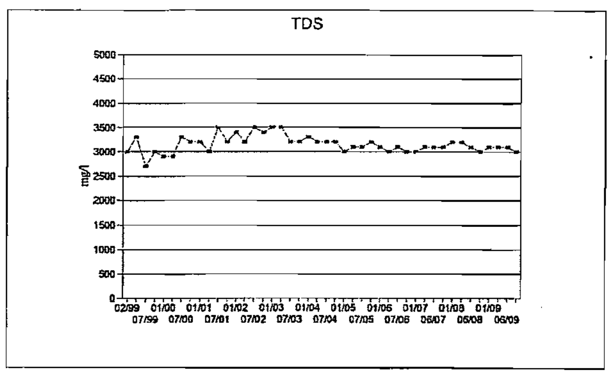








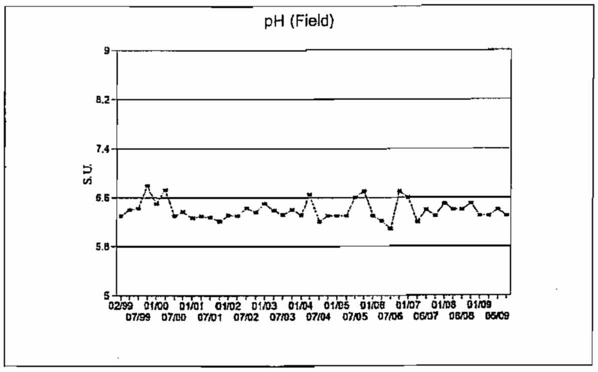


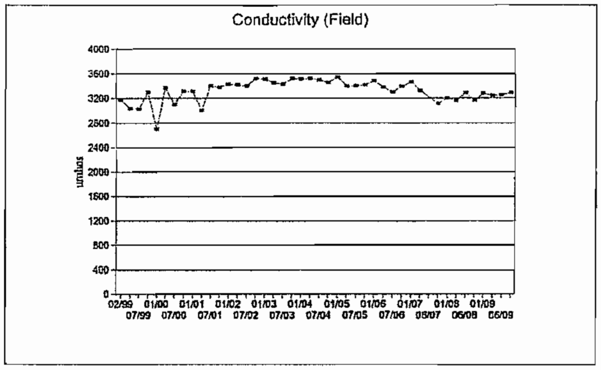


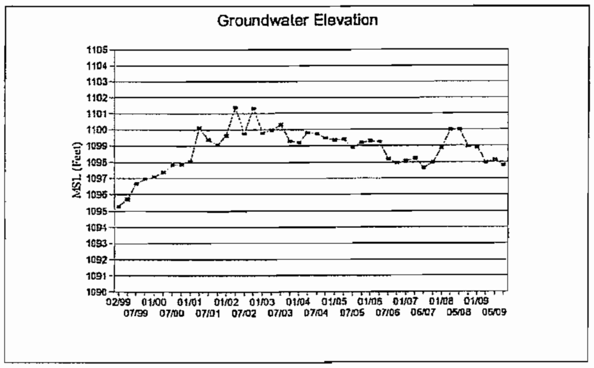
Created By: SGL Checked By: DAT

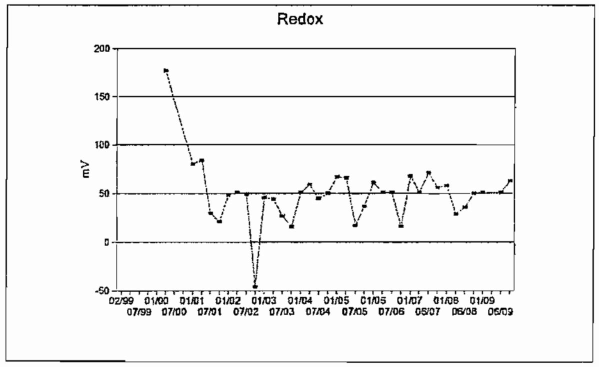
Flambeau Mining Company
Groundwater Quality Results

MW-1013C (In-Pit Well)





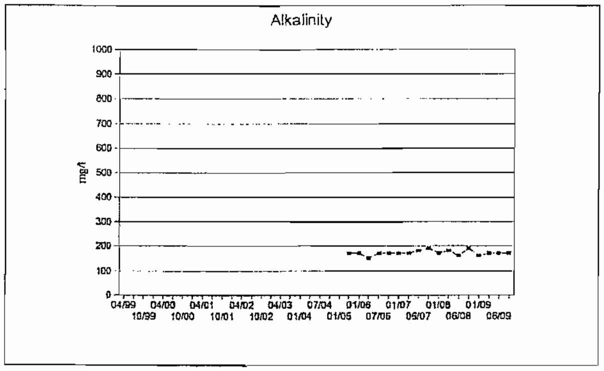


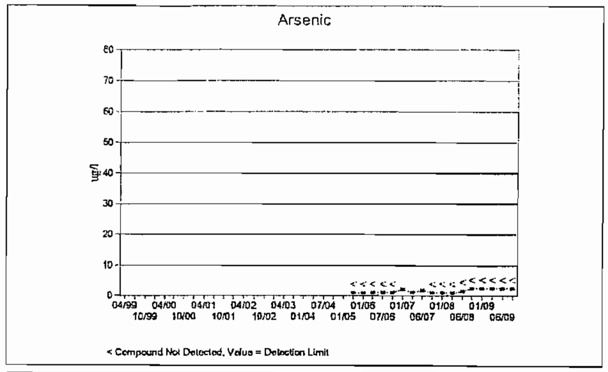


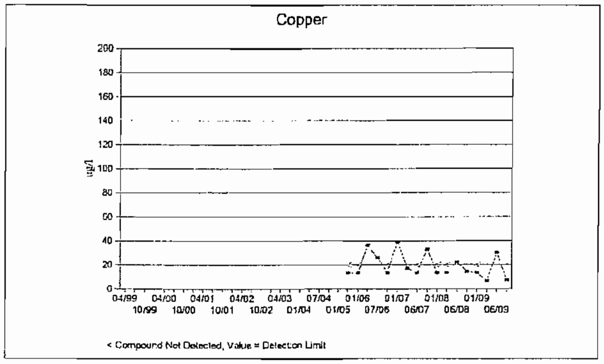
Created By: SGL   Checked By: DAT

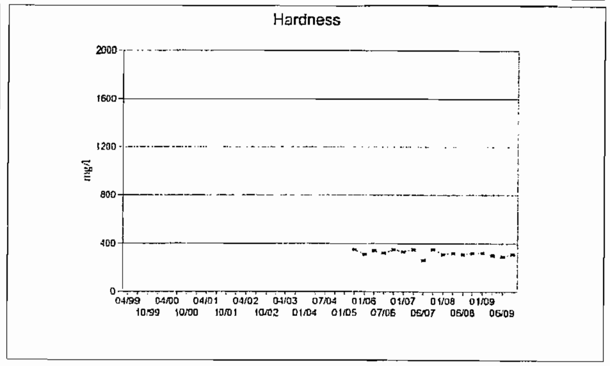
Flambeau Mining Company
Groundwater Quality Results

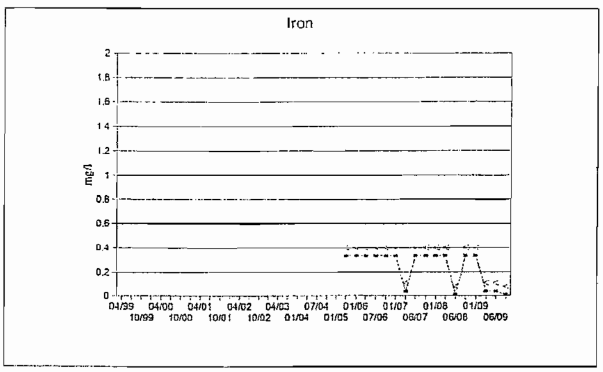
MW-1014 (In-Pit Well)

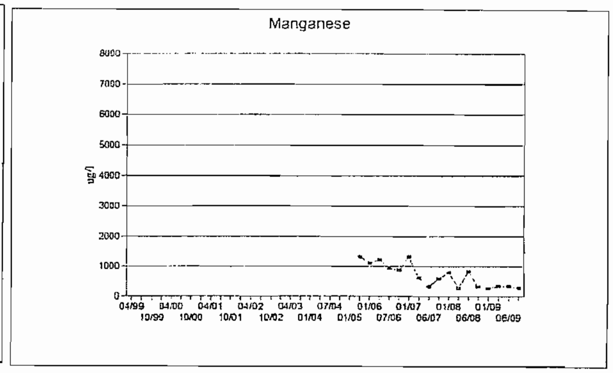


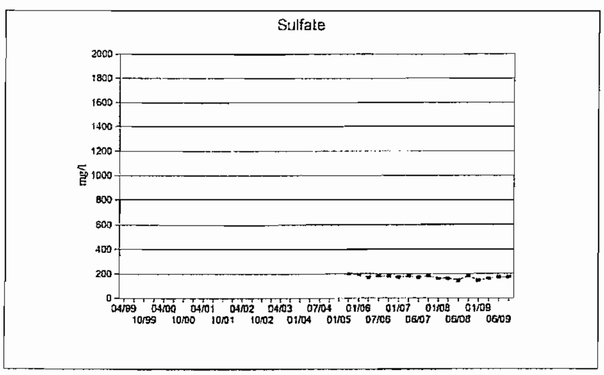


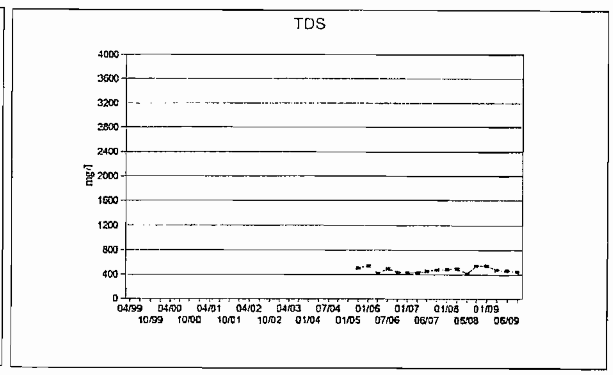








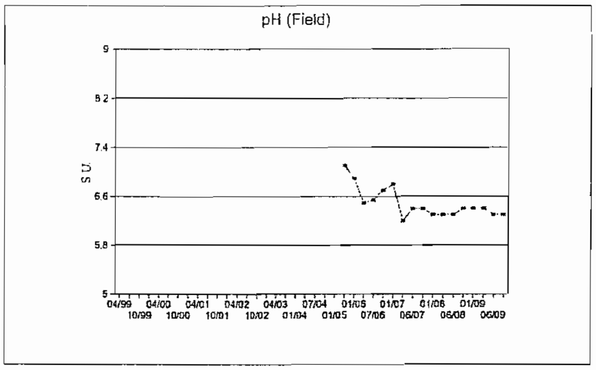


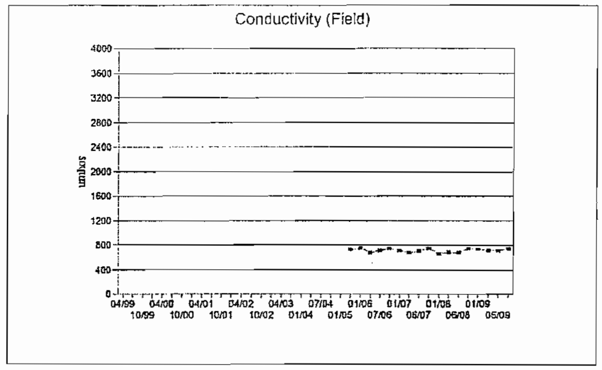


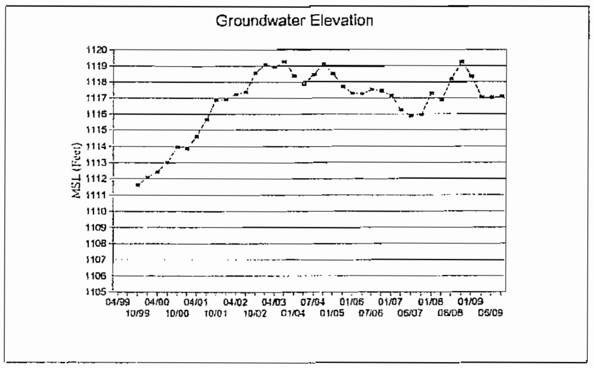
Created By: SGL Checked By: DAT

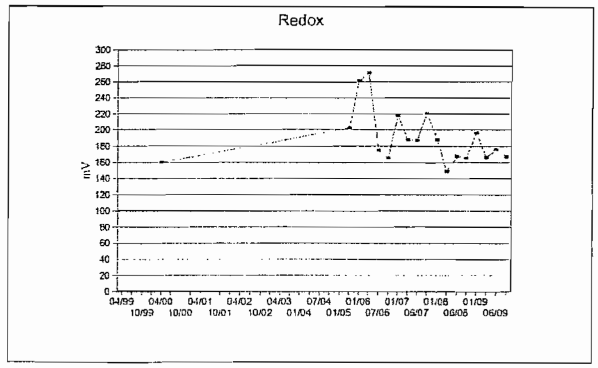
Flambeau Mining Company
Groundwater Quality Results

MW-1014 (In-Pit Well)





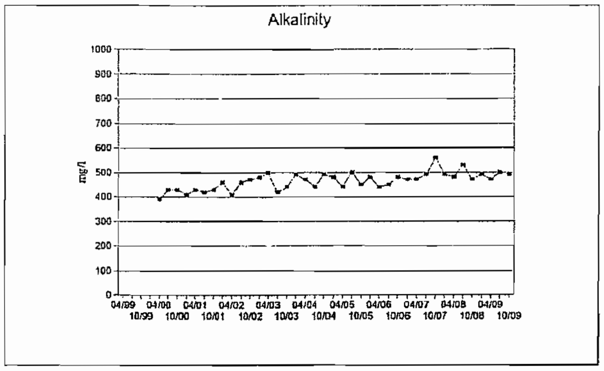


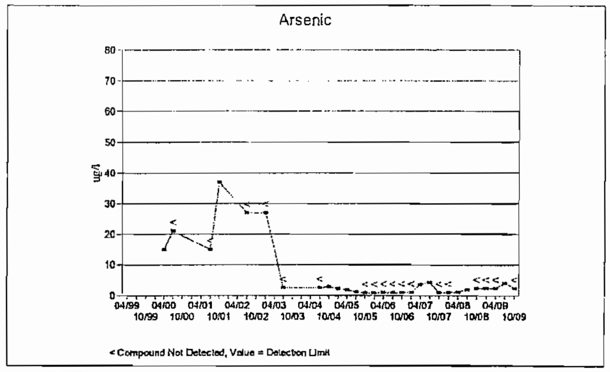


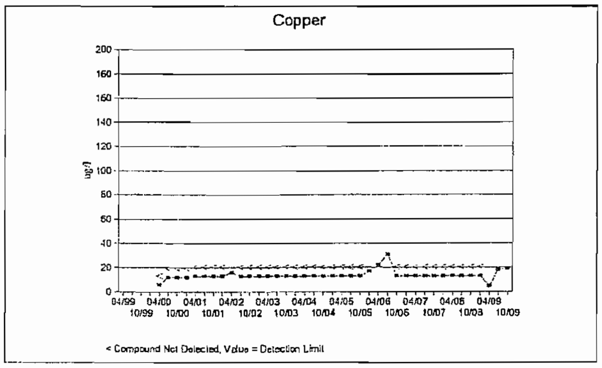
Created By: SGL Checked By: DAT

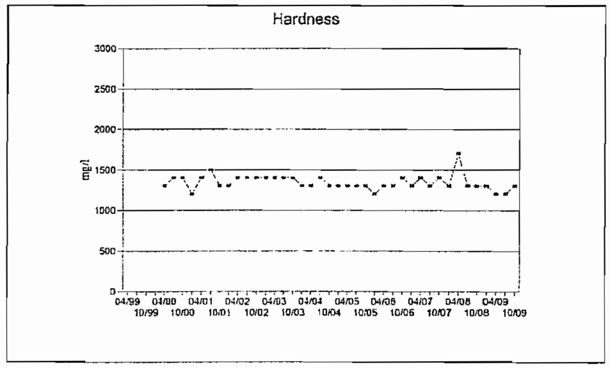
Flambeau Mining Company
Groundwater Quality Results

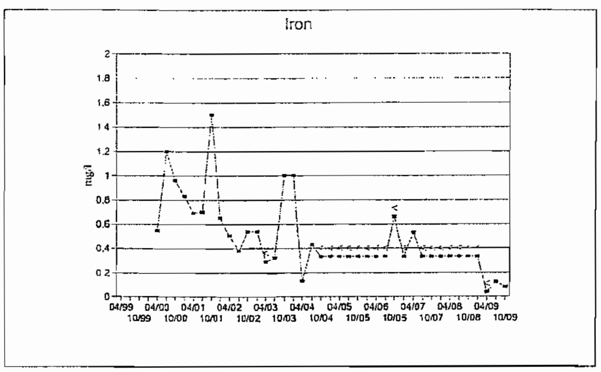
MW-1014A (In-Pit Well)

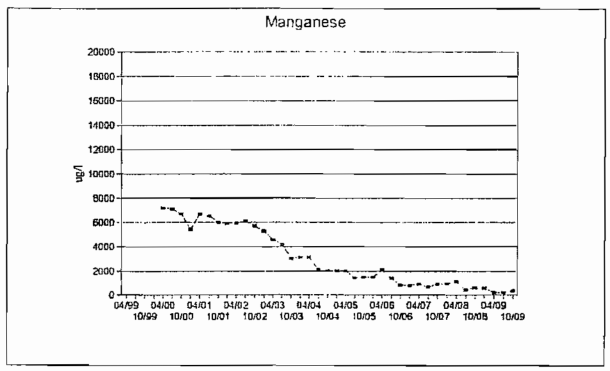


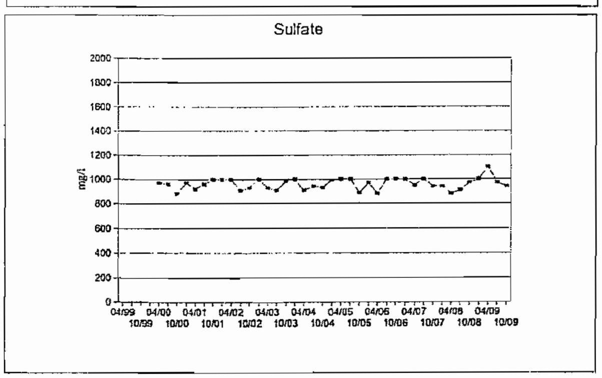


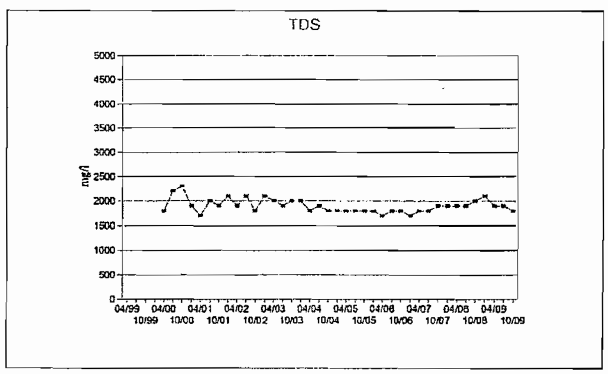








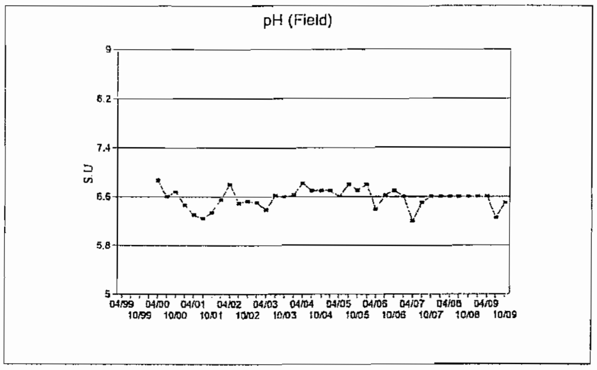


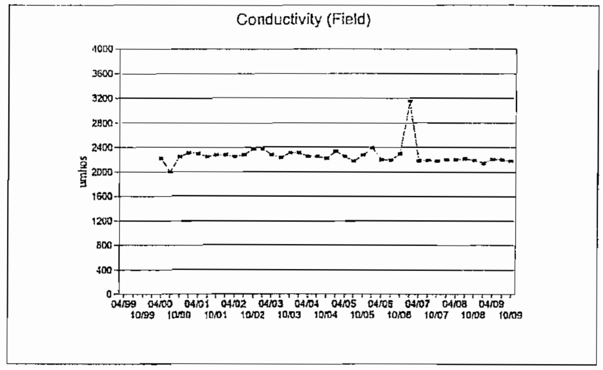


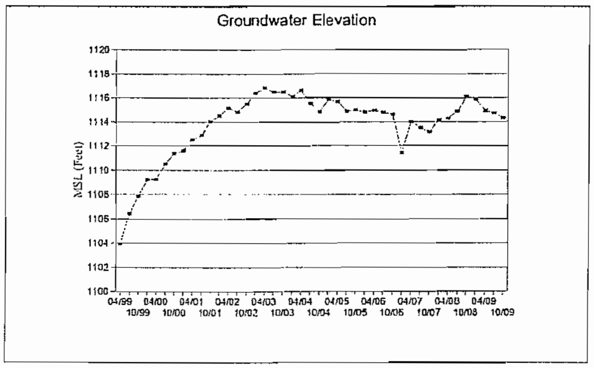
Created By: SGL Checked By: DAT

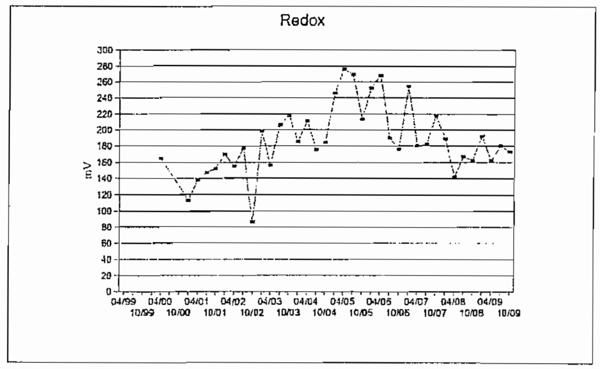
Flambeau Mining Company
Groundwater Quality Results

MW-1014A (In-Pit Well)







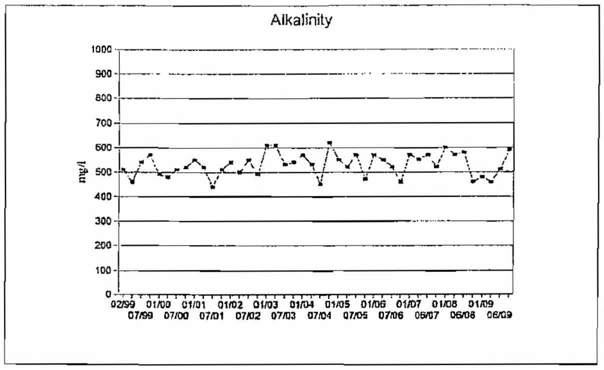


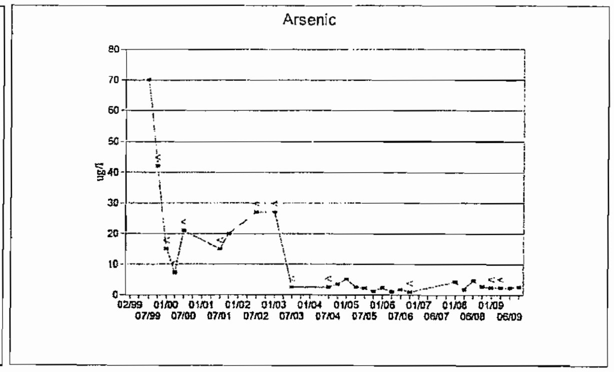
Created By: SGL Checked By: DAT

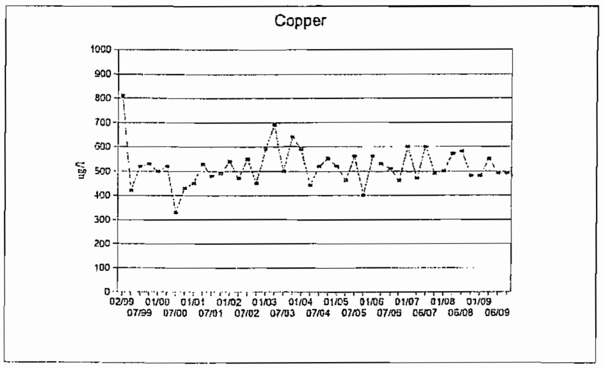
Flambeau Mining Company
2009 Annual Report

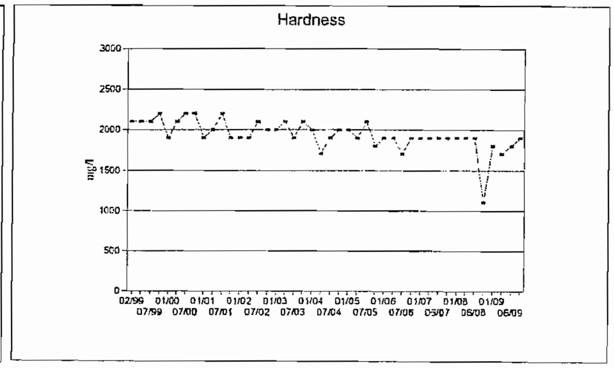
Flambeau Mining Company
Groundwater Quality Results

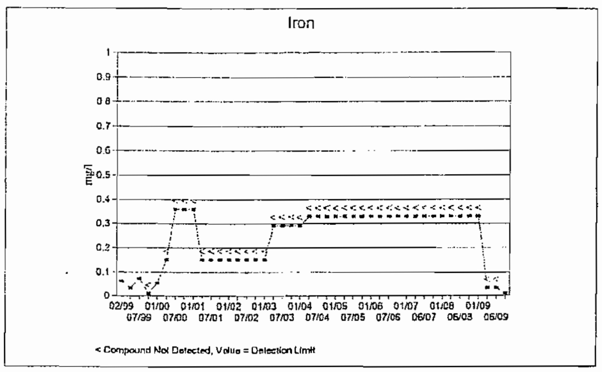
MW-1014B (In-Pit Well)

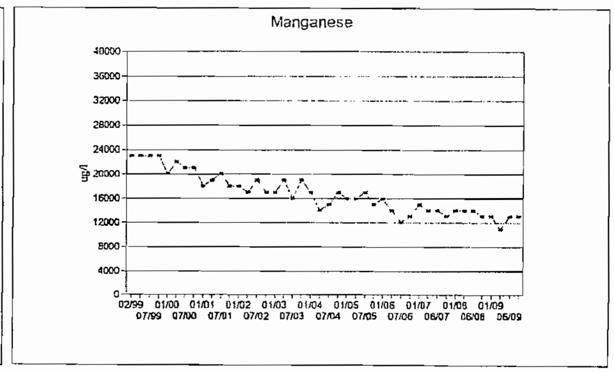


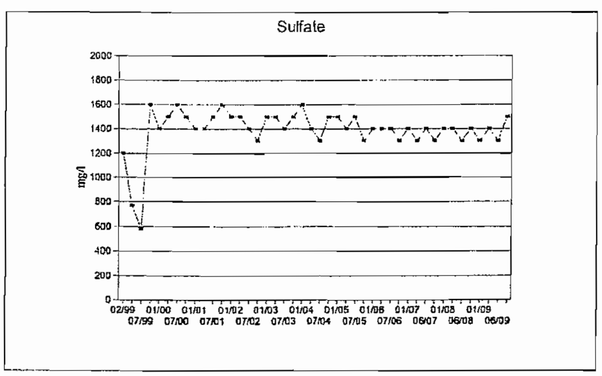


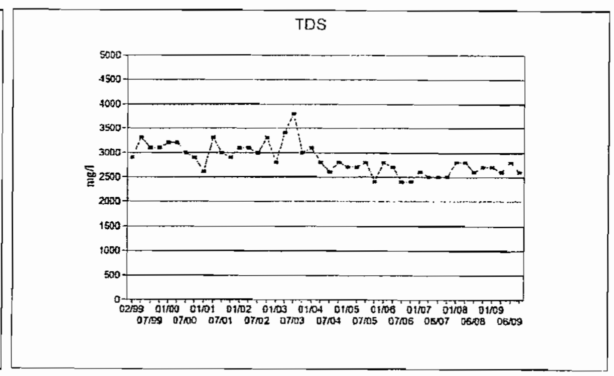








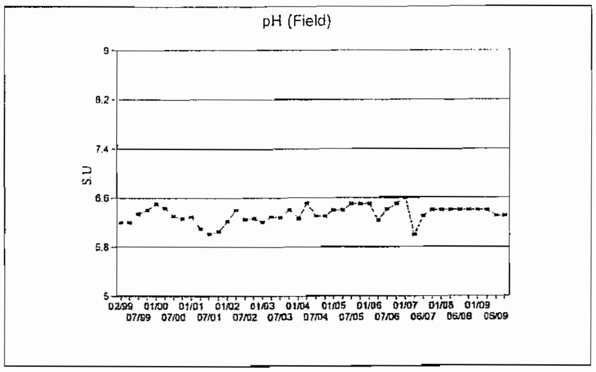


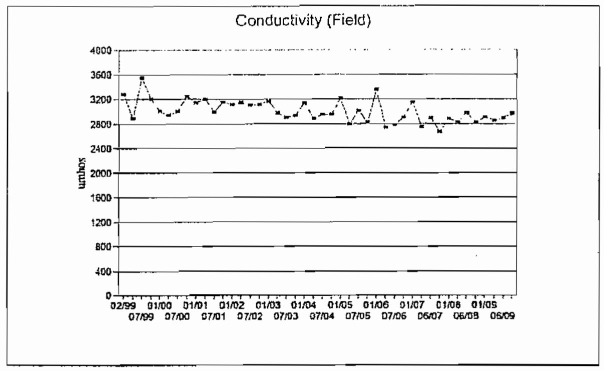


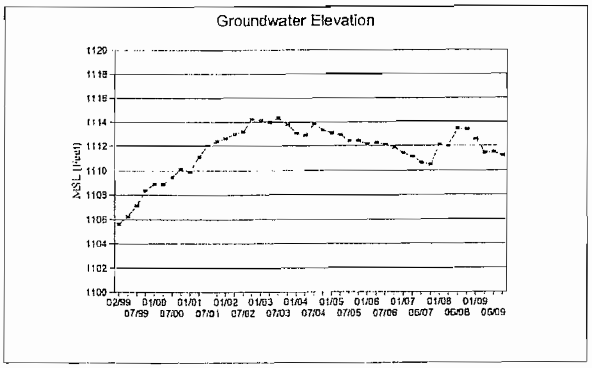
Created By: SGL Checked By: DAT

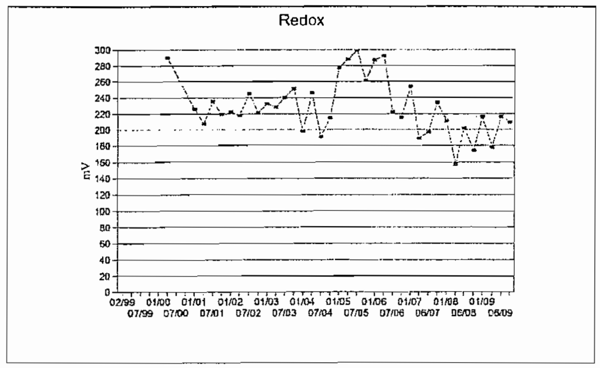
Flambeau Mining Company
Groundwater Quality Results

MW-1014B (In-Pit Well)





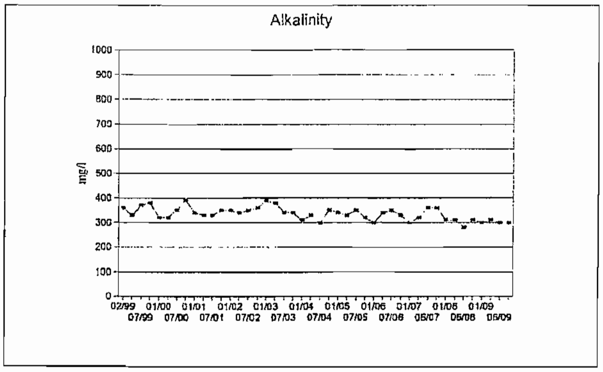


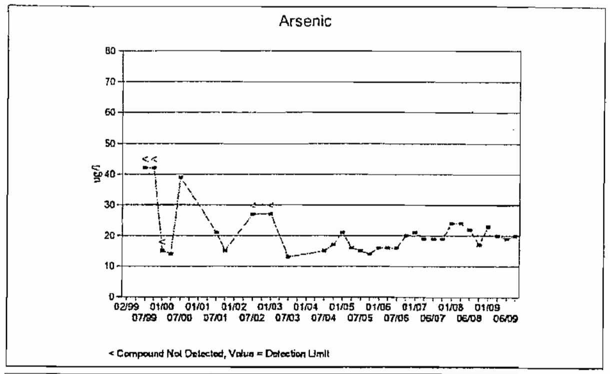


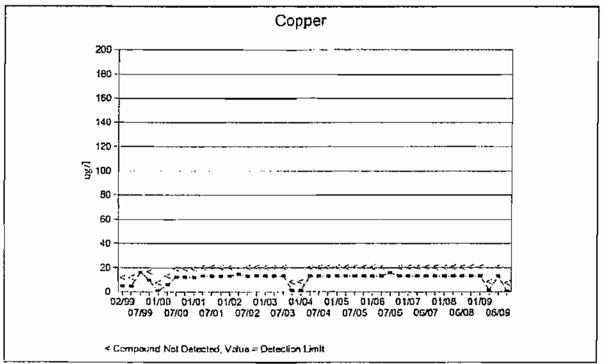
Created By: SGL Checked By: DAT

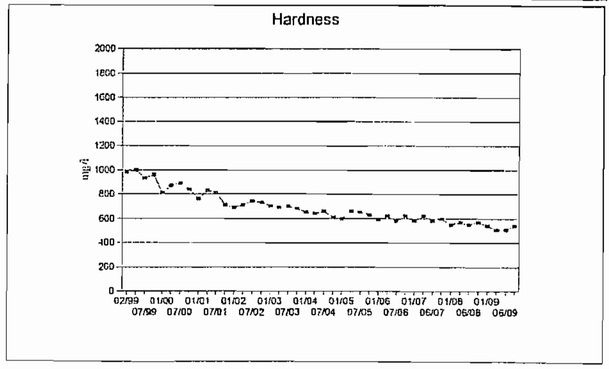
Flambeau Mining Company
Groundwater Quality Results

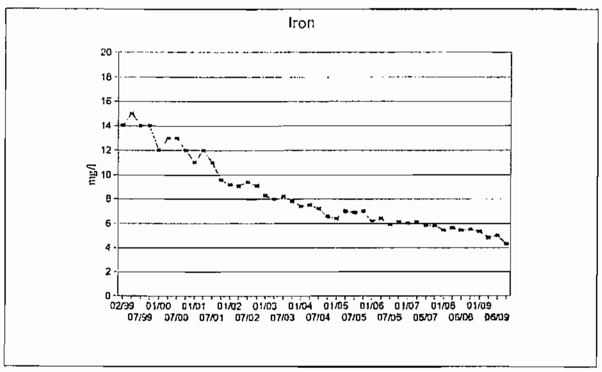
MW-1014C (In-Pit Well)

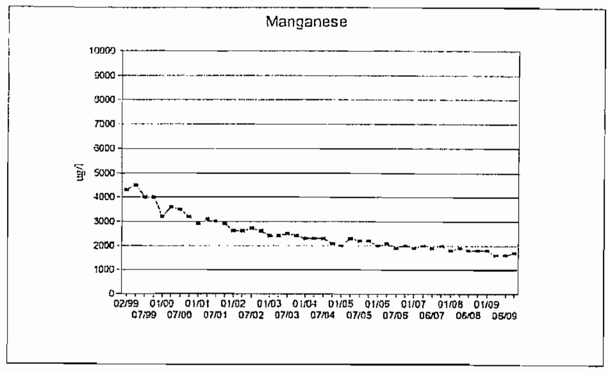


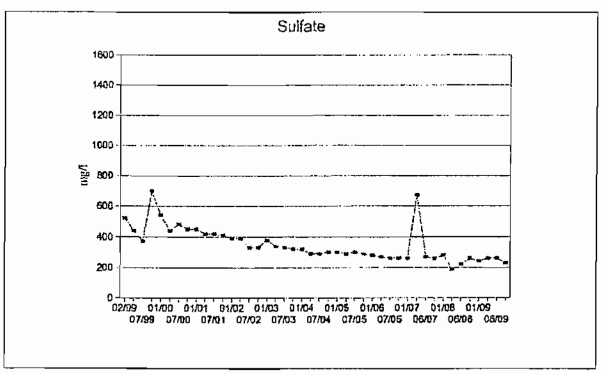


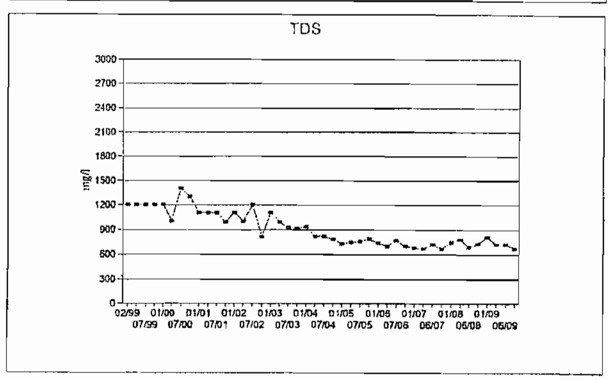








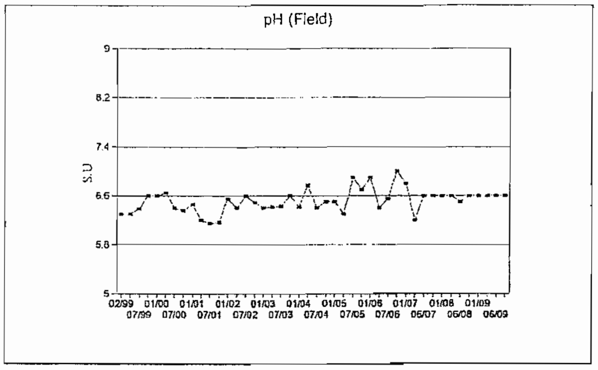


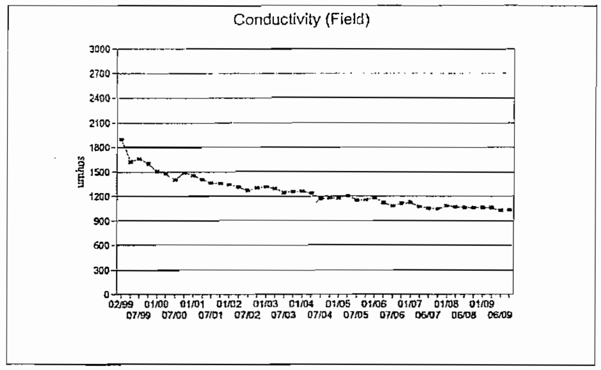


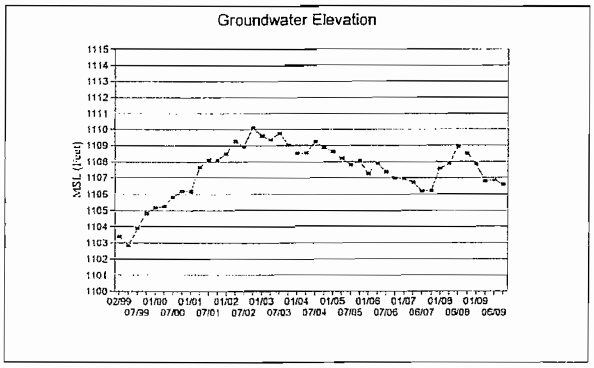
Created By: SGL Checked By: DAT

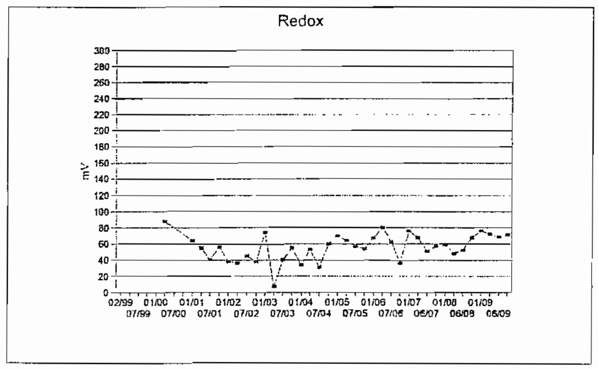
Flambeau Mining Company
Groundwater Quality Results

MW-1014C (In-Pit Well)





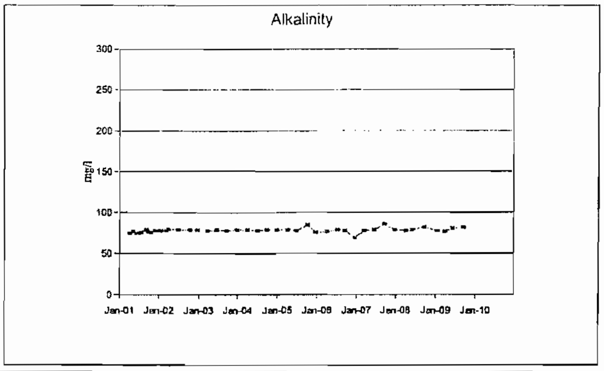


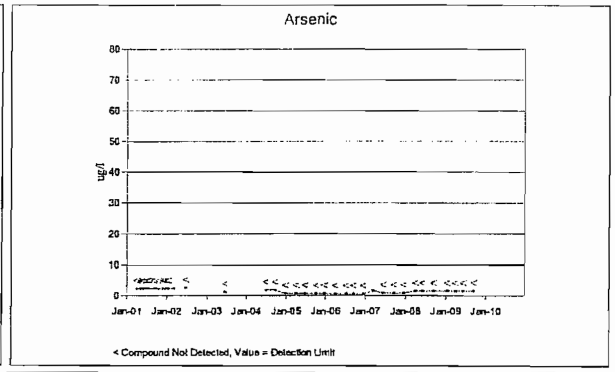


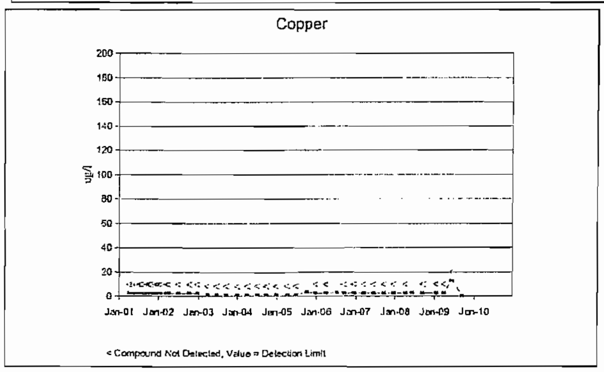
Created By: SGL Checked By: DAT

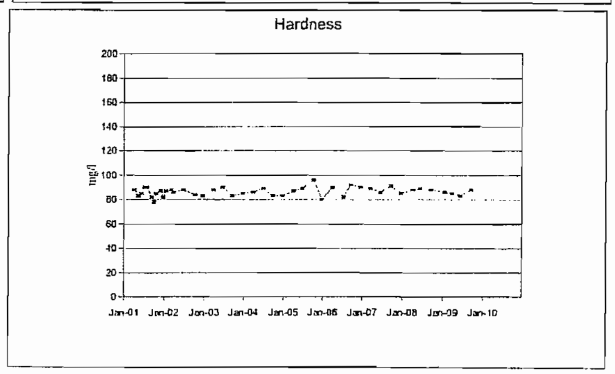
Flambeau Mining Company
Groundwater Quality Results

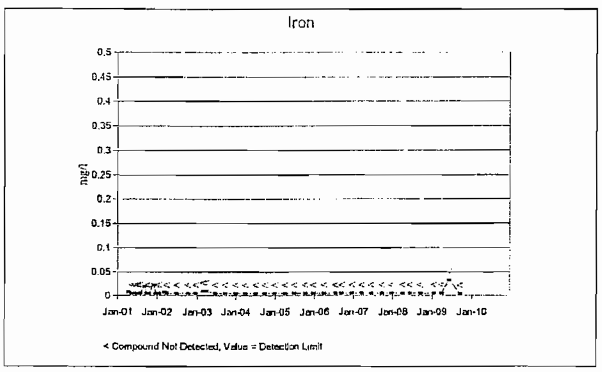
MW-1015A

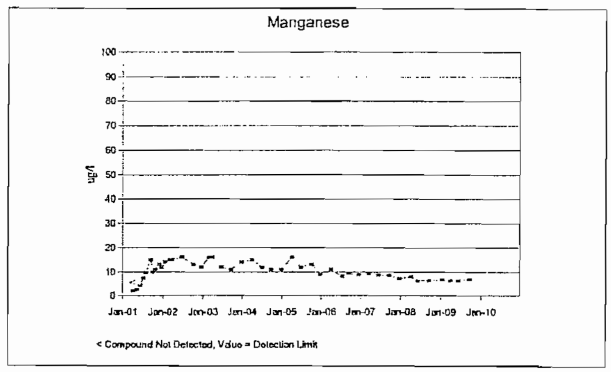


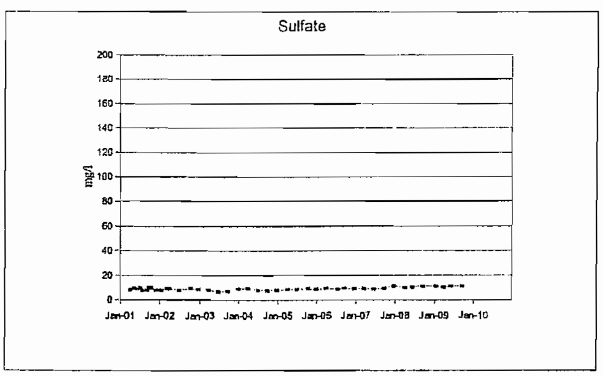


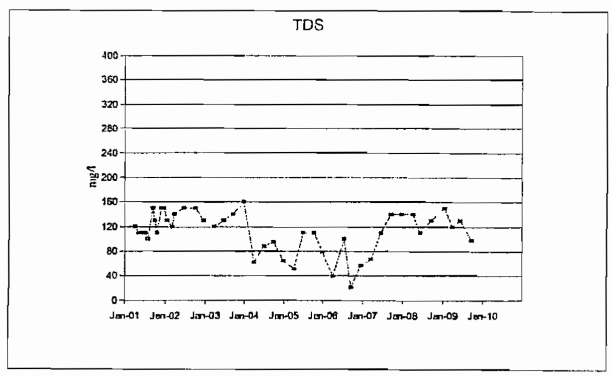








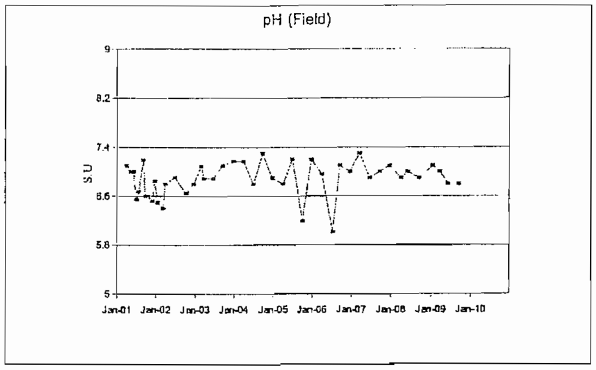


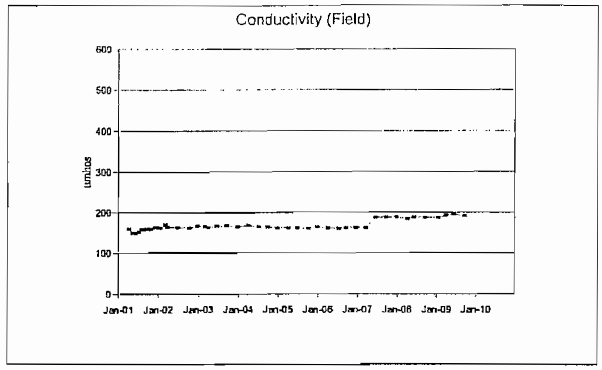


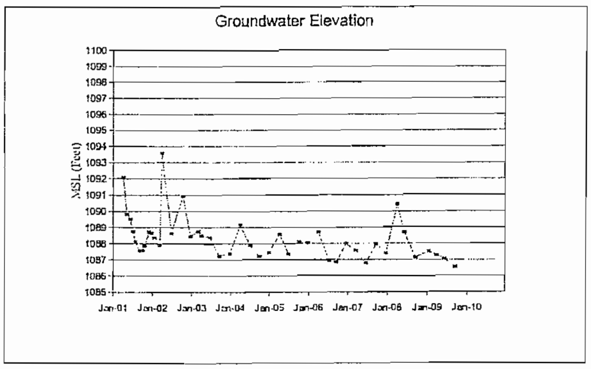
Created By: SGL Checked By: DAT

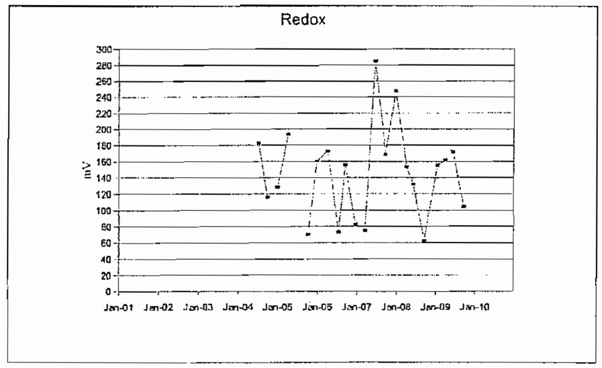
Flambeau Mining Company
Groundwater Quality Results

MW-1015A





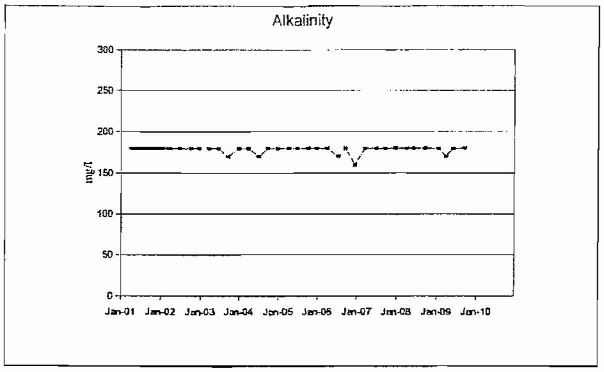


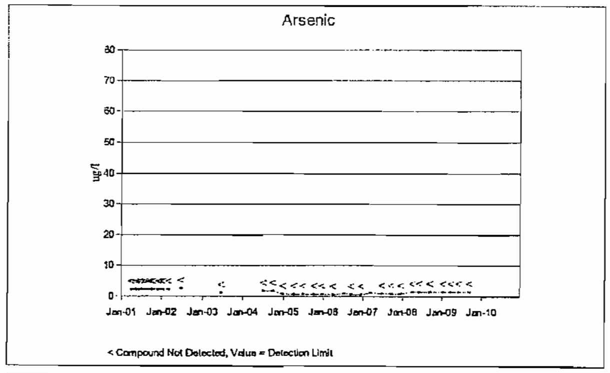


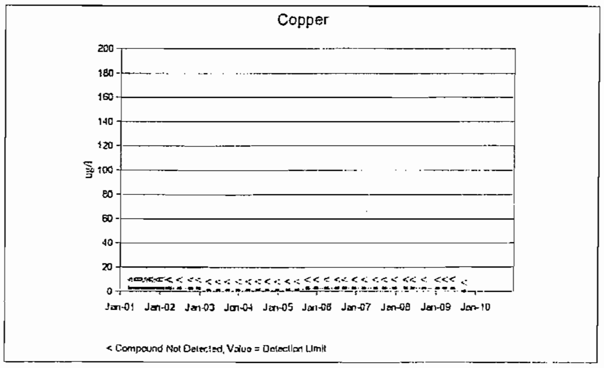
Created By: SGL Checked By: DAT

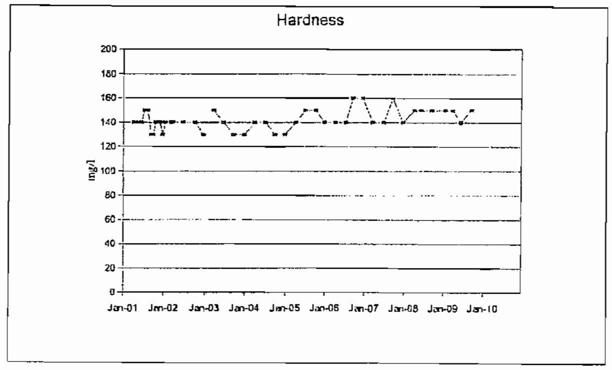
Flambeau Mining Company
Groundwater Quality Results

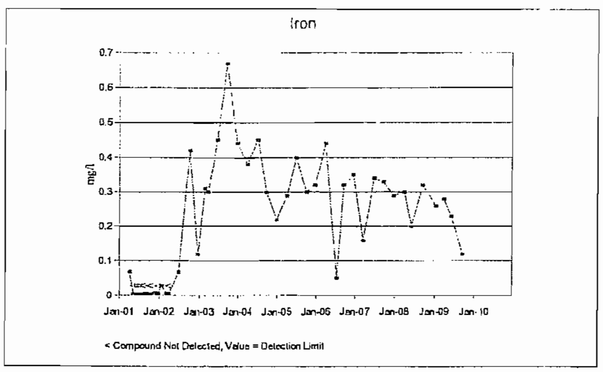
MW-1015B

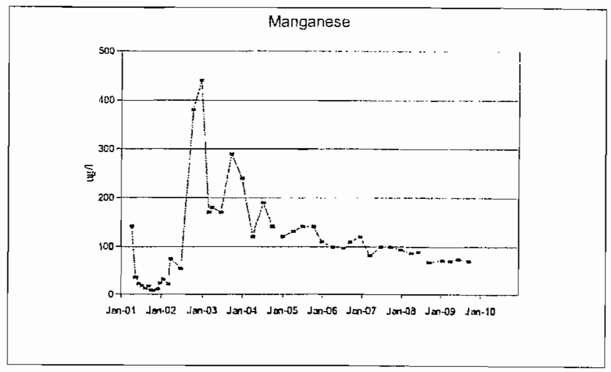


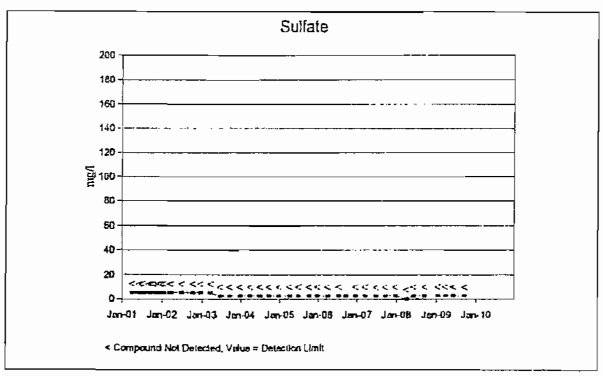


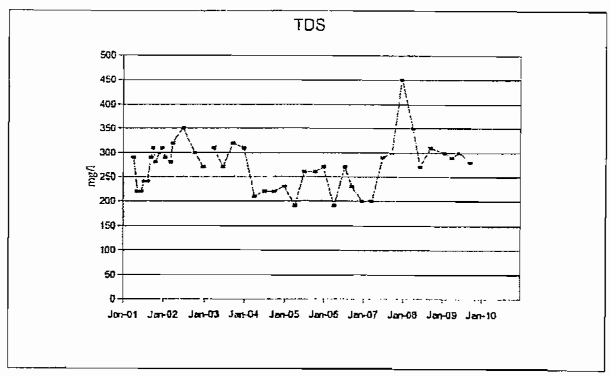








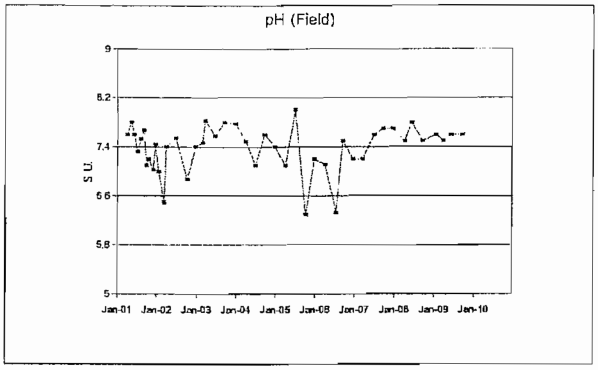


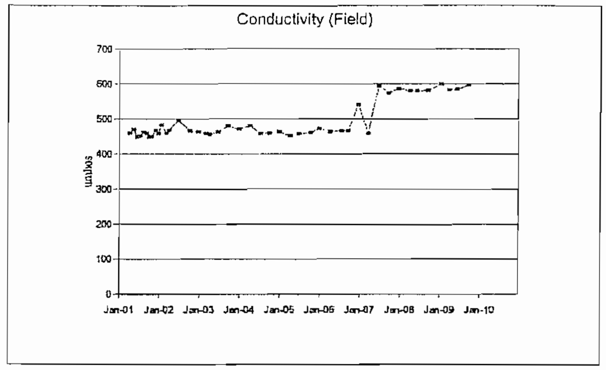


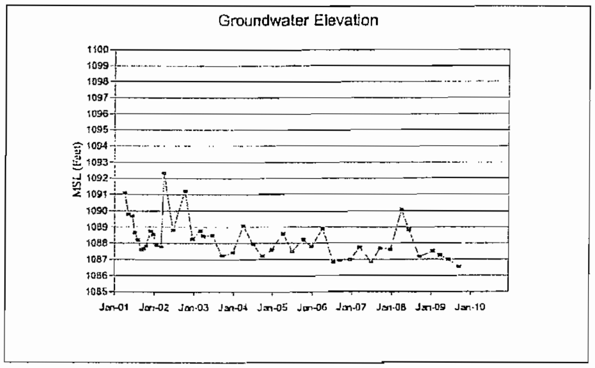
Created By: SGL Checked By: DAT

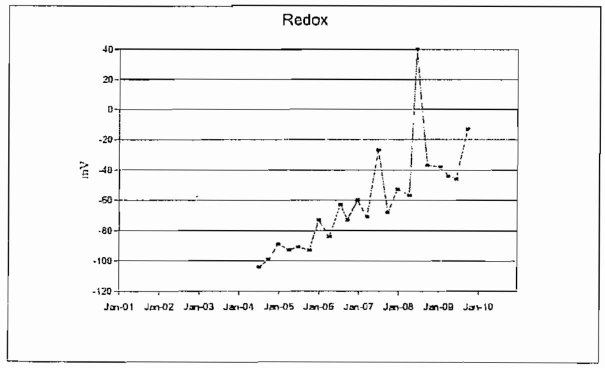
Flambeau Mining Company
Groundwater Quality Results

MW-1015B









Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/91													
	MW-1000PR	65		< 14	84	0.65	850	< 10	190	8.39	225		1089.14
	MW-1002	50		< 14	60	0.99	5.1	< 10	160	8.33	157		1092.94
	MW-1002G	86		< 14	100	< 0.055	5.4	< 10	240	7.56	277		1092.97
	MW-1004P	160		< 14	150	0.33	130	< 10	210	8.15	175		1108.93
	MW-1004S	50		< 14	60	< 0.055	< 4	< 10	160	8.64	161		1111.39
	MW-1005	84		< 14	380	17	510	15	570	7.73	1028		1139.65
	MW-1005P	260		< 14	230	1.2	220	< 10	290	8.49	512		1140.19
	MW-1005S	170		< 14	170	0.3	210	< 10	220	7.68	377		1139.43
	MW-1010P	140		< 14	140	< 0.055	260	< 10	180	8.47	337		1086.50
10/91													
	MW-1000PR	90		< 14	110	0.84	880	< 10	160	7.41	327		1089.51
	MW-1002	49		< 14	60	< 0.055	< 4	< 10	170	6.78	189		1092.36
	MW-1002G	88		< 14	120	< 0.055	< 4	10	280	6.98	272		1092.40
	MW-1004P	170		< 14	170	0.22	130	< 10	310	7.15	352		1108.79
	MW-1004S	49		< 14	60	< 0.055	< 4	10	170	7.25	135		1111.00
	MW-1005	92		< 14	360	20	490	12	770	7.34	981		1138.75
	MW-1005P	260		< 14	230	1	150	< 10	440	7.66	479		1138.88
	MW-1005S	170		< 14	170	3.8	220	< 10	370	7.37	351		1138.10
	MW-1010P	160		< 14	130	< 0.055	280	10	250	8.26	326		1087.62
01/92													
	MW-1000PR	88		< 14	110	1.7	820	11	120	5.75	190		1090.15
	MW-1002	47		< 14	67	< 0.055	< 4	< 10	100	6.88	138		1093.90
	MW-1002G	80		< 14	110	< 0.055	< 4	11	140	6.93	221		1093.93
	MW-1004P	160		< 14	150	0.32	120	< 10	160	6.8	302		1108.79

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/92													
	MW-1004S	27		< 14	62	< 0.055	< 4	11	95	7.03	146		1111.00
	MW-1005	86		< 14	1000	18	460	14	530	6.12	870		1140.86
	MW-1005P	260		< 14	240	0.75	160	< 10	280	6.85	391		1140.95
	MW-1005S	170		< 14	250	3.6	210	< 10		6.88	303		1140.32
	MW-1010P	150		< 14	130	0.15	250	16	200	6.87	292		1087.60
04/92													
	MW-1000PR	84		< 14	88	1.3	830	14	120	6.91	183.2		1091.67
	MW-1002	49		< 14	48	< 0.055	< 4	11	85	6.05	145		1093.70
	MW-1002G	84		< 14	110	< 0.055	< 4	14	150	6.25	199		1093.75
	MW-1004P	170		< 14	160	0.37	140	< 10	180	6.88	282		1109.72
	MW-1004S	60		< 14	72	< 0.055	< 4	12	100	6.7	153		1112.05
	MW-1005	90		< 14	520	17	380	16	680	6.32	905		1141.23
	MW-1005P	260		< 14	240	1	130	< 10	350	6.97	417		1141.48
	MW-1005S	180		< 14	290	3.7	200	< 10	210	7.48	324		1140.71
	MW-1010P	160		< 14	140	< 0.055	200	14	340	7.62	314		1089.08
07/92													
	MW-1000PR	81		14	120	0.47	730	12	140	6.64	194		1088.87
	MW-1002	41		< 14	120	< 0.055	< 4	< 10	87	5.61	118		1093.04
	MW-1002G	79		< 14	160	< 0.055	< 4	11	150	6.02	198		1093.09
	MW-1004P	160		< 14	170	0.38	130	< 10	180	6.74	295		1109.39
	MW-1004S	74		< 14	150	< 0.055	< 4	< 10	110	6.5	175		1111.58
	MW-1005	90		< 14	440	19	440	15	640	6.01	912		1140.11
	MW-1005P	270		< 14	260	0.95	150	< 10	270	6.81	426		1140.29
	MW-1005S	170		< 14	220	4.1	210	< 10	220	6.68	331		1139.40

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/92													
	MW-1010P	160		< 14	180	< 0.055	86	< 10	180	6.86	285		1088.28
10/92													
	MW-1000PR	95		< 14	100	0.8	780	12	160	6.9	201		1089.22
	MW-1002	53		< 14	82	< 0.055	15	11	130	6.94	181		1091.69
	MW-1002G	85		< 14	130	< 0.055	< 4	11	180	6.94	254		1091.73
	MW-1004P	190		< 14	180	0.32	130	< 10	260	7.46	342		1107.39
	MW-1004S	100		< 14	110	< 0.055	< 4	< 10	220	6.96	258		1108.44
	MW-1005	110		< 14	420	22	470	15	600	6.13	1013		1139.07
	MW-1005P	270		< 14	260	12	100	< 10	320	7.26	501		1137.84
	MW-1005S	190		< 14	270	3.9	200	< 10	260	7.38	391		1138.13
	MW-1010P	180		< 14	160	< 0.055	140	< 10	280	7.49	389		1086.55
01/93													
	MW-1000PR	84		< 14	88	0.15	710	< 10	100	6.22	203		1091.62
	MW-1002	53		< 14	66	0.059	4.7	< 10	90	6.96	127		1085.62
	MW-1002G	75		< 14	94	< 0.055	< 4	12	98	7.14	197		1092.69
	MW-1004P	170		< 14	160	0.39	140	< 10	160	6.24	291		1104.64
	MW-1004S	73		< 14	92	< 0.055	< 4	< 10	95	6.37	174		1105.97
	MW-1005	94		< 14	400	24	520	23	140	6.21	945		1139.18
	MW-1005P	260		< 14	240	1.1	110	< 10	220	6.39	440		1139.08
	MW-1005S	180		< 14	180	4.1	210	10	160	6.99	418		1138.52
	MW-1010P	190		< 14	130	< 0.055	31	32	210	7.21	357		1088.95
04/93													
	MW-1000PR	82		20	90	0.27	940	12	130	6.24	198		1089.06
	MW-1002	66		< 10	90	< 0.01	< 4	9	120	6.33	136		1093.34

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/93													
	MW-1002G	44		< 10	76	< 0.01	< 4	8	74	6.13	239		1093.38
	MW-1004P	170		< 10	160	< 0.01	< 4	3	160	7.74	329		1099.76
	MW-1004S	51		< 10	70	< 0.01	< 4	11	120	7.77	168		1103.31
	MW-1005	78		< 10	500	24	540	15	630	6.11	971		1140.35
	MW-1005P	250		< 10	250	0.46	150	2	240	6.52	458		1139.42
	MW-1005S	81		< 10	210	4.4	230	8	200	6.38	360		1139.26
	MW-1010P	170		< 14	130	0.055	140	28	270	6.62	357		1088.51
07/93													
	MW-1000PR	82		16	86	0.061	730	15	140	6.6	217		1079.77
	MW-1002	42		< 12	52	0.034	< 4	10	100	6.83	273		1095.73
	MW-1002G	64		< 12	80	< 0.015	< 4	11	140	6.72	480		1095.72
	MW-1004P	170		< 12	150	0.042	22	5	180	7.4	347		1095.77
	MW-1004S	24		< 12	56	< 0.015	< 4	11	110	7	178		1102.69
	MW-1005	74		< 12	410	18	420	18	590	6.12	1100		1141.19
	MW-1005P	250		< 12	230	0.61	140	3	260	7.59	519		1141.08
	MW-1005S	170		< 12	160	4.2	220	9	200	7.28	372		1140.88
	MW-1010P	150		< 12	130	< 0.015	35	11	180	7.21	313		1085.01
10/93													
	MW-1000PR	62		13	120	0.032	910	12	110	7.03	233		1074.86
	MW-1002	42		< 12	52	< 0.015	< 4	6	78	7.52	138		1091.71
	MW-1002G	82		< 12	110	< 0.015	< 4	11	190	7.38	262		1091.77
	MW-1004P	170		< 12	160	0.048	40	3	230	7.61	329		1090.27
	MW-1004S	32		< 12	46	< 0.015	< 4	9	98	7.41	186		1099.82
	MW-1005	84		< 12	390	25	610	17	680	6.68	1005		1140.03

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/93													
	MW-1005P	250		< 12	220	0.17	69	< 2	300	7.53	462		1139.85
	MW-1005S	170		< 12	160	4.2	240	6	220	7.28	321		1139.29
	MW-1010P	160		< 12	130	< 0.015	18	5	230	7.51	294		1080.16
01/94													
	MW-1000PR	43		22	54	< 0.015	340	12	70	6.86	135		1073.75
	MW-1002	39		< 12	50	< 0.015	< 4	7	82	7.53	151		1091.21
	MW-1002G	94		< 12	120	< 0.015	< 4	14	180	7.01	278		1091.31
	MW-1004P	140		< 12	150	< 0.015	20	2	160	7.34	371		1088.40
	MW-1004S	42		16	44	< 0.015	< 4	10	74	7	123		1097.96
	MW-1005	81		< 12	440	24	530	18	560	6.28	1072		1138.39
	MW-1005P	250		< 12	230	0.19	35	< 2	260	7.34	487		1138.88
	MW-1005S	160		< 12	160	4	200	9	190	7.22	357		1138.29
	MW-1010P	160		< 12	150	< 0.015	170	3	170	7.34	283		1081.09
04/94													
	MW-1000PR	44		23	54	0.021	500	12	95	7.74	124		1071.98
	MW-1002	35		< 12	45	< 0.015	< 4	7	86	7.49	105		1091.21
	MW-1002G	92		< 12	120	< 0.015	< 4	12	170	7.39	267		1091.27
	MW-1004P	160		15	150	0.033	45	3	180	7.36	287		1087.03
	MW-1004S	38		< 12	51	< 0.015	< 4	8	100	7.75	109		1097.72
	MW-1005	88		< 12	450	24	540	13	620	7.6	1082		1140.00
	MW-1005P	250		< 12	230	0.2	160	< 2	270	7.24	487		1139.44
	MW-1005S	160		< 12	160	4.1	200	8	200	7.52	344		1139.14
	MW-1010P	160		< 12	150	< 0.015	14	3	180	7.36	276		1080.00
07/94													

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/94													
	MW-1000PR	39		17	49	0.026	420	11	90	7.47	132.6		1071.01
	MW-1002	31		< 12	44	< 0.015	< 4	6.6	94	7	109.4		1091.02
	MW-1002G	92		< 12	120	< 0.015	< 4	12	170	6.74	238		1091.07
	MW-1004P	160		< 12	150	0.024	28	2.5	190	7.09	317		1086.74
	MW-1004S	140		< 12	52	< 0.015	< 4	8	100	6.77	200		1097.66
	MW-1005	75		< 12	450	31	690	14	600	6.18	1093		1139.53
	MW-1005P	240		< 12	230	0.22	100	< 2	270	6.89	456		1138.96
	MW-1005S	160		< 12	160	4.1	200	7.2	210	6.88	322		1138.65
	MW-1010P	160		< 12	150	< 0.015	10	3.4	190	7.17	322		1078.27
10/94													
	MW-1000PR	34		58	36	0.047	360	17	120	7.17	115.9		1071.03
	MW-1002	38		< 1.6	46	0.0056	< 0.47	6.1	87	6.99	122		1092.12
	MW-1002G	88		< 1.6	110	0.0054	< 0.47	14	200	6.77	269		1092.18
	MW-1004P	170		< 1.6	160	0.035	29	3.9	200	7.12	303		1086.36
	MW-1004S	44		< 1.6	54	0.0064	< 0.47	8.6	150	6.71	123.5		1097.75
	MW-1005	78		< 1.6	420	28	630	20	820	6.08	1028		1138.79
	MW-1005P	250		< 1.6	250	0.24	62	2.5	280	7.15	452		1137.79
	MW-1005S	160		< 1.6	160	3.7	190	13	240	7.34	320		1137.49
	MW-1010P	160		3.2	150	0.0046	14	4.5	200	7.45	309		1080.17
01/95													
	MW-1000PR	30		52	36	0.12	290	9	88	7.14	115.6		1068.79
	MW-1002	38		< 0.47	47	0.0073	2.7	6.2	120	6.65	143.2		1090.71
	MW-1002G	90		< 0.47	110	0.0072	2.1	12	240	6.74	301		1090.77
	MW-1004P	170		3.3	150	0.014	29	1.7	190	6.69	315		1085.81

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/95													
	MW-1004S	100		1.1	57	0.0049	3.4	7.1	140	6.18	142.4		1096.59
	MW-1005	84		< 0.47	370	29	650	14	660	6.16	1035		1137.52
	MW-1005P	270		4.4	230	0.035	41	< 0.56	340	7.05	511		1137.14
	MW-1005S	160		< 0.47	150	4.2	220	8.9	240	6.72	425		1136.86
	MW-1010P	160		6.7	160	0.004	60	3.3	250	7.63	337		1078.26
04/95													
	MW-1000PR	38		58	35	0.026	320	14	90	7.4	106		1070.00
	MW-1002	42		2	42	0.0039	0.27	7.3	170	7.4	106		1091.70
	MW-1002G	93		1.4	100	0.0044	< 0.086	15	170	6.9	255		1091.77
	MW-1004P	170		11	130	0.025	31	4.7	250	7.4	292		1086.80
	MW-1004S	55		7	45	0.0087	0.87	7.8	150	6.7	131		1096.68
	MW-1005	79		1.3	320	28	600	18	770	6.2	1014		1138.27
	MW-1005P	270		3.7	200	0.078	41	< 0.56	300	7.5	420		1137.45
	MW-1005S	160		< 0.68	130	4	200	9.3	190	7	315		1137.20
	MW-1010P	170		9.7	130	0.005	51	5	240	7.4	311		1079.01
07/95													
	MW-1000PR	34		43	36	0.0096	240	10	99	8.08	115.7		1070.99
	MW-1002	33		0.97	35	< 0.0017	0.42	5.3	76	7.16	99		1090.41
	MW-1002G	90		< 0.68	100	0.0019	< 0.086	11	190	6.91	275		1090.65
	MW-1004P	170		20	130	0.044	77	1.8	190	7.16	317		1086.38
	MW-1004S	50		6.6	50	0.0031	0.5	6.2	110	6.87	126.3		1096.28
	MW-1005	75		< 0.68	320	28	640	14	730	6.28	1049		1137.69
	MW-1005P	280		1.8	200	0.071	90	< 0.56	290	7.17	454		1137.47
	MW-1005S	170		< 0.68	140	3.8	200	6.9	220	6.91	358		1137.06

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/95													
	MW-1010P	160		21	130	0.0017	11	2.4	200	7.58	315		1077.61
10/95													
	MW-1000PR	36		61	39	0.027	110	11	75	7.32	118.8		1071.39
	MW-1002	30		1.6	38	0.004	1.4	7.9	86	6.6	120		1091.61
	MW-1002G	100		< 0.68	110	< 0.0017	< 0.086	14	160	6.91	239		1091.68
	MW-1004P	170		4.3	150	0.0086	28	8.1	170	7.01	308		1079.81
	MW-1004S	79		7.6	59	0.004	1.3	9.4	110	6.28	144.9		1097.49
	MW-1005	55		< 0.68	360	32	700	21	740	6.18	976		1138.86
	MW-1005P	260		2.1	230	0.17	72	5.3	260	7.22	470		1137.79
	MW-1005S	170		< 0.68	160	4.3	220	14	220	7.11	354		1137.60
	MW-1010P	140		63	140	0.037	21	9.6	200	7.4	291		1079.23
01/96													
	MW-1000PR	27		49	33	0.011	54	8.5	87	6.86	112.4		1069.64
	MW-1002	35		< 0.68	41	0.0031	0.12	5.4	65	6.98	153.7		1091.25
	MW-1002G	85		< 0.68	100	< 0.0017	< 0.086	11	150	6.79	232		1091.31
	MW-1004P	150		3.3	130	0.0094	27	2.3	150	7.3	295		1078.22
	MW-1004S	50		3.4	54	0.0038	1.1	5.8	120	6.61	144.9		1095.89
	MW-1005	78		< 0.68	330	28	600	14	560	6.17	963		1137.72
	MW-1005P	240		< 0.68	210	0.28	97	0.93	270	7.31	464		1137.39
	MW-1005S	160		< 0.68	140	3.7	200	7	190	7.27	360		1137.09
	MW-1010P	140		45	130	0.0023	13	3.4	180	7.01	313		1077.28
04/96													
	MW-1000PR	53		31	40	0.018	64	16	130	7.07	149.4		1066.96
	MW-1002	32		1.7	36	0.017	0.98	5.9	120	6.75	142.2		1091.57

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/96													
	MW-1002G	110		< 0.68	100	0.0039	0.14	11	220	6.55	264		1091.63
	MW-1004P	150		7.3	130	0.011	22	4.2	210	6.93	258		1077.65
	MW-1004S	61		2.6	52	0.0048	0.32	6.2	130	5.84	168.2		1096.23
	MW-1005	73		< 0.68	300	23	550	14	530	5.97	967		1139.05
	MW-1005P	250		< 0.68	210	0.049	35	2.2	300	6.85	486		1139.37
	MW-1005S	160		< 0.68	140	3.9	200	7.6	240	6.8	329		1139.04
	MW-1010P	160		16	140	0.0036	100	3.8	200	7.16	309		1076.11
07/96													
	MW-1000PR	35		33	38	0.0066	120	9.3	140	7.26	113.5		1070.33
	MW-1002	34		1.6	97	0.021	0.5	5.9	94	6.78	119.6		1092.26
	MW-1002G	79		< 0.54	93	0.0038	< 0.18	11	200	6.71	221		1092.33
	MW-1004P	150		3.3	130	0.0047	17	4.3	200	7.21	287		1076.74
	MW-1004S	55		3.9	46	0.0023	0.72	6.9	130	6.31	153.5		1096.12
	MW-1005	68		< 0.54	300	19	470	14	650	6.07	858		1139.74
	MW-1005P	240		3.9	210	0.064	140	2.6	300	6.9	441		1139.57
	MW-1005S	150		< 0.54	140	3.6	190	8.8	230	6.8	323		1139.05
	MW-1010P	140		74	130	< 0.001	18	5.9	200	7.42	285		1077.43
10/96													
	MW-1000PR	38		57	36	0.01	140	7.1	76	7.37	108.5		1068.99
	MW-1002	41		3.5	42	0.0063	0.2	6.9	85	6.92	155.1		1090.73
	MW-1002G	86		< 0.54	93	0.0039	< 0.18	11	120	6.79	226		1090.78
	MW-1004P	160		5.9	120	0.0042	14	4.2	160	7.23	340		1076.74
	MW-1004S	66		1.8	59	0.0049	0.29	6.5	100	6.25	159.5		1095.43
	MW-1005	64		5	320	17	430	14	550	6.16	948		1137.60

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/96													
	MW-1005P	260		8.2	200	0.37	67	3.6	280	7.19	471		1137.46
	MW-1005S	160		0.63	130	3.6	200	8.2	220	7.09	329		1137.07
	MW-1010P	150		39	130	0.0026	21	5.8	170	7.6	302		1076.75
01/97													
	MW-1000PR	27		33	33	0.0093	150	9.8	160	7.22	112.4		1070.35
	MW-1002	42		0.99	46	0.011	< 0.18	6.3	110	7.47	123.8		1092.32
	MW-1002G	80		1.9	96	0.0024	< 0.18	9.6	180	7.15	245		1092.43
	MW-1004P	160		6.2	120	0.015	34	5.5	220	7.42	238		1077.50
	MW-1004S	61		5.1	62	0.0061	0.25	6.6	150	7.03	163.7		1095.33
	MW-1005	79		15	300	23	540	13	600	5.91	921		1138.10
	MW-1005P	260		2.7	210	0.073	24	5.4	280	7.04	462		1137.41
	MW-1005S	160		4	140	3.8	200	7.4	250	6.8	321		1137.05
	MW-1010P	140		56	130	0.0018	28	5.8	180	7.23	282		1078.40
04/97													
	MW-1000PR	36		32	43	0.043	190	9.9	160	7.46	132.9		1072.62
	MW-1002	41		0.79	46	0.007	0.87	7	110	7.4	140		1094.09
	MW-1002G	81		< 0.54	100	0.0029	< 0.18	10	200	7	260		1094.21
	MW-1004P	140		16	130	0.008	17	6.9	210	7.25	311		1078.42
	MW-1004S	60		1.8	59	0.0049	0.72	8.2	110	6.51	165.8		1096.67
	MW-1005	66		4.5	280	21	510	12	620	6.34	812		1139.51
	MW-1005P	250		1.6	220	0.41	77	5.8	320	7	480		1138.85
	MW-1005S	160		1.6	150	4.1	210	9.5	250	6.8	344		1138.40
	MW-1010P	150		15	150	0.008	120	6.7	170	7.43	346		1081.61
07/97													

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/97													
	MW-1000PR	33		29	39	0.0079	61	7.8	110	6.72	107.1		1073.70
	MW-1002	30		1.3	45	0.0087	0.8	6.6	88	6.38	118.4		1091.83
	MW-1002G	78		< 0.54	100	0.0051	< 0.18	9.3	200	6.51	271		1094.93
	MW-1004P	140		14	140	0.0035	12	6.5	200	6.94	277		1083.61
	MW-1004S	55		2	64	0.0091	0.38	8	130	6.36	202		1096.13
	MW-1005	63		5.9	300	29	800	12	220	6.22	755		1137.92
	MW-1005P	240		2	230	0.087	66	6.7	280	7.03	448		1137.66
	MW-1005S	140		0.71	150	4	200	9.8	260	6.83	689		1137.65
	MW-1010P	130		48	140	0.001	26	7	170	7.25	295		1083.07
10/97													
	MW-1000PR	40		34	45	0.0044	110	5.9	82	6.55	132		1087.37
	MW-1002	40		0.86	46	0.003	0.52	6	76	6.02	114		1090.89
	MW-1002G	88		< 0.54	98	< 0.001	< 0.18	7.8	160	6.35	228		1090.97
	MW-1004P	150		40	140	0.0047	10	5.3	120	6.91	349		1096.14
	MW-1004S	58		1.6	75	0.0057	0.93	15	100	6.13	201		1097.72
	MW-1005	77		< 0.54	280	23	590	10	510	6	804		1138.61
	MW-1005P	240		< 0.54	230	0.17	62	< 5	260	6.9	505		1137.77
	MW-1005S	150		< 0.54	150	4.2	210	6.2	190	6.77	351		1137.49
	MW-1010P	140		30	140	< 0.001	29	5.1	170	7.03	303		1087.13
01/98													
	MW-1000PR	54		40	110	0.0061	490	180	96	6.47	576		1087.51
	MW-1002	40		1.4	47	0.034	0.26	7.6	82	7.15	109.8		1090.00
	MW-1002G	82		< 0.54	100	0.0034	< 0.18	12	150	6.85	218		1090.06
	MW-1004P	150		27	140	0.012	12	8.8	140	7.13	271		1097.86

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/98													
	MW-1004S	48		1.6	58	0.0027	0.3	11	120	6.6	140.1		1099.89
	MW-1005	71		< 0.54	260	21	490	14	490	6.1	782		1136.65
	MW-1005P	250		0.73	220	0.41	72	11	270	7.06	456		1136.00
	MW-1005S	170		< 0.54	120	3.3	170	11	200	7.09	313		1136.35
	MW-1010P	140		26	130	< 0.001	29	9.2	190	7.4	284		1087.61
04/98													
	MW-1000PR	93		98	470	0.044	3000	310	770	6.69	888		1089.61
	MW-1002	30		0.86	37	0.05	1.7	< 5	89	7.32	131.7		1095.91
	MW-1002G	75		< 0.54	98	0.0047	0.21	11	180	6.97	245		1095.83
	MW-1004P	96		20	130	0.0064	9.9	8.5	170	7.41	303		1099.54
	MW-1004S	47		0.92	60	0.0049	0.52	10	140	7.97	164.6		1103.49
	MW-1005	69		< 0.54	250	21	500	13	440	6.06	725		1139.07
	MW-1005P	240		1.1	210	0.077	29	9.6	280	7.36	461		1137.92
	MW-1005S	140		< 0.54	140	4.2	200	11	250	7.19	332		1137.81
	MW-1010P	130		19	130	0.0034	43	5.6	170	7.64	294		1089.49
07/98													
	MW-1000PR	71		66	480	0.076	1800	350	250	6.28	1097		1086.30
	MW-1002	44		0.9	50	0.0077	0.92	8.2	100	6.55	124.8		1090.67
	MW-1002G	82		0.69	93	0.0038	< 0.18	13	180	6.81	215		1090.72
	MW-1004P	160		10	130	0.0077	32	9.2	220	7.08	292		1103.73
	MW-1004S	40		1.4	60	0.0054	0.29	13	140	6.5	162.3		1104.89
	MW-1005	130		< 0.54	240	17	400	16	440	6.16	644		1138.11
	MW-1005P	260		< 0.54	220	0.34	100	12	270	7.01	458		1137.63
	MW-1005S	160		11	150	3.9	200	15	230	6.7	305		1137.32

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/98													
	MW-1010P	150		27	130	0.0034	29	11	160	7.24	284		1086.64
10/98													
	MW-1000PR	100		53	570	0.012	2000	480	960	6.24	1338		1086.24
	MW-1002	52		0.56	57	0.0096	0.4	6.9	120	7.13	158		1090.03
	MW-1002G	76		< 0.54	97	< 0.001	< 0.18	13	120	7	194		1090.04
	MW-1004P	140		5	140	0.0094	12	8.6	150	7.06	327		1102.49
	MW-1004S	48		1.1	60	0.0029	0.45	14	98	6.29	324		1104.57
	MW-1005	65		< 0.54	250	19	460	17	430	6.12	724		1136.87
	MW-1005P	230		1.9	220	0.17	63	9.4	250	6.96	477		1136.19
	MW-1005S	150		< 0.54	150	3.9	210	13	180	6.82	327		1136.02
	MW-1010P	130		20	130	< 0.001	22	8.6	190	7.53	309		1086.42
02/99													
	MW-1000PR	120		37	760	1.2	4800	560	1200	6.15	1293		1086.21
	MW-1002	54		< 0.54	60	0.012	0.71	8.3	92	7.29	142.9		1089.33
	MW-1002G	85		< 0.54	97	0.0035	0.24	11	160	6.54	215		1089.39
	MW-1004P	160		2.6	140	0.007	12	7.6	140	7.47	267		1101.91
	MW-1004P (Dup)	160		2.8	140	0.0069	12	7.6	170				
	MW-1004S	44		0.6	59	0.005	0.62	11	120	6.59	141.8		1103.70
	MW-1005	74		< 0.54	230	20	470	12	370	6.21	598		1135.69
	MW-1005P	250		< 0.54	220	0.066	27	7.8	250	7.6	449		1135.35
	MW-1005S	170		< 0.54	150	4	200	8.9	180	6.87	319		1135.21
	MW-1010P	140		24	130	0.0046	20	8.3	170	7.01	288		1086.37
	MW-1013B	630		36	2300	0.045	25000	1400	3100	6.2	3540		1093.95
	MW-1013C	480		100	2100	0.92	7200	1300	3000	6.3	3170		1095.27

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
02/99														
	MW-1014B		510		810	2100	0.062	23000	1200	2900	6.2	3280		1105.62
	MW-1014C		360		< 4.7	980	14	4300	520	1200	6.3	1900		1103.39
04/99														
	MW-1000PR		120		54	740	1.2	5300	440	1300	6.2	1319		1086.61
	MW-1000PR	(Dup)	120		55	770	1.3	5300	340	1200				
	MW-1002		52		0.51	59	0.0018	< 0.41	7.3	72	6.6	160		1091.06
	MW-1002G		85		< 0.47	95	< 0.001	< 0.41	9.8	100	6.5	248		1091.10
	MW-1004P		160		3.2	130	0.0066	9	6.6	140	6.7	294		1103.29
	MW-1004S		46		1.7	60	0.0037	0.87	10	82	6.1	157		1105.50
	MW-1005		69		< 0.47	200	20	480	11	430	6.3	596		1137.97
	MW-1005P		250		1.1	210	0.049	23	7.8	230	7	464		1136.65
	MW-1005S		160		< 0.47	140	4.1	210	8.6	210	7	297		1136.65
	MW-1010P		160		12	140	0.019	67	7.6	140	7.1	284		1086.95
	MW-1013													1105.11
	MW-1013A													1094.73
	MW-1013B		550		16	2300	0.33	30000	770	3700	6.2	3130		1094.58
	MW-1013C		430		75	2200	0.84	7700	920	3300	6.4	3030		1095.73
	MW-1014													
	MW-1014A													1103.93
	MW-1014B		460		420	2100	0.033	23000	770	3300	6.2	2890		1106.23
	MW-1014C		330		< 4.7	1000	15	4500	440	1200	6.3	1623		1102.83
07/99														
	MW-1000PR		130	< 42	130	770	3.3	5400	380	1300	6.09	1310		1087.96
	MW-1000PR	(Dup)	120	< 42	97	770	3.2	5600	350	1300				

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/99													
	MW-1002	50	< 4.2	< 4.7	58	0.0027	< 0.41	5.9	110	6.73	148.6		1092.31
	MW-1002G	84	5	< 4.7	100	0.0022	< 0.41	11	180	7	227		1092.30
	MW-1004P	160	< 4.2	< 6.9	140	0.014	10	2.7	180	7.07	308		1104.97
	MW-1004S	40	< 4.2	< 6.9	59	0.0068	2.3	10	100	5.94	157.9		1107.29
	MW-1005	65	5	< 4.7	200	19	460	12	530	6.15	603		1139.21
	MW-1005P	240	< 4.2	< 4.7	220	0.054	51	7.3	250	6.91	501		1138.09
	MW-1005S	160	< 4.2	< 4.7	150	4.3	220	9.5	240	6.72	331		1138.05
	MW-1010P	150	16	12	140	0.0074	59	5.5	200	7.19	269		1088.46
	MW-1013												1106.07
	MW-1013A												1095.38
	MW-1013B	620	< 42	33	2200	0.76	29000	1600	3800	6.39	3020		1095.20
	MW-1013C	430	83	50	2100	1.3	7300	870	2700	6.42	3020		1096.67
	MW-1014												
	MW-1014A												1106.42
	MW-1014B	540	70	520	2100	0.072	23000	580	3100	6.34	3540		1107.13
	MW-1014C	370	< 42	16	930	14	4000	370	1200	6.39	1657		1103.90
10/99													
	MW-1000PR	130	< 8.4	17	760	3.6	5200	680	1100	6.7	1400		1086.75
	MW-1002	46		< 0.47	51	0.029	< 0.41	6.9	91	7	140		1090.59
	MW-1002G	87		< 0.47	100	0.0061	< 0.41	12	150	7.2	240		1090.62
	MW-1004P	160	< 4.2	1.9	140	0.014	8.1	2.8	180	7.4	320		1104.88
	MW-1004S	41	< 4.2	0.83	57	0.0089	0.63	15	84	6.5	160		1106.69
	MW-1005	65		< 0.47	190	18	410	17	400	6.5	570		1137.86
	MW-1005P	240		< 0.47	220	0.97	88	< 1.5	260	7.3	460		1137.64

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/99														
	MW-1005S		160		< 0.47	150	4.1	210	5.6	210	7	320		1137.32
	MW-1010P		150	6.8	3.5	140	0.0096	65	5.3	170	7.6	300		1086.81
	MW-1010P	(Dup)	140	13	0.84	140	0.011	130	5.2	170				
	MW-1013													1105.80
	MW-1013A													1095.51
	MW-1013B		540	< 42	< 9.4	2200	0.17	28000	1900	3700	6.6	3200		1095.49
	MW-1013C		400	< 42	< 9.4	2200	1.4	7600	2000	3000	6.8	3300		1096.97
	MW-1014													1111.60
	MW-1014A													1107.87
	MW-1014B		570	< 42	530	2200	< 0.01	23000	1600	3100	6.4	3200		1108.33
	MW-1014C		380	< 42	< 9.4	960	14	4000	700	1200	6.6	1600		1104.81
01/00														
	MW-1000PR		140		1.9	670	4.4	4100	610	1000	6.3	1300		1086.61
	MW-1002		57		< 0.47	65	< 0.001	< 0.41	5.6	110	6.9	170		1089.42
	MW-1002G		87		< 0.47	98	0.0031	< 0.41	12	120	7.1	240		1089.43
	MW-1004P		160		< 0.47	130	0.085	56	< 5	150	6.7	310		1103.16
	MW-1004S		43		< 0.47	59	0.0051	0.65	16	110	6.7	160		1104.64
	MW-1005		85		< 0.47	200	16	530	16	300	6.8	600		1137.18
	MW-1005P		250		< 0.47	200	0.14	47	< 5	280	6.7	480		1136.65
	MW-1005S		170		< 0.47	150	3.9	210	< 5	210	6.7	380		1136.76
	MW-1010P		140		2.2	130	0.017	39	< 5	130	6.8	280		1086.65
	MW-1013													1104.64
	MW-1013A													1095.62
	MW-1013B		560	17	< 4.7	2100	0.41	30000	1700	3300	6.4	3000		1095.59

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/00														
	MW-1013C		510	< 15	< 4.7	2100	1.5	7300	1700	2900	6.5	2700		1097.10
	MW-1014													1112.07
	MW-1014A													1109.22
	MW-1014B		490	< 15	500	1900	0.055	20000	1400	3200	6.5	3000		1108.88
	MW-1014C		320	< 15	< 0.47	810	12	3200	540	1200	6.6	1500		1105.18
	MW-1014C	(Dup)	300	< 15	< 0.47	820	11	3100	560	1300				
04/00														
	MW-1000PR		140		19	720	3.4	3800	560	920	6.93	1274		1087.26
	MW-1000PR	(Dup)	150		18	700	4.3	4000	550	1000				
	MW-1002		55		0.91	67	0.0039	< 0.41	5.2	98	6.82	166		1090.33
	MW-1002G		89		< 0.6	100	0.0027	< 0.41	11	140	6.84	239		1090.34
	MW-1004P		160		1.7	140	0.012	7.9	< 5	170	6.86	293		1103.32
	MW-1004S		42		1.3	56	0.0027	< 0.41	15	98	6.9	156.3		1104.96
	MW-1005		66		< 0.67	190	18	410	13	400	6.76	598		1138.07
	MW-1005P		250		< 0.6	220	0.37	80	< 5	220	7.27	483	64	1137.05
	MW-1005S		170		< 0.6	150	4.2	220	< 5	230	7.04	354		1136.99
	MW-1010P		140		9.9	150	0.0066	24	< 5	140	7.1	283	77	1087.46
	MW-1013												97	1103.87
	MW-1013A												97	1095.36
	MW-1013B		520	12	19	2200	0.27	32000	1200	3600	6.63	3120	230	1095.54
	MW-1013C		460	14	11	2200	1.6	7800	1700	2900	6.73	3370	177	1097.39
	MW-1014												160	1112.41
	MW-1014A		390	15	< 6	1300	0.55	7200	970	1800	6.87	2220	165	1109.24
	MW-1014B		480	< 7.5	520	2100	< 0.15	22000	1500	3200	6.43	2940	290	1108.85

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/00														
	MW-1014C		320	14	< 6	870	13	3600	440	1000	6.65	1470	88	1105.25
07/00														
	MW-1000PR		140	< 8.6	7.3	710	2.3	5000	550	930	6.3	1200		1087.30
	MW-1002		52	< 1.7	< 0.53	66	< 0.005	< 2	5.7	110	6.7	160		1092.01
	MW-1002G		90	< 1.7	< 0.53	110	< 0.005	< 2	12	160	6.6	220		1092.00
	MW-1004P		160	< 1.7	0.65	150	0.0086	22	< 5	160	6.3	300		1104.69
	MW-1004S		41	< 1.7	1.2	61	< 0.005	< 2	16	100	6.6	150		1106.70
	MW-1005		64	< 1.7	0.7	210	20	600	15	470	6.6	520		1138.43
	MW-1005P		250	< 1.7	< 0.53	230	0.058	75	< 5	290	6.5	460		1138.08
	MW-1005S		170	2.9	< 0.53	170	4.6	240	< 5	200	6.5	330		1137.92
	MW-1010P		140	12	14	140	< 0.025	26	< 5	190	6.5	290		1087.16
	MW-1010P	(Dup)	150	11	9.9	140	0.012	40	< 5	160				
	MW-1013													1104.58
	MW-1013A													1095.79
	MW-1013B		660	< 21	14	2300	< 0.36	34000	1600	3200	6.3	3000		1096.09
	MW-1013C		520	< 21	< 12	2300	2.2	8400	1600	3300	6.3	3100		1097.84
	MW-1014													1113.00
	MW-1014A		430	< 21	< 12	1400	1.2	7100	960	2200	6.6	2000		1110.50
	MW-1014B		510	< 21	330	2200	< 0.36	21000	1600	3000	6.3	3000		1109.47
	MW-1014C		350	39	< 12	890	13	3500	480	1400	6.4	1400		1105.82
10/00														
	MW-1000PR		170		< 2.6	680	6.6	4200	460	1100	6.19	1189		1086.79
	MW-1002		47		< 0.53	58	< 0.005	< 2	5.7	120	6.35	125		1090.59
	MW-1002G		89		< 0.53	110	< 0.005	< 2	12	150	6.6	223		1090.62

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/00														
	MW-1004P		160		0.8	140	0.008	16	< 5	200	7.16	284		1104.41
	MW-1004P	(Dup)	160		< 0.53	140	0.17	79	< 5	200				
	MW-1004S		35		1	58	< 0.005	< 2	18	130	5.99	134.1		1105.87
	MW-1005		58		0.58	190	17	390	15	430	6.17	530		1137.55
	MW-1005P		240		0.74	220	0.13	38	< 5	260	7.26	448		1137.56
	MW-1005S		170		< 0.53	160	4.3	220	< 5	210	7.34	330		1137.20
	MW-1010P		150		4.3	140	0.41	250	< 5	220	7.49	268		1086.67
	MW-1013													1105.06
	MW-1013A													1096.20
	MW-1013B		620		< 12	2200	0.84	35000	1500	3200	6.28	3180		1096.45
	MW-1013C		540		< 12	2200	1.6	8200	1600	3200	6.37	3310		1097.86
	MW-1014													1113.98
	MW-1014A		430		< 12	1400	0.96	6700	880	2300	6.68	2250		1111.39
	MW-1014B		520		430	2200	< 0.36	21000	1500	2900	6.26	3240		1110.09
	MW-1014C		390		< 12	840	12	3200	450	1300	6.36	1490		1106.21
01/01														
	MW-1000PR		180		< 2.6	610	6.8	3700	440	1000	6.13	1192	143	1088.39
	MW-1002		58		< 0.53	66	< 0.005	< 2	6.7	120	6.55	156.3		1089.93
	MW-1002G		90		< 0.53	99	< 0.005	< 2	12	150	6.48	253		1089.93
	MW-1004P		160		< 0.53	130	0.085	52	< 5	130	7.25	293	46	1103.37
	MW-1004S		39		< 0.53	56	< 0.005	< 2	19	100	5.9	139.3	180	1104.73
	MW-1005		58		< 0.53	160	16	370	15	300	6.18	520		1136.92
	MW-1005P		250		< 0.53	210	0.058	24	< 5	260	7.17	454	37	1136.65
	MW-1005S		170		< 0.53	150	4.1	210	< 5	200	6.95	335		1136.42

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/01														
	MW-1010P		160		< 0.53	140	0.17	180	< 5	170	7.57	270	88	1088.16
	MW-1013													1103.78
	MW-1013A													1095.72
	MW-1013B		590		< 12	1900	0.41	30000	1600	3300	6.14	3230	174	1095.86
	MW-1013C		520		< 12	2100	2.6	7800	1600	3200	6.27	3310	80	1098.03
	MW-1013C	(Dup)	470		< 12	2000	2.5	7700	1600	3000				
	MW-1014													1113.86
	MW-1014A		410		< 12	1200	0.83	5400	970	1900	6.46	2310	113	1111.59
	MW-1014B		550		450	1900	< 0.36	18000	1400	2600	6.29	3140	226	1109.89
	MW-1014C		340		< 12	760	11	2900	450	1100	6.46	1452	64	1106.15
04/01														
	MW-1000PR		170		14	650	1.3	2900	480	910	5.9	1200	175	1091.12
	MW-1002		60		< 2.7	72	0.012	< 2	6.4	99	6.5	130		1095.48
	MW-1002G		89		< 2.7	110	< 0.005	< 2	12	170	6.3	200		1095.38
	MW-1002G	(Dup)	89		< 2.7	110	< 0.005	< 2	11	200				
	MW-1004P		160		< 2.7	140	0.055	54	< 5	160	7	260	144	1107.47
	MW-1004S		35		< 2.7	60	< 0.005	< 2	19	73	5.5	130	230	1110.93
	MW-1005		61		< 2.7	170	15	350	14	370	5.6	460		1140.04
	MW-1005P		240		< 2.7	220	0.055	27	< 5	290	6.7	430	17	1138.80
	MW-1005S		170		< 2.7	160	4.4	230	< 5	210	6.7	310		1139.04
	MW-1010P		150		5.5	140	0.066	64	< 5	130	7.1	250	-8	1090.56
	MW-1013													1104.08
	MW-1013A													1097.10
	MW-1013B		530		35	2300	0.72	40000	1600	3300	6	3400	203	1097.57

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/01														
	MW-1013C		440		< 13	2300	2.1	9100	1600	3000	6.3	3000	84	1100.12
	MW-1014													1114.62
	MW-1014A		430		< 13	1400	0.69	6700	920	1700	6.3	2300	138	1112.51
	MW-1014B		520		530	2000	< 0.15	19000	1400	3300	6.1	3200	207	1111.14
	MW-1014C		330		< 13	830	12	3100	420	1100	6.2	1400	55	1107.65
	MW-1014C	(Dup)												
	MW-1015A		75	< 2.3	< 2.7	88	0.0082	< 2	8.2	120	7.1	160		1092.09
	MW-1015B		180	< 2.3	< 2.7	140	0.069	140	< 5	290	7.6	460		1091.09
05/01														
	MW-1015A		77	< 2.3	< 2.7	83	< 0.005	2.5	9.2	110	7	150		1089.83
	MW-1015B		180	< 2.3	< 2.7	140	< 0.005	36	5.1	220	7.8	470		1089.79
06/01														
	MW-1015A		75	< 2.3	< 2.7	85	< 0.005	4.2	8.4	110	7	150		1089.53
	MW-1015B		180	< 2.3	< 2.7	140	< 0.005	23	< 5	220	7.6	450		1089.69
07/01														
	MW-1000PR		180	< 11	< 13	660	7.1	3900	450	950	5.99	1130	147	1087.88
	MW-1002		54	< 2.3	< 2.7	67	< 0.005	< 2	7.6	79	6.12	123		1092.93
	MW-1002G		89	< 2.3	3.6	110	< 0.005	< 2	11	120	6.63	202		1092.90
	MW-1004P		150	< 2.3	< 2.7	150	0.015	14	< 5	160	6.9	260	99	1107.30
	MW-1004S		34	< 2.3	< 2.7	60	< 0.005	< 2	22	96	5.6	122	196	1109.33
	MW-1005		53	< 2.3	< 2.7	190	15	420	14	330	5.87	493		1140.32
	MW-1005P		230	< 2.3	< 2.7	230	0.087	49	< 5	250	7.13	428	8	1140.03
	MW-1005P	(Dup)	240	< 2.3	< 2.7	230	0.77	80	< 5	210				
	MW-1005S		170	< 2.3	< 2.7	170	4.4	230	< 5	190	6.91	308		1139.84

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/01													
	MW-1010P	140	6.1	< 2.7	150	0.16	150	6	140	7.08	250	173	1087.82
	MW-1013												1106.08
	MW-1013A												1097.19
	MW-1013B	490	< 15	33	2400	0.89	40000	1600	3500	6.09	3290	252	1097.63
	MW-1013C	460	< 15	< 13	2300	3.2	9000	1600	3500	6.28	3400	30	1099.39
	MW-1014												1115.67
	MW-1014A	420	< 15	< 13	1500	0.7	6500	960	2000	6.24	2250	147	1112.88
	MW-1014B	440	< 15	480	2200	< 0.15	20000	1500	3000	6.01	2990	235	1112.02
	MW-1014C	330	21	< 13	810	11	3000	420	1100	6.15	1360	40	1108.11
	MW-1015A	75	< 2.3	< 2.7	90	< 0.005	7.5	9.8	110	6.55	153		1088.74
	MW-1015B	180	< 2.3	< 2.7	150	< 0.005	19	< 5	240	7.32	451		1088.67
08/01													
	MW-1015A	76	< 2.3	< 2.7	90	< 0.005	9.7	7.6	100	6.68	158.7		1088.12
	MW-1015B	180	< 2.3	< 2.7	150	< 0.005	13	5.3	240	7.53	462		1088.21
09/01													
	MW-1015A	79	< 2.3	< 2.7	82	0.02	15	7.8	150	7.19	159.9		1087.55
	MW-1015B	180	< 2.3	< 2.7	130	0.0052	18	< 5	290	7.67	458		1087.59
10/01													
	MW-1000PR	190	< 11	< 13	560	2.8	3300	450	940	5.97	1109	163	1087.26
	MW-1002	53		< 2.7	57	< 0.005	< 2	7.1	140	6.03	123.3		1090.63
	MW-1002G	89		< 2.7	94	< 0.005	< 2	11	140	6.1	203		1090.63
	MW-1004P	160	< 2.3	< 2.7	130	0.1	65	< 5	130	6.81	260	94	1105.50
	MW-1004S	34	< 2.3	< 2.7	51	< 0.005	< 2	23	110	5.73	121.3	198	1107.06
	MW-1004S (Dup)	33	< 2.3	< 2.7	50	< 0.005	< 2	23	110				

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/01													
	MW-1005	49		< 2.7	170	12	340	15	450	5.72	530		1138.85
	MW-1005P	240		< 2.7	200	0.2	68	< 5	270	6.63	424	5	1138.59
	MW-1005S	170		< 2.7	140	3.9	210	< 5	230	6.45	306		1138.31
	MW-1010P	150	13	5.3	120	0.0097	18	5.4	180	6.63	246		1087.10
	MW-1013												1106.69
	MW-1013A												1096.90
	MW-1013B	560	18	69	2000	0.66	34000	1600	3200	6.06	3320	201	1097.19
	MW-1013C	480	22	< 13	2000	2.7	8500	1700	3200	6.22	3380	21	1099.04
	MW-1014												1116.86
	MW-1014A	430	37	< 13	1300	1.5	6000	1000	1900	6.34	2280	152	1114.03
	MW-1014B	510	20	490	1900	< 0.15	18000	1600	2900	6.05	3150	219	1112.38
	MW-1014C	350	15	< 13	710	9.6	2900	410	990	6.17	1354	56	1108.10
	MW-1015A	77	2.3	< 2.7	78	< 0.005	10	10	130	6.6	160		1087.58
	MW-1015B	180	< 2.3	< 2.7	130	< 0.005	8.6	< 5	310	7.1	450		1087.67
11/01													
	MW-1015A	76	< 2.3	< 2.7	85	< 0.005	11	9.7	110	6.6	160		1087.86
	MW-1015B	180	< 2.3	< 2.7	140	< 0.005	8.9	< 5	280	7.2	450		1087.84
12/01													
	MW-1015A	78	< 2.3	< 2.7	87	0.023	13	7.8	150	6.52	163.5		1088.72
	MW-1015B	180	< 2.3	< 2.7	140	0.0069	11	< 5	300	7.03	468		1088.74
01/02													
	MW-1000PR	190		< 13	570	6.2	3500	440	970	6.09	1099	176	1088.25
	MW-1002	59		< 2.7	64	< 0.005	< 2	6.4	110	6.44	129.3		1091.30
	MW-1002G	91		< 2.7	99	< 0.005	< 2	10	150	6.54	203		1091.25

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/02														
	MW-1004P		160		< 2.7	130	< 0.005	9.6	< 5	190	6.75	276	83	1106.20
	MW-1004P	(Dup)	160		< 2.7	130	0.0061	11	< 5	200				
	MW-1004S		34		< 2.7	53	< 0.005	< 2	22	140	5.89	124.1	207	1107.79
	MW-1005		55		< 2.7	160	13	380	14	310	5.86	455		1139.08
	MW-1005P		250		< 2.7	200	0.077	30	< 5	270	7.03	418	7	1138.67
	MW-1005S		170		< 2.7	150	4.1	210	< 5	260	6.86	304		1138.59
	MW-1010P		150		< 2.7	130	0.069	76	< 5	230	6.95	246	-25	1087.87
	MW-1013													1105.28
	MW-1013A													1097.02
	MW-1013B		600		52	2100	0.71	36000	1600	3600	6.24	3380	201	1097.33
	MW-1013C		510		< 13	2100	4.5	8800	1700	3400	6.32	3430	48	1099.65
	MW-1014													1116.91
	MW-1014A		460		< 13	1300	0.65	5900	1000	2100	6.55	2280	170	1114.51
	MW-1014B		540		540	1900	< 0.15	18000	1500	3100	6.22	3110	222	1112.61
	MW-1014C		350		< 13	690	9.2	2600	390	1100	6.55	1341	38	1108.48
	MW-1015A		78	< 2.3	< 2.7	82	< 0.005	12	7.8	150	6.85	164.2		1088.65
	MW-1015B		180	< 2.3	< 2.7	130	< 0.005	25	< 5	310	7.44	458		1088.54
02/02														
	MW-1015A		78	< 2.3	< 2.7	87	< 0.005	14	7.6	130	6.5	162		1088.38
	MW-1015B		180	< 2.3	< 2.7	140	0.03	33	< 5	290	7	483		1087.90
03/02														
	MW-1015A		78	2.3	< 2.7	88	0.0074	15	8.8	120	6.4	170		1087.91
	MW-1015B		180	< 2.3	< 2.7	140	0.0066	22	< 5	280	6.5	460		1087.79
04/02														

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/02													
	MW-1000PR	190		< 13	570	2.6	2800	430	970	6.2	1088	153	1094.71
	MW-1002	61		< 2.7	65	< 0.005	< 2	6.8	130	6.5	122		1093.61
	MW-1002 (Dup)	60		< 2.7	65	< 0.005	< 2	7	130				
	MW-1002G	91		< 2.7	100	< 0.005	< 2	9.4	150	6.4	201		1093.66
	MW-1004P	160		< 2.7	140	0.0053	8.3	< 5	170	7.1	263	188	1105.74
	MW-1004S	37		< 2.7	58	< 0.005	< 2	22	120	5.9	129	223	1108.04
	MW-1005	54		< 2.7	160	12	280	14	400	6.2	472		1140.78
	MW-1005P	240		< 2.7	210	0.076	20	< 5	270	7.2	434	2	1139.89
	MW-1005S	170		< 2.7	150	4.2	210	< 5	240	7.1	300		1139.89
	MW-1010P	150		< 2.7	140	0.18	180	5.5	200	7.1	249	-19	1094.26
	MW-1013												1105.35
	MW-1013A												1097.18
	MW-1013B	520		110	2200	0.36	34000	1600	3200	6.2	3370	205	1097.63
	MW-1013C	480		14	2100	3.9	8900	1700	3200	6.3	3420	51	1101.39
	MW-1014												1117.24
	MW-1014A	410		16	1400	0.51	5900	1000	1900	6.8	2250	155	1115.15
	MW-1014B	500		470	1900	< 0.15	17000	1500	3100	6.4	3140	218	1113.00
	MW-1014C	340		15	710	9.1	2600	390	1000	6.4	1310	36	1109.25
	MW-1015A	80		< 2.7	86	< 0.005	15	9	140	6.8	164		1093.59
	MW-1015B	180		< 2.7	140	< 0.005	73	< 5	320	7.4	467		1092.33
07/02													
	MW-1000PR	200	10	< 13	610	6.2	3600	380	1000	6.28	1093	157	1087.66
	MW-1002	59	< 2.6	< 2.7	66	< 0.005	< 2	5.8	120	6.58	123.7		1093.51
	MW-1002G	92	< 2.6	< 2.7	110	< 0.005	< 2	8.1	160	6.57	208		1093.78

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/02													
	MW-1004P	160	< 2.6	< 2.7	140	0.0056	9.7	< 5	200	7.39	267	106	1107.04
	MW-1004S	38	< 2.6	< 2.7	62	< 0.005	< 2	19	140	6.27	138.4	209	1109.07
	MW-1005	50	3.2	< 2.7	180	12	310	12	390	6.03	528		1141.12
	MW-1005P	250	< 2.6	< 2.7	220	0.12	71	< 5	270	7.19	426	26	1141.25
	MW-1005S	170	3.3	< 2.7	160	4.4	220	< 5	250	7.03	302		1141.05
	MW-1010P	160	16	< 2.7	140	0.03	42	5.8	240	7.43	250	9	1087.55
	MW-1013												1106.66
	MW-1013A												1097.44
	MW-1013B	690	28	150	2300	0.7	39000	1400	3900	6.37	3340	202	1097.95
	MW-1013C	520	< 27	< 13	2300	4.1	10000	1500	3500	6.43	3400	49	1099.76
	MW-1014												1117.37
	MW-1014A	460	< 27	< 13	1400	0.38	6100	910	2100	6.49	2280	177	1114.80
	MW-1014A (Dup)	480	< 27	< 13	1500	0.42	6400	910	2200				
	MW-1014B	550	< 27	550	2100	< 0.15	19000	1400	3000	6.25	3100	245	1113.19
	MW-1014C	350	< 27	< 13	740	9.4	2700	330	1200	6.6	1269	45	1108.93
	MW-1015A	79	< 2.6	< 2.7	88	< 0.005	16	7.7	150	6.91	162.8		1088.64
	MW-1015B	180	< 2.6	< 2.7	140	0.069	53	< 5	350	7.55	496		1088.82
10/02													
	MW-1000PR	200		< 13	600	7.4	3400	370	870	6.14	1088	90	1090.89
	MW-1002	68		< 2.7	72	< 0.005	< 2	< 5	100	6.32	140.5		1095.93
	MW-1002G	96		< 2.7	110	< 0.005	< 2	8.2	180	6.43	211		1095.89
	MW-1004P	160		< 2.7	140	0.033	22	< 5	160	6.96	270	52	1108.31
	MW-1004S	39		< 2.7	61	< 0.005	< 2	20	140	6.26	135.7	168	1110.88
	MW-1005	51		< 2.7	210	12	330	13	470	5.8	655		1141.78

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/02														
	MW-1005	(Dup)	50		< 2.7	210	12	320	12	510				
	MW-1005P		240		< 2.7	210	0.23	54	< 5	300	7.18	428	5	1142.14
	MW-1005S		170		< 2.7	150	4.1	210	< 5	220	6.94	300		1141.94
	MW-1010P		150		< 2.7	140	0.035	120	< 5	200	7.28	269	-60	1089.49
	MW-1013													1107.28
	MW-1013A													1097.85
	MW-1013B		620		210	2300	< 0.15	36000	1600	3000	6.13	3390	221	1097.30
	MW-1013C		570		< 13	2300	5.4	9900	1600	3400	6.36	3520	-46	1101.33
	MW-1014													1118.56
	MW-1014A		470		< 13	1400	0.54	5700	930	1800	6.52	2370	86	1115.50
	MW-1014B		490		450	2000	< 0.15	17000	1300	3300	6.26	3110	221	1114.21
	MW-1014C		360		< 13	730	9.1	2600	330	810	6.49	1299	38	1110.10
	MW-1015A		79		< 2.7	84	< 0.005	13	9.1	150	6.65	162.4		1090.94
	MW-1015B		180		< 2.7	140	0.42	380	< 5	300	6.87	466		1091.21
01/03														
	MW-1000PR		200	11	< 13	590	6.7	3200	390	990	6.2	1080	170	1087.45
	MW-1002		65		< 2.7	66	0.012	< 2	6.4	92	6.5	136		1091.65
	MW-1002G		92		< 2.7	100	0.0089	< 2	9.9	160	6.6	215		1091.63
	MW-1004P		160		< 2.7	130	0.053	42	< 5	150	7.2	274	205	1105.93
	MW-1004S		40		< 2.7	59	< 0.005	< 2	22	110	6.18	208	205	1107.52
	MW-1005		55		< 2.7	290	12	340	14	620	5.6	1079		1140.47
	MW-1005P		250		< 2.7	190	0.52	51	< 5	290	7.2	298	22	1140.70
	MW-1005S		170		< 2.7	150	3.7	200	< 5	220	7	301		1140.35
	MW-1010P		150	19	< 2.7	140	0.036	120	7	180	7.2	257	-24	1086.94

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/03													
	MW-1013												1105.97
	MW-1013A												1097.39
	MW-1013B	630	< 27	92	2200	0.15	33000	1600	3400	6.1	3420	208	1098.58
	MW-1013C	570	< 27	< 13	2300	5.4	9500	1800	3500	6.5	3510	46	1099.80
	MW-1014												1119.07
	MW-1014A	480	< 27	< 13	1400	0.54	5300	1000	2100	6.5	2370	198	1116.36
	MW-1014B	610	< 27	590	2000	< 0.15	17000	1500	2800	6.2	3160	232	1114.14
	MW-1014C	390	< 27	< 13	700	8.3	2400	380	1100	6.4	1311	74	1109.58
	MW-1014C (Dup)	370	< 27	< 13	690	8.3	2400	370	1000				
	MW-1015A	79		< 2.7	83	< 0.005	12	8.5	130	6.8	167		1088.46
	MW-1015B	180		< 2.7	130	0.12	440	< 5	270	7.4	463		1088.27
03/03													
	MW-1015A					< 0.01	16			7.09	164.4		1088.75
	MW-1015B					0.31	170			7.47	458		1088.76
04/03													
	MW-1000PR	200		< 6.7	570	5.1	3200	380	920	6.23	1047	154	1087.83
	MW-1002	68		< 1.3	71	< 0.01	< 2	< 5	100	6.31	133.6		1091.51
	MW-1002G	90		< 1.3	110	< 0.01	< 2	9.5	170	6.51	212		1091.43
	MW-1004P	170		< 1.3	140	0.032	25	< 5	170	7.47	262	178	1105.58
	MW-1004S	41		< 1.3	62	< 0.01	< 2	20	120	6.01	136.7	213	1107.39
	MW-1005	62		< 1.3	390	18	440	22	550	5.71	1080		1139.42
	MW-1005P	230		< 1.3	200	0.73	110	< 5	220	7.06	381	-4	1138.93
	MW-1005S	170		< 1.3	160	4.2	220	< 5	250	6.99	298		1138.82
	MW-1010P	150		4.8	140	< 0.01	14	5.3	170	7.58	253	-32	1087.55

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/03														
	MW-1013													1106.02
	MW-1013A													1097.95
	MW-1013B		660		160	2200	1.2	39000	1500	3500	6.21	3340	203	1097.87
	MW-1013C		540		< 13	2200	4.7	9600	1700	3500	6.39	3450	44	1099.98
	MW-1014													1118.91
	MW-1014A		500		< 13	1400	< 0.29	4600	930	2000	6.38	2280	156	1116.82
	MW-1014B		610		690	2100	< 0.29	19000	1500	3400	6.29	2970	228	1113.96
	MW-1014C		380		< 13	690	8	2400	340	990	6.42	1287	7	1109.35
	MW-1015A		78		< 1.3	88	< 0.01	16	7.7	120	6.89	163.3		1088.49
	MW-1015B		180		< 1.3	150	0.3	180	< 5	310	7.83	456		1088.45
	MW-1015B	(Dup)	190		< 1.3	140	0.21	250	< 5	320				
07/03														
	MW-1000PR		200	12	< 6.7	580	6.6	3200	360	810	6.26	1027	150	1087.76
	MW-1002		63	< 1.2	< 1.3	65	0.0079	< 1	2.9	100	6.48	121.8		1093.00
	MW-1002G		90	< 1.2	< 1.3	110	0.0066	< 1	8	150	6.49	209		1092.92
	MW-1004P		160	< 1.2	< 1.3	150	0.066	43	< 2.5	160	7.25	263	96	1107.30
	MW-1004S		42	< 1.2	< 1.3	69	< 0.005	< 1	20	110	6.36	141.9	186	1109.16
	MW-1005		53	< 1.2	1.4	350	16	450	11	580	5.53	1014		1140.38
	MW-1005P		240	< 1.2	< 1.3	230	1.1	74	< 2.5	260	7.11	439	-3	1140.27
	MW-1005S		170	2.1	< 1.3	160	4.2	230	< 2.5	200	6.95	305		1140.12
	MW-1010P		150	11	< 1.3	150	0.031	120	5.9	170	7.34	255	-20	1087.54
	MW-1013B		620	< 2.6	120	2300	0.61	38000	1600	3100	6.25	3290	200	1098.71
	MW-1013B	(Dup)	580	4.3	110	2300	0.36	37000	1500	3100				
	MW-1013C		500	17	< 13	2300	4.2	9600	1700	3200	6.32	3430	27	1100.31

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/03													
	MW-1014A	420	< 2.6	< 13	1400	0.32	4200	910	1900	6.62	2230	206	1116.45
	MW-1014B	530	< 2.6	500	1900	< 0.29	16000	1400	3800	6.28	2900	240	1114.33
	MW-1014C	340	13	< 13	700	8.2	2500	330	920	6.43	1239	40	1109.74
	MW-1015A	79	< 1.2	< 1.3	90	< 0.005	12	6.6	130	6.89	166.3		1088.38
	MW-1015B	180	< 1.2	< 1.3	140	0.45	170	< 2.5	270	7.58	463		1088.49
10/03													
	MW-1000PR	210		< 6.7	560	6.5	3100	350	810	6.2	1040	166	1086.98
	MW-1002	65		< 1.3	66	< 0.005	4.9	4.6	110	6.3	135		1090.23
	MW-1002G	88		< 1.3	100	< 0.005	1.5	8	160	6.5	209		1090.23
	MW-1004P	160		< 1.3	130	0.13	69	< 2.5	170	7.3	272	48	1104.84
	MW-1004S	42		< 1.3	62	< 0.005	5.4	17	120	6.3	143	167	1106.29
	MW-1005	55		< 1.3	420	18	440	11	850	5.6	1260		1138.41
	MW-1005P	240		< 1.3	210	1	74	< 2.5	260	7.3	436	-18	1138.32
	MW-1005S	170		< 1.3	150	4	210	< 2.5	210	7.2	317		1138.15
	MW-1010P	140		< 1.3	140	0.064	130	6.4	180	7.3	343	-47	1086.76
	MW-1013												1109.30
	MW-1013A												1097.00
	MW-1013B	590		110	2300	< 0.29	35000	1500	3200	6.3	3350	199	1097.29
	MW-1013B (Dup)	550		140	2200	0.83	37000	1500	3200				
	MW-1013C	540		< 13	2200	6.2	9800	1700	3200	6.4	3520	16	1099.27
	MW-1014												1119.25
	MW-1014A	440		< 13	1400	1	3000	980	2000	6.6	2310	218	1116.50
	MW-1014B	540		640	2100	< 0.29	19000	1500	3000	6.4	2930	251	1113.77
	MW-1014C	340		< 1.3	680	7.8	2400	320	910	6.6	1256	55	1109.01

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/03													
	MW-1015A	78		< 1.3	83	< 0.005	11	7.1	140	7.1	167		1087.24
	MW-1015B	170		< 1.3	130	0.67	290	< 2.5	320	7.8	480		1087.21
01/04													
	MW-1000PR	210		< 6.7	530	4.3	2900	360	790	6.25	1065	98	1087.59
	MW-1002	64		< 1.3	69	0.006	3.1	6.1	130	6.55	141.5		1089.83
	MW-1002G	89		< 1.3	100	< 0.005	2.6	8.6	160	6.62	215		1089.80
	MW-1004P	160		< 1.3	140	0.11	78	< 2.5	220	7.22	290	52	1104.24
	MW-1004S	42		< 1.3	62	< 0.005	< 1	19	170	6.21	133.7	208	1105.62
	MW-1005	56		< 1.3	260	15	360	14	430	5.73	829		1137.52
	MW-1005 (Dup)	58		< 1.3	270	19	540	14	510				
	MW-1005P	240		< 1.3	220	0.38	43	< 2.5	260	7.28	438	-2	1137.38
	MW-1005S	170		< 1.3	150	4.2	220	< 2.5	240	6.9	329		1137.23
	MW-1013												1108.22
	MW-1013A												1096.91
	MW-1013B	580		170	2200	1.6	40000	1600	3200	6.15	3370	212	1097.13
	MW-1013C	490		40	2200	2.8	9100	1700	3300	6.32	3510	51	1099.18
	MW-1014												1118.37
	MW-1014A	490		< 13	1300	1	3100	1000	2000	6.63	2310	185	1116.08
	MW-1014B	570		590	2000	< 0.29	17000	1600	3100	6.26	3130	198	1113.07
	MW-1014C	310		< 1.3	650	7.4	2300	320	930	6.42	1259	34	1108.52
	MW-1015A	79		< 1.3	85	< 0.005	14	8.7	160	7.17	165.1		1087.39
	MW-1015B	180		< 1.3	130	0.44	240	< 2.5	310	7.78	471		1087.43
03/04													
	MW-1010P	150		2.1	150	0.095	180	6.9	160	7.66	269		1083.41

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/04													
	MW-1000PR	210		< 6.7	530	7	2900	330	720	6.73	1025	105	1088.38
	MW-1000PR DNR Split	205	13.5	2.1	540	6.6	3010	363	750				
	MW-1002	61		< 1.3	65	< 0.005	< 1	6	37	6.74	128.4		1092.45
	MW-1002G	90		< 1.3	100	0.022	< 1	8.3	92	6.76	206		1092.38
	MW-1004P	160		< 1.3	140	0.1	77	< 2.5	160	7.26	275	117	1104.46
	MW-1004S	43		6.4	64	< 0.005	< 1	19	66	6.58	143.3	156	1105.94
	MW-1005	57		< 1.3	280	17	430	14	500	6.29	807		1139.18
	MW-1005P	240		< 1.3	220	0.11	20	< 2.5	220	7.05	436	4	1137.86
	MW-1005S	160		< 1.3	150	4.3	210	3.7	130	6.92	298		1138.11
	MW-1010P	140		< 1.3	140	0.013	97	8.8	130	7.55	276	20	1088.35
	MW-1010P DNR Split	144	14.5	1.6	145	< 0.1	92	7.8	178				
	MW-1013												1108.20
	MW-1013A												1097.43
	MW-1013B	560		230	2200	< 0.33	32000	1500	3100	6.29	3260	188	1097.77
	MW-1013C	490		< 13	2200	7.8	9700	1600	3200	6.65	3520	59	1099.81
	MW-1013C DNR Split	527	9.9	2.3	2180	7.2	9830	1840	3210				
	MW-1014												1117.83
	MW-1014A	470		< 13	1300	0.13	3100	910	1800	6.82	2250	211	1116.64
	MW-1014A DNR Split	463	< 1	6	1320	0.1	3050	1040	1920				
	MW-1014B	530		440	1700	< 0.33	14000	1400	2800	6.51	2880	246	1112.89
	MW-1014B (Dup)	570		440	1700	< 0.33	14000	1400	2800				
	MW-1014B DNR Split	461	< 1	492	1920	< 0.1	18800	1480	2530				
	MW-1014C	330		< 13	640	7.5	2300	290	820	6.77	1233	53	1108.53
	MW-1014C DNR Split		8.4	1.2	657	6.9	2220	330	868				

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/04														
	MW-1015A		79		< 1.3	86	< 0.005	15	9	62	7.17	167.7		1089.17
	MW-1015B		180		< 1.3	140	0.38	120	< 2.5	210	7.49	481		1089.08
07/04														
	MW-1000PR		200	< 1.8	28	530	2.3	2800	310	690	6.1	998	146	1087.40
	MW-1002		53	< 1.8	< 1.3	60	< 0.005	< 1	5.6	93	6.5	114		1092.22
	MW-1002G		90	< 1.8	< 1.3	110	< 0.005	< 1	8.7	140	6.8	202		1092.14
	MW-1004P		160	< 1.8	< 1.3	140	0.066	97	< 2.5	120	6.8	275	114	1106.69
	MW-1004S		44	< 1.8	< 1.3	71	< 0.005	< 1	21	100	6.3	152	184	1108.33
	MW-1005		55	< 1.8	1.9	280	18	520	13	480	6	733		1139.35
	MW-1005P		240	< 1.8	< 1.3	220	0.45	93	< 2.5	170	7	428	-5	1139.37
	MW-1005S		160	< 1.8	< 1.3	160	4.2	220	4.2	150	6.8	294		1139.16
	MW-1010P		160	2.3	< 1.3	160	0.18	210	4.3	130	7	284	55	1087.09
	MW-1013													1111.69
	MW-1013A													1097.86
	MW-1013B		550	< 2.6	150	2200	< 0.33	24000	1600	3100	6.1	3340	191	1098.27
	MW-1013C		520	16	< 13	2300	7.4	10000	1400	3200	6.2	3490	45	1099.75
	MW-1013C	(Dup)	490	9.7	< 13	2200	7.3	10000	1600	3200				
	MW-1014													1118.45
	MW-1014A		440	< 2.6	< 13	1400	0.43	2100	940	1900	6.7	2250	175	1115.52
	MW-1014B		450	< 2.6	520	1900	< 0.33	15000	1300	2600	6.3	2950	191	1113.85
	MW-1014C		300	15	< 13	660	7.2	2300	290	820	6.4	1171	31	1109.22
	MW-1015A		78	< 1.8	< 1.3	89	< 0.005	12	7.7	88	6.8	165	183	1087.88
	MW-1015B		170	< 1.8	< 1.3	140	0.45	190	< 2.5	220	7.1	458	-104	1087.97
10/04														

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)		As (ug/l)		Cu (ug/l)	Hard (mg/l)		Fe (mg/l)		Mn (ug/l)		Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/04																			
	MW-1000PR		210		3.2		15	500		0.37		2700		320	670	6.4	970		1087.16
	MW-1002		56	<	1.8	<	1.3	56	<	0.005		3		4.6	59	6.7	116		1090.26
	MW-1002G		93	<	1.8	<	1.3	98	<	0.005		4.1		8.4	110	6.7	204		1090.23
	MW-1004P		160	<	1.8		1.5	130	<	0.005		17	<	2.5	120	7.3	271	109	1104.65
	MW-1004S		46	<	1.8	<	1.3	65	<	0.005		1.3		19	76	6.7	146		1106.13
	MW-1005		55		4.3	<	1.3	270		15		390		14	550	5.9	799		1138.67
	MW-1005P		240		2.6	<	1.3	210		0.47		87	<	2.5	210	7.1	436	-2	1138.05
	MW-1005S		170		3.9	<	1.3	150		3.7		210		3.6	160	6.6	298		1138.06
	MW-1010P		160		3.3	<	1.3	150		0.19		200		6.1	140	6.9	281	64	1086.86
	MW-1013																		1110.47
	MW-1013A																		1097.11
	MW-1013B		640		4.2		380	2200	<	0.33		34000		1600	3100	6.3	3250	204	1097.10
	MW-1013C		520		17	<	13	2200		7		9800		1700	3200	6.3	3450	50	1099.48
	MW-1014																		1119.12
	MW-1014A		490		2.9	<	13	1300	<	0.33		2000		930	1800	6.7	2220	184	1114.83
	MW-1014B		620		3.6		550	2000	<	0.33		17000		1500	2800	6.3	2950	215	1113.33
	MW-1014C		350		17	<	13	610		6.6		2100		300	780	6.5	1175	60	1108.87
	MW-1015A		79	<	1.8	<	1.3	83	<	0.005		11		7.6	95	7.3	164	116	1087.22
	MW-1015B		180	<	1.8	<	1.3	130		0.3		140	<	2.5	220	7.6	459	-99	1087.21
	MW-1015B	(Dup)	180	<	1.8	<	1.3	130		0.3		140	<	2.5	230				
01/05																			
	MW-1000PR		220		1.3		16	510		0.51		2500		310	660	6.2	991	133	1087.89
	MW-1002		59	<	0.73	<	1.3	62	<	0.005	<	1		5.1	24	6.9	122		1090.20
	MW-1002G		93	<	0.73	<	1.3	100	<	0.005	<	1		9.6	93	6.6	208		1090.42

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/05														
	MW-1004P		160	< 0.73	< 1.3	130	0.058	75	< 2.5	94	7	270	102	1104.67
	MW-1004S		46	< 0.73	< 1.3	65	< 0.005	< 1	19	110	6.5	146	187	1106.02
	MW-1004S	(Dup)	46	< 0.73	< 1.3	65	< 0.005	< 1	19	79				
	MW-1005		54	2.3	< 1.3	180	12	310	13	280	6.1	510		1138.48
	MW-1005P		250	< 0.73	< 1.3	210	0.85	79	< 2.5	210	7.1	428	15	1137.86
	MW-1005S		160	2.4	< 1.3	150	3.8	210	4.8	130	6.4	301		1137.89
	MW-1010P		150	18	< 1.3	140	< 0.005	92	11	130	6.7	284	72	1087.56
	MW-1013													1109.19
	MW-1013A													1097.27
	MW-1013B		580	4.8	180	2200	< 0.33	24000	1700	3000	6.3	3390	207	1097.29
	MW-1013C		540	20	< 13	2100	7.2	9500	1700	3000	6.3	3540	67	1099.34
	MW-1014													1118.50
	MW-1014A		480	2.3	< 13	1300	< 0.33	2000	990	1800	6.7	2330	246	1115.84
	MW-1014B		550	5.3	520	2000	< 0.33	16000	1500	2700	6.4	3210	277	1113.05
	MW-1014C		340	21	< 13	600	6.4	2000	300	730	6.5	1174	70	1108.62
	MW-1015A		79	< 0.73	< 1.3	83	< 0.005	11	7.7	65	6.9	162	128	1087.45
	MW-1015B		180	< 0.73	< 1.3	130	0.22	120	< 2.5	230	7.4	464	-89	1087.61
04/05														
	MW-1000PR		210	2.7	17	530	0.75	3000	320	660	6.3	882	105	1088.23
	MW-1002		56	< 0.66	< 1.3	61	< 0.005	< 1	6.1	8	6.8	117		1091.64
	MW-1002G		91	< 0.66	< 1.3	100	< 0.005	< 1	9.2	95	6.7	206		1091.79
	MW-1004P		160	< 0.66	< 1.3	140	< 0.005	26	< 2.5	120	6.6	265	124	1104.74
	MW-1004S		46	< 0.66	< 1.3	69	< 0.005	< 1	21	45	6.2	148	202	1106.28
	MW-1005		52	2.3	< 1.3	190	17	450	14	300	6.1	528		1139.08

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/05														
	MW-1005	(Dup)	51	2.2	< 1.3	190	17	460	14	290				
	MW-1005P		240	< 0.66	< 1.3	220	0.11	17	< 2.5	200	6.7	437	-2	1137.90
	MW-1005S		160	2.8	< 1.3	150	4.4	240	4.3	170	6.3	294		1137.95
	MW-1010P		150	9.9	< 1.3	150	0.034	150	11	110	6.7	284	60	1088.20
	MW-1013													1108.43
	MW-1013A													1097.16
	MW-1013B		630	1.7	450	2200	< 0.33	42000	1700	3100	6.2	3420	238	1097.61
	MW-1013C		520	16	< 13	2200	8.2	10000	1700	3100	6.3	3390	66	1099.38
	MW-1014A		440	1.9	< 13	1300	< 0.33	2000	1000	1800	6.6	2250	276	1115.68
	MW-1014B		520	2.6	460	1900	< 0.33	16000	1400	2700	6.4	2790	288	1112.91
	MW-1014C		330	16	< 13	660	7	2300	290	750	6.3	1202	64	1108.19
	MW-1015A		79	< 0.66	< 1.3	87	< 0.005	16	8.6	51	6.8	162	194	1088.58
	MW-1015B		180	< 0.66	< 1.3	140	0.29	130	< 2.5	190	7.1	451	-93	1088.60
07/05														
	MW-1000PR		210	4	27	560	1.5	2900	330	680	6.7	962	139	1087.41
	MW-1002		47	< 0.66	1.6	53	< 0.005	< 1	4.9	82	6.7	98		1090.63
	MW-1002G		91	< 0.66	< 1.3	110	< 0.005	< 1	8.8	140	6.8	184		1090.54
	MW-1004P		160	< 0.66	< 1.3	150	0.059	41	< 2.5	130	7.4	270	58	1104.59
	MW-1004S		47	< 0.66	2	77	< 0.005	< 1	24	100	6.3	158	211	1106.10
	MW-1004S	(Dup)	47	< 0.66	2.8	78	< 0.005	< 1	24	260				
	MW-1005		46	1.5	< 1.3	180	14	370	16	270	6.2	497		1138.52
	MW-1005P		240	< 0.66	< 1.3	230	0.17	82	< 2.5	230	7.4	428	-1	1138.30
	MW-1005S		170	3	< 1.3	160	4.5	240	3.9	180	7.2	296		1138.25
	MW-1010P		150	22	< 1.3	160	< 0.005	85	14	170	7.9	288	94	1087.16

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/05													
	MW-1013												1110.98
	MW-1013A												1096.86
	MW-1013B	640	1.9	400	2300	< 0.33	39000	1700	3100	6.4	3200	229	1097.22
	MW-1013C	510	13	< 13	2300	8.5	11000	1800	3100	6.6	3400	17	1098.89
	MW-1014A	500	1.2	< 13	1300	< 0.33	1400	1000	1800	6.8	2170	269	1114.86
	MW-1014B	570	2.3	560	2100	< 0.33	17000	1500	2800	6.5	3010	299	1112.42
	MW-1014C	350	15	< 13	650	6.9	2200	300	760	6.9	1150	57	1107.80
	MW-1015A	78	< 0.66	< 1.3	89	< 0.005	12	8.5	110	7.2	162		1087.37
	MW-1015B	180	< 0.66	< 1.3	150	0.4	140	< 2.5	260	8	457	-91	1087.49
10/05													
	MW-1000PR	210	2.9	25	580	0.73	2900	330	730	6.6	955	141	1087.92
	MW-1002	50	< 0.66	< 2.7	60	< 0.005	< 1	5.2	120	6.5	104		1092.07
	MW-1002G	89	< 0.66	< 2.7	110	< 0.005	< 1	9	120	6.5	201		1091.97
	MW-1004P	170	< 0.66	< 2.7	140	< 0.005	21	< 2.5	150	7.1	277	83	1105.61
	MW-1004S	49	< 0.66	< 2.7	75	0.008	< 1	23	150	7.2	162	186	1107.58
	MW-1005	61	2	< 2.7	290	17	480	14	450	6	786		1138.49
	MW-1005P	240	< 0.66	< 2.7	220	0.03	48	< 2.5	210	6.5	427	-6	1137.53
	MW-1005S	170	1.9	< 2.7	180	4.2	240	4.2	200	6.4	298		1137.60
	MW-1010P	160	3.9	< 2.7	170	0.044	160	8.8	150	7.1	283	25	1087.81
	MW-1013	510	2.5	< 13	600	22	25000	62	760	6.1	1332	73	1109.89
	MW-1013A	370	0.86	< 13	680	< 0.33	4500	380	870	6.7	1576	153	1096.84
	MW-1013B	630	< 0.85	230	2300	< 0.33	30000	1500	3100	6.4	3260	222	1096.98
	MW-1013C	510	9.2	< 13	2200	8.3	11000	1700	3200	6.7	3410	37	1099.20
	MW-1013C (Dup)	500	9.4	< 13	2300	8.7	11000	1700	3100				

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/05													
	MW-1014	170	< 0.85	< 13	350	< 0.33	1300	200	500	7.1	726	202	1117.70
	MW-1014A	450	< 0.85	< 13	1300	< 0.33	1500	890	1800	6.7	2270	213	1114.97
	MW-1014B	470	1.2	400	1800	< 0.33	15000	1300	2400	6.5	2820	261	1112.41
	MW-1014C	320	14	< 13	630	7	2200	290	790	6.7	1157	54	1108.06
	MW-1015A	85	< 0.66	3.8	96	< 0.005	13	8.8	110	6.2	161	70	1088.12
	MW-1015B	180	< 0.66	< 2.7	150	0.3	140	< 2.5	260	6.3	461	-93	1088.24
01/06													
	MW-1000PR	210	3	58	480	0.68	2400	300	670	6.8	1014	126	1087.71
	MW-1002	51	< 0.66	< 2.7	52	< 0.005	< 1	4.6	33	7.1	112		1090.67
	MW-1002G	89	< 0.66	< 2.7	94	< 0.005	< 1	8.3	95	7	213		1090.58
	MW-1004P	160	< 0.66	< 2.7	140	0.35	170	< 2.5	110	7.1	290	95	1105.59
	MW-1004S	48	< 0.66	< 2.7	58	< 0.005	1	23	75	7	165	175	1106.51
	MW-1005	51	1.7	< 2.7	200	15	440	14	350	6.5	597		1138.33
	MW-1005P	250	< 0.66	< 2.7	200	0.49	75	< 2.5	200	6.9	434	20	1137.24
	MW-1005S	160	2.4	< 2.7	140	4	210	3.2	160	6.8	316		1137.47
	MW-1010P	150	4.3	< 2.7	140	0.057	170	9.2	130	7.2	301	90	1087.51
	MW-1013	680	0.98	< 13	560	12	22000	79	700	6.4	1211	72	1108.54
	MW-1013A	340	< 0.85	< 13	500	< 0.33	2900	240	650	6.8	1271	156	1097.01
	MW-1013B	590	1.1	210	2200	< 0.33	22000	1500	3000	6.4	3480	223	1097.17
	MW-1013C	550	13	< 13	2100	7.6	9700	1700	3100	6.3	3480	61	1099.30
	MW-1014	170	< 0.85	< 13	310	< 0.33	1100	190	540	6.9	748	261	1117.27
	MW-1014A	480	< 0.85	17	1200	< 0.33	1500	970	1800	6.8	2390	252	1114.81
	MW-1014B	570	2.4	560	1900	< 0.33	16000	1400	2800	6.5	3350	287	1112.12
	MW-1014C	300	16	< 13	590	6.2	2000	280	740	6.9	1182	67	1107.25

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/06														
	MW-1014C	(Dup)	310	18	< 13	570	6	1900	270	750				
	MW-1015A		76	< 0.66	< 2.7	80	< 0.005	9	8.4	79	7.2	165	160	1088.05
	MW-1015B		180	< 0.66	< 2.7	140	0.32	110	< 2.5	270	7.2	472	-73	1087.80
04/06														
	MW-1000PR		210	1.8	30	530	0.46	2600	300	620	6.62	926	129	1088.35
	MW-1002		52	< 0.57	< 2.7	61	0.006	< 1	6.2	26	6.72	112		1092.17
	MW-1002G		89	< 0.57	< 2.7	110	0.015	< 1	9.1	67	6.76	201		1092.06
	MW-1004P		160	< 0.57	< 2.7	140	0.2	89	2.5	93	6.31	270	88	1105.34
	MW-1004S		49	< 0.57	< 2.7	78	< 0.008	2.6	25	63	5.85	161.6	176	1107.08
	MW-1005		52	2.2	< 2.7	210	13	320	14	290	6.23	596		1139.51
	MW-1005P		250	< 0.57	< 2.7	230	0.22	40	< 2.5	210	6.71	439	6	1138.47
	MW-1005S		170	2.8	< 2.7	160	4.4	230	4	140	6.56	298		1138.64
	MW-1005S	(Dup)	170	2.3	< 2.7	160	4.4	230	4	110				
	MW-1010P		150	4.2	< 2.7	160	0.029	150	13	89	7	278	101	1088.21
	MW-1013		510	< 1	23	550	2.2	21000	65	640	5.95	1040	150	1108.42
	MW-1013A		340	< 1	17	730	< 0.33	3900	270	640	6.23	1571	152	1097.29
	MW-1013B		590	< 1	280	2200	< 0.22	25000	1600	3000	6.1	3300	210	1097.65
	MW-1013C		520	12	< 13	2300	8.9	11000	1600	3000	6.21	3380	51	1099.24
	MW-1014		150	< 1	36	340	< 0.33	1200	170	410	6.49	677	271	1117.25
	MW-1014A		440	< 1	22	1300	< 0.33	2100	880	1700	6.39	2200	268	1114.95
	MW-1014B		550	1.1	530	1900	< 0.33	14000	1400	2700	6.23	2740	292	1112.27
	MW-1014C		340	16	< 13	620	6.4	2100	270	700	6.4	1124	80	1107.90
	MW-1015A		77	< 0.57	< 2.7	90	< 0.005	11	9.1	39	6.96	161.5	173	1088.71
	MW-1015B		180	< 0.57	< 2.7	140	0.44	100	< 2.5	190	7.11	464	-84	1088.89

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/06														
	MW-1000PR		270	1.7	21	480	0.62	2400	310	660	6.47	928	100	1086.96
	MW-1002		50	< 0.57	2.9	53	< 0.005	< 1	5.1	88	6.49	108.8		1089.57
	MW-1002G		86	< 0.57	< 2.7	99	< 0.005	2.9	8.7	140	6.55	199.4		1088.49
	MW-1004P		160	< 0.57	26	130	< 0.005	5.6	< 2.5	170	7.11	266	72	1103.79
	MW-1004S		50	< 0.57	8.9	77	< 0.005	< 1	26	93	7.11	165.3	199	1105.22
	MW-1005		54	1.7	< 2.7	220	12	340	14	560	6.44	715		1137.18
	MW-1005P		240	< 0.57	< 2.7	210	0.6	86	< 2.5	200	6.59	423	1	1136.80
	MW-1005S		170	2.8	< 2.7	150	4	210	3.8	170	6.66	302		1137.26
	MW-1010P		150	4.4	2.8	150	0.045	150	14	150	7.16	290	104	1086.63
	MW-1013		520	< 1	24	530	3.2	20000	58	630	6.05	1091	92	1111.08
	MW-1013	(Dup)	560	< 1	29	520	3.2	19000	58	670				
	MW-1013A		320	< 1	16	460	< 0.33	1700	220	600	6.52	1104	160	1096.52
	MW-1013B		610	1.4	470	2200	< 0.33	36000	1600	3000	6.17	3280	249	1096.73
	MW-1013C		520	18	14	2200	7	9800	1700	3100	6.09	3300	51	1098.20
	MW-1014		170	< 1	26	320	< 0.33	940	180	490	6.54	713	175	1117.53
	MW-1014A		450	< 1	31	1300	< 0.33	1400	1000	1800	6.62	2190	190	1114.77
	MW-1014B		520	1.8	510	1700	< 0.33	12000	1400	2400	6.41	2780	222	1112.10
	MW-1014C		350	16	16	580	5.9	1900	260	770	6.55	1080	63	1107.35
	MW-1015A		79	< 0.57	3.3	82	< 0.005	8.2	8.6	100	6.02	160.8	73	1086.95
	MW-1015B		170	0.97	< 2.7	140	0.052	97	< 2.5	270	6.33	466	-63	1086.84
10/06														
	MW-1000PR		210	2.8	12	550	0.49	2700	290	600	7	948	108	1085.87
	MW-1002		52	< 0.57	< 2.7	62	< 0.005	< 1	6.3	< 2	6.8	109		1089.47
	MW-1002G		87	< 0.57	< 2.7	110	< 0.005	< 1	9.3	37	6.9	200		1089.42

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/06														
	MW-1004P		150	< 0.57	< 2.7	150	< 0.005	6.1	3.1	120	7.3	280	75	1103.68
	MW-1004P	(Dup)	160	< 0.57	< 2.7	150	< 0.005	6.2	4.5	66				
	MW-1004S		51	< 0.57	< 2.7	87	< 0.005	< 1	26	83	6.8	185	181	1104.98
	MW-1005		54	2.3	< 2.7	300	16	380	15	320	6.3	833		1137.03
	MW-1005P		240	< 0.57	< 2.7	230	0.019	39	< 2.5	140	7	456	-3	1136.78
	MW-1005S		160	2.3	< 2.7	170	4.4	240	4.1	83	7.3	302		1136.55
	MW-1010P		160	5.7	< 2.7	170	0.017	110	8.1	92	7.8	289	71	1086.79
	MW-1013		520	< 1	< 13	580	11	24000	55	620	6.5	1233	81	1109.73
	MW-1013A		300	< 1	< 13	490	< 0.33	2400	200	560	7	1015	130	1096.36
	MW-1013B		480	< 1	200	2400	< 0.33	23000	1600	3000	6.5	3360	309	1096.54
	MW-1013C		580	15	< 13	2200	9.1	11000	1600	3000	6.7	3390	16	1097.94
	MW-1014		170	< 1	< 13	350	< 0.33	880	180	430	6.7	739	165	1117.45
	MW-1014A		480	< 1	< 13	1400	< 0.66	820	1000	1800	6.7	2290	176	1114.60
	MW-1014B		460	< 1	460	1900	< 0.33	13000	1300	2400	6.5	2900	215	1111.88
	MW-1014C		330	20	< 13	620	6.1	2000	260	700	7	1113	36	1106.97
	MW-1015A		78	< 0.57	< 2.7	92	< 0.005	9.5	9.3	21	7.1	162	156	1086.85
	MW-1015B		180	< 0.57	< 2.7	160	0.32	110	2.5	230	7.5	466	-73	1086.94
01/07														
	MW-1000PR		220	1.7	29	530	0.26	2600	290	570	6.8	959	175	1087.12
	MW-1002		39	< 0.57	< 2.7	57	< 0.005	< 1	5.5	5	6.9	106		1089.38
	MW-1002G		81	< 0.57	< 2.7	110	< 0.005	< 1	8.3	43	6.7	208		1089.34
	MW-1004P		160	< 0.57	< 2.7	140	0.04	79	< 2.5	91	7.2	285	157	1103.05
	MW-1004S		48	< 0.57	< 2.7	83	< 0.005	< 1	27	46	6.9	178	227	1104.49
	MW-1005		49	1.5	< 2.7	200	16	460	14	290	6.2	528		1137.54

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/07														
	MW-1005P		250	< 0.57	< 2.7	230	0.41	89	3.7	180	6.9	441	11	1136.27
	MW-1005S		170	1.9	< 2.7	170	4.1	230	3.5	130	6.7	312		1136.33
	MW-1010P		150	4.4	< 2.7	160	0.035	160	8.4	130	7.3	303	97	1087.00
	MW-1010P	(Dup)	160	4.3	< 2.7	160	0.038	160	8.7	120				
	MW-1013		560	4	< 13	600	12	24000	72	680	6.4	1168	100	1108.40
	MW-1013A		320	1.9	< 13	400	< 0.33	1700	170	510	7	885	147	1096.32
	MW-1013B		570	< 1	290	2200	< 0.33	24000	1600	2900	6.5	3370	286	1096.44
	MW-1013C		540	9	< 13	2300	9.5	11000	1700	3000	6.6	3460	68	1098.06
	MW-1014		170	2.1	39	330	< 0.33	1300	170	420	6.8	710	218	1117.15
	MW-1014A		470	< 1	< 13	1300	< 0.33	780	1000	1700	6.6	3150	254	1111.42
	MW-1014B		570		600	1900	< 0.33	15000	1400	2600	6.6	3150	254	1111.42
	MW-1014C		300	21	< 13	580	6	1900	260	680	6.8	1122	76	1106.92
	MW-1015A		69	< 0.57	< 2.7	90	< 0.005	8.9	8.8	57	7	163	83	1087.99
	MW-1015B		160	< 0.57	< 2.7	160	0.35	120	< 2.5	200	7.2	541	-60	1086.98
04/07														
	MW-1000PR		230	3.9	13	530	0.38	2600	300	630	6.1	929	207	1087.43
	MW-1002		50	1.7	< 2.7	56	< 0.005	< 1	5.6	43	7.2	101		1090.43
	MW-1002G		88	1.9	< 2.7	110	< 0.005	< 1	9.2	190	6.8	203		1090.34
	MW-1004P		160	1.8	< 2.7	140	0.22	82	2.5	110	6.5	266	128	1103.86
	MW-1004S		54	2.1	< 2.7	92	< 0.005	< 1	30	100	6.4	181	212	1105.59
	MW-1005		50	3.1	< 2.7	190	16	430	14	89	6.5	508		1137.26
	MW-1005	(Dup)	51	2.9	< 2.7	190	16	430	14	170				
	MW-1005P		240	2	< 2.7	230	0.24	28	< 2.5	170	6.8	427	7	1135.62
	MW-1005S		170	3.6	< 2.7	160	4.2	230	3.5	230	6.9	297		1135.91

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/07														
	MW-1010P		160	5.2	< 2.7	160	0.037	170	8.1	140	6.5	289	154	1087.48
	MW-1013		550	1.4	< 13	620	3.3	24000	74	670	6.1	1149	87	1108.02
	MW-1013A		330	< 1	< 13	460	< 0.33	1700	180	540	6.3	1006	137	1096.20
	MW-1013B		620	3.2	230	2400	< 0.33	23000	1700	3000	5.9	3260	255	1096.45
	MW-1013C		560	16	< 13	2300	9.3	11000	1700	3100	6.2	3320	51	1098.24
	MW-1014		170	1.1	17	350	< 0.033	610	180	420	6.2	677	188	1116.26
	MW-1014A		470	3.7	< 13	1400	0.53	920	950	1800	6.2	2180	180	1113.98
	MW-1014B		550		470	1900	< 0.33	14000	1300	2500	6	2750	189	1111.12
	MW-1014C		320	19	< 13	620	6.1	2000	670	670	6.2	1072	68	1106.71
	MW-1015A		78	1.6	< 2.7	89	< 0.005	9.3	8.9	67	7.3	162	75	1087.59
	MW-1015B		180	1.2	< 2.7	140	0.16	81	< 2.5	200	7.2	458	-71	1087.75
06/07														
	MW-1005P		260	< 0.83	< 2.7	220	0.24	71	< 2.5	200	7	464	6	1135.99
	MW-1005S		170	2.1	< 2.7	160	4.2	230	2.9	220	7	331		1136.17
	MW-1013		610	3	< 13	560	9.6	23000	61	700	6.1	1144	84	1110.51
	MW-1013A		360	2.1	< 13	430	< 0.33	1200	170	530	6.6	974	100	1096.07
	MW-1013B		620	3.8	240	2100	< 0.33	21000	1600	3000	6.2	3131	216	1096.39
	MW-1013C		590	22	< 13	2200	11	10000	1700	3100	6.4		71	1097.64
	MW-1014		180	1.8	< 13	260	< 0.33	310	170	450	6.4	701	187	1115.87
	MW-1014	(Dup)	190	2.8	15	330	< 0.33	380	170	430				
	MW-1014A		490	4.4	< 13	1300	< 0.33	640	1000	1800	6.5	2187	182	1113.49
	MW-1014B		570		600	1900	< 0.33	14000	1400	2500	6.3	2888	197	1110.64
	MW-1014C		360	19	< 13	580	5.8	1900	270	720	6.6	1050	51	1106.19
07/07														

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName	Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
07/07													
	MW-1000PR	230	2.7	12	500	0.66	2600	300	660	6.4	887	89	1086.72
	MW-1002	42	0.83	< 2.7	46	< 0.005	< 1	4.6	46	6.5	105		1089.67
	MW-1002G	88	< 0.83	< 2.7	100	< 0.005	< 1	8.1	130	6.7	227		1089.60
	MW-1004P	160	< 0.83	< 2.7	140	0.075	110	< 2.5	120	7.1	297	151	1103.45
	MW-1004S	54	< 0.83	< 2.7	87	< 0.005	< 1	29	110	6.2	205	201	1104.94
	MW-1005	50	2.2	< 2.7	180	15	410	14	340	6.1	527		1136.98
	MW-1010P	150	4.7	< 2.7	160	0.031	150	15	180	7.4	326	86	1086.67
	MW-1015A	79	< 0.83	< 2.7	86	< 0.005	8.8	8.5	110	6.9	187	285	1086.78
	MW-1015B	180	< 0.83	< 2.7	140	0.34	100	< 2.5	290	7.6	594	-27	1086.85
10/07													
	MW-1000PR	230	26	< 2.7	520	4.7	2800	300	650	6.5	933	74	1089.31
	MW-1002	44	< 0.83	< 2.7	50	< 0.005	< 1	4.9	27	6.7	113		1090.85
	MW-1002G	90	< 0.83	< 2.7	110	< 0.005	< 1	8.5	77	6.7	228		1090.79
	MW-1004P	160	< 0.83	< 2.7	150	0.19	84	< 2.5	110	7.3	296	72	1105.02
	MW-1004S	51	1.5	< 2.7	93	< 0.005	< 1	31	120	6.3	214	211	1109.67
	MW-1005	51	2.6	< 2.7	190	14	330	14	320	6.1	560		1137.93
	MW-1005P	250	< 0.83	< 2.7	230	0.31	61	< 2.5	220	7.1	457	-12	1136.00
	MW-1005S	180	3.1	< 2.7	160	4.3	230	< 2.5	220	7.1	326		1136.38
	MW-1010P	160	13	< 2.7	170	0.009	90	16	160	7.6	319	159	1089.09
	MW-1013	620	< 1	< 13	610	15	24000	53	740	6.2	1261	68	1110.28
	MW-1013A	380	< 1	< 13	490	< 0.33	2600	210	610	6.6	912	85	1095.72
	MW-1013B	690	3.7	500	2300	< 0.33	38000	1600	3100	6.3	3182	227	1095.86
	MW-1013C	570	16	< 13	2300	9.7	11000	1800	3100	6.3	3108	56	1097.98
	MW-1014	190	< 1	33	350	< 0.33	580	180	470	6.4	739	220	1115.95

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/07														
	MW-1014A		560	< 1	< 13	1400	< 0.33	890	940	1900	6.6	2175	218	1113.13
	MW-1014A	(Dup)	510	1.5	27	1400	< 0.33	880	860	1800				
	MW-1014B		520		490	1900	< 0.33	13000	1300	2500	6.4	2670	234	1110.47
	MW-1014C		360	19	< 13	600	5.8	2000	260	670	6.6	1041	57	1106.22
	MW-1015A		86	< 0.83	< 2.7	91	< 0.005	8.7	9.2	140	7	188	169	1087.98
	MW-1015A	(Dup)	80	< 0.83	< 2.7	91	< 0.005	8.6	9.4	55				
	MW-1015B		180	< 0.83	< 2.7	160	0.33	100	< 2.5	300	7.7	573	-68	1087.70
01/08														
	MW-1000PR		230	4.6	13	460	0.31	2400	310	690	6.4	921	161	1087.62
	MW-1000PR	(Dup)	220	5.3	12	490	0.32	2500	310	670				
	MW-1002		50	1	< 2.7	53	< 0.005	< 1	6.2	97	6.6	122		1090.08
	MW-1002G		89	< 0.83	< 2.7	97	< 0.005	< 1	9.4	150	6.6	227		1090.02
	MW-1004P		160	1.8	< 2.7	140	0.036	66	2.7	230	7.2	286	122	1105.32
	MW-1004S		63	< 0.83	< 2.7	89	< 0.005	< 1	33	150	6.3	215	208	1106.72
	MW-1005		51	2.7	< 2.7	170	14	360	15	350	6.2	508		1137.51
	MW-1005P		220	< 0.83	< 2.7	170	0.25	33	< 2.5	410	7.3	520	-5	1136.50
	MW-1005S		180	2	< 2.7	150	4.1	220	< 2.5	220	7	332		1136.74
	MW-1010P		160	5.3	< 2.7	150	0.035	160	14	210	7.5	321	72	1087.63
	MW-1013		600	2.2	< 13	590	14	24000	78	800	6.2	1183	63	1109.61
	MW-1013A		370	< 1	< 13	410	< 0.33	2100	170	590	6.6	963	85	1097.10
	MW-1013B		620	3.9	400	2200	< 0.33	31000	1500	3200	6.2	3141	206	1097.27
	MW-1013C		590	22	< 13	2100	9.1	10000	1800	3200	6.5	3203	58	1098.85
	MW-1014		170	< 1	< 13	310	< 0.33	800	160	480	6.3	661	188	1117.28
	MW-1014A		490	< 1	< 13	1300	< 0.33	940	940	1900	6.6	2202	189	1114.15

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/08														
	MW-1014B		600	4.4	500	1900	< 0.33	14000	1400	2800	6.4	2882	211	1112.06
	MW-1014C		310	24	< 13	550	5.4	1800	280	750	6.6	1081	59	1107.58
	MW-1015A		79	< 0.83	< 2.7	85	< 0.005	7.3	11	140	7.1	189	248	1087.41
	MW-1015B		180	< 0.83	< 2.7	140	0.29	94	< 2.5	450	7.7	586	-53	1087.61
04/08														
	MW-1000PR		230	4	7.8	490	0.33	2500	280	710	6.5	880	157	1091.29
	MW-1002		53	< 1.5	< 2.7	56	< 0.005	< 1	5.8	96	6.5	134		1092.08
	MW-1002G		89	< 1.5	< 2.7	98	< 0.005	< 1	8.8	150	6.6	225		1092.04
	MW-1004P		160	< 1.5	< 2.7	190	0.18	170	2.5	190	7.1	279	119	1107.14
	MW-1004S		56	< 1.5	< 2.7	91	< 0.005	< 1	30	140	6.3	211	171	1110.09
	MW-1005		46	2.5	< 2.7	170	14	330	14	320	6.1	453		1139.01
	MW-1005P		260	< 1.5	< 2.7	220	1.1	72	< 0.25	350	6.9	478	-7	1137.53
	MW-1005P	(Dup)	220	< 1.5	< 2.7	220	1.1	72	< 2.5	350	7.1	474		
	MW-1005S		180	2.9	< 2.7	150	4.3	230	12	220	6.9	324		1137.92
	MW-1010P		160	5	< 2.7	160	0.014	150	9.5	190	7.5	319	117	1091.20
	MW-1013		570	5.1	< 13	580	4.1	23000	66	770	6.2	1155	52	1110.52
	MW-1013A		330	1.5	< 13	500	< 0.33	2800	180	640	6.7	862	83	1096.94
	MW-1013B		640	< 1	530	2200	< 0.33	40000	1500	3200	6.2	3200	201	1097.36
	MW-1013B	(Dup)	630	2.9	550	2200	< 0.33	39000	1400	3200	6.2	3209		
	MW-1013C		530	16	< 13	2200	9.6	11000	1600	3200	6.4	3156	29	1099.98
	MW-1014		180	< 1	< 13	320	< 0.33	260	160	490	6.3	683	149	1116.86
	MW-1014A		480	1.2	< 13	1700	< 0.33	1100	880	1900	6.6	2202	142	1114.25
	MW-1014B		570	1.9	570	1900	< 0.33	14000	1400	2800	6.4	2815	157	1111.97
	MW-1014C		310	24	< 13	570	5.6	1900	190	780	6.6	1069	48	1107.87

Created By: SGL Checked By: DAT

Appendix B

Groundwater Quality & Elevation/Surface Water Quality/Trends

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/08														
	MW-1015A		78	< 1.5	< 2.7	88	< 0.005	8.1	9.7	140	6.9	185	153	1090.43
	MW-1015B		180	< 1.5	< 2.7	150	0.3	86	< 0.25	350	7.5	580	-57	1090.08
06/08														
	MW-1000PR		220	3.7	21	500	0.46	2500	240	640	6.4	932	117	1087.84
	MW-1002		56	< 1.5	< 2.7	66	< 0.005	< 1	7.1	81	6.6	143		1092.92
	MW-1002G		88	< 1.5	< 2.7	110	< 0.005	< 1	9.2	150	6.7	233		1092.84
	MW-1002G	(Dup)	88	< 1.5	< 2.7	110	0.035	< 1	11	150	6.7	231		
	MW-1004P		160	< 1.5	< 2.7	140	0.055	70	2.8	130	7.3	301	143	1107.51
	MW-1004S		57	< 1.5	< 2.7	95	< 0.005	< 1	31	130	6.2	215	178	1109.60
	MW-1005		50	2.8	< 2.7	180	15	380	16	440	6.1	511		1140.12
	MW-1005P		250	< 1.5	< 2.7	230	1.2	76	< 2.5	230	7.2	460	-8	1139.00
	MW-1005S		170	1.6	< 2.7	160	4.5	230	< 2.5	190	7	332		1139.17
	MW-1010P		150	23	< 2.7	160	< 0.005	67	13	170	7.5	322	76	1087.77
	MW-1013		470	1.7	22	550	3.6	22000	60	660	6.2	1150	88	1112.75
	MW-1013A		340	2	< 13	630	< 0.33	3500	270	740	6.6	1195	94	1097.88
	MW-1013B		550	2.7	270	2200	< 0.33	21000	1600	3100	6.2	3159	216	1098.29
	MW-1013C		480	18	< 13	2200	10	10000	1700	3100	6.4	3288	36	1100.00
	MW-1014		160	< 1.5	22	310	< 0.005	830	140	410	6.3	676	167	1118.17
	MW-1014A		530	2	< 13	1300	< 0.33	410	910	1900	6.6	2211	167	1114.85
	MW-1014B		580	4.8	580	1900	< 0.33	14000	1300	2600	6.4	2972	202	1113.44
	MW-1014B	(Dup)	480	5.5	570	2000	< 0.33	14000	1400	2700	6.5	2975		
	MW-1014C		280	22	< 13	550	5.4	1800	220	690	6.5	1061	52	1108.96
	MW-1015A		79	< 1.5	3	89	< 0.005	6.3	10	110	7	189	132	1088.69
	MW-1015B		180	< 1.5	< 2.7	150	0.2	89	< 2.5	270	7.8	580	40	1088.85

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/08														
	MW-1000PR		230	2.7	13	480	0.63	2600	290	660	6.5	919	175	1086.95
	MW-1002		54	< 1.5	< 2.7	58	< 0.005	< 1	6.4	87	6.5	135		1090.20
	MW-1002G		93	< 1.5	< 2.7	100	< 0.005	< 1	9.3	140	6.6	237		1090.15
	MW-1004P		160	< 1.5	< 2.7	140	0.17	160	2.5	190	7.2	302	132	1104.58
	MW-1004S		53	< 1.5	< 2.7	85	< 0.005	< 1	30	190	6.3	203	170	1106.05
	MW-1005		48	1.7	< 2.7	270	13	330	13	460	5.9	861		1137.82
	MW-1005P		250	< 1.5	< 2.7	220	1.1	80	< 2.5	240	7	468	6	1137.23
	MW-1005S		180	2.2	< 2.7	160	3.8	220	< 2.5	230	7	336		1137.36
	MW-1010P		170	8.6	< 2.7	160	0.024	120	9.5	190	7.5	328	133	1086.88
	MW-1013		610	< 2.4	< 13	590	14	24000	51	760	6.2	1389	62	1111.19
	MW-1013A		310	< 2.4	< 13	450	< 0.33	2700	210	620	6.7	854	78	1096.84
	MW-1013A	(Dup)	340	< 2.4	< 13	460	< 0.33	2700	200	620				
	MW-1013B		210	< 2.4	260	2200	< 0.33	20000	1700	3100	6.3	3134	213	1097.10
	MW-1013C		530	17	< 13	2200	9.4	10000	1700	3000	6.5	3163	50	1098.96
	MW-1014		190	< 2.4	14	320	< 0.33	310	180	540	6.4	739	165	1119.24
	MW-1014A		470	< 2.4	< 13	1300	< 0.33	590	970	2000	6.6	2185	162	1116.06
	MW-1014B		460	2.8	480	1100	< 0.33	13000	1400	2700	6.4	2814	174	1113.37
	MW-1014C		310	17	< 13	570	5.5	1800	260	730	6.6	1058	68	1108.49
	MW-1015A		82	< 1.5	< 2.7	88	< 0.005	6.5	11	130	6.9	188	62	1087.15
	MW-1015B		180	< 1.5	< 2.7	150	0.32	66	< 2.5	310	7.5	581	-37	1087.16
	MW-1015B	(Dup)	180	< 1.5	< 2.7	150	0.32	65	< 2.5	300				
01/09														
	MW-1000PR		220	4.9	17	470	0.34	2400	260	680	6.4	873	132	1087.63
	MW-1002		52	< 1.5	< 2.7	63	< 0.005	< 1	6.5	140	6.7	141		1089.60

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
01/09														
	MW-1002G		81	< 1.5	< 2.7	100	< 0.005	< 1	8.5	140	6.7	225		1089.54
	MW-1004P		150	2.5	< 2.7	140	0.41	170	< 2.5	180	7.1	296	124	1104.25
	MW-1004S		38	< 1.5	< 2.7	80	< 0.005	< 1	27	150	6.3	194	170	1104.54
	MW-1004S	(Dup)	48	< 1.5	< 2.7	80	0.006	< 1	28	120				
	MW-1005		42	2.1	4.2	260	14	340	14	470	6.1	814		1136.78
	MW-1005P		240	< 1.5	< 2.7	210	0.91	70	< 2.5	260	7.2	472	7	1136.22
	MW-1005S		170	1.8	< 2.7	160	3.8	220	< 2.5	230	7	339		1136.46
	MW-1010P		150	3.5	< 2.7	160	0.02	140	13	200	7.5	315	106	1087.44
	MW-1013		560	< 2.4	< 13	620	13	25000	73	800	6.1	1230	52	1109.57
	MW-1013A		300	< 2.4	< 13	440	< 0.33	2400	180	620	6.6	953	62	1096.69
	MW-1013B		660	< 2.4	240	2200	< 0.33	19000	1500	3200	6.2	3075	197	1096.95
	MW-1013C		520	17	< 13	2100	10	10000	1600	3100	6.3	3277	51	1098.87
	MW-1014		160	< 2.4	< 13	320	< 0.33	260	140	540	6.4	729	196	1118.33
	MW-1014A		490	< 2.4	< 13	1300	< 0.33	560	1000	2100	6.6	2138	192	1115.84
	MW-1014B		480	< 2.4	480	1800	< 0.33	13000	1300	2700	6.4	2908	216	1112.54
	MW-1014C		300	23	< 13	540	5.3	1800	240	810	6.6	1061	76	1107.83
	MW-1014C	(Dup)	320	22	< 13	540	5.3	1800	240	730				
	MW-1015A		78	< 1.5	< 2.7	86	< 0.005	6.7	11	150	7.1	187	155	1087.52
	MW-1015B		180	< 1.5	< 2.7	150	0.26	70	< 2.5	300	7.6	599	-38	1087.51
04/09														
	MW-1000PR		220	3.5	8.4	470	0.26	2300	280	650	6.5	906	155	1086.89
	MW-1002		53	< 1.5	< 2.7	60	< 0.005	< 1	8.7	70	6.5	142		1090.13
	MW-1002G		85	< 1.5	< 2.7	100	< 0.005	< 1	7	89	6.6	237		1090.07
	MW-1004P		160	< 1.5	< 2.7	140	0.072	63	< 2.5	140	7.3	302	87	1103.73

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
04/09														
	MW-1004S		55	< 1.5	< 2.7	80	0.049	1.5	28	140	6.3	193	198	1105.58
	MW-1005		47	< 1.5	< 2.7	190	13	340	14	310	6.1	576		1137.45
	MW-1005P		210	< 1.5	< 2.7	210	0.27	62	2.7	280	7.1	540	22	1135.83
	MW-1005S		170	3.6	< 2.7	150	4	220	< 2.5	200	7	330		1136.18
	MW-1005S	(Dup)	170	2.4	< 2.7	150	4	220	< 2.5	130	7	336		
	MW-1010P		160	18	< 2.7	160	0.042	140	11	170	7.4	325	125	1086.85
	MW-1013		680	< 2.4	4.4	570	4.3	23000	65	730	6.2	1172	91	1108.25
	MW-1013A		390	< 2.4	< 1.3	370	0.071	960	150	530	6.7	856	98	1096.00
	MW-1013B		490	< 2.4	390	2100	< 0.033	26000	1700	3000	6.2	3181	215	1096.30
	MW-1013C		500	15	< 1.3	2100	9.8	9100	1500	3100	6.3	3241		1097.96
	MW-1013C	(Dup)	460	14	< 1.3	2700	13	12000	1700	3100	6.4	3265	55	
	MW-1014		170	< 2.4	6.3	300	< 0.033	330	160	470	6.4	711	166	1117.03
	MW-1014A		470	< 2.4	4.8	1200	< 0.033	210	1100	1900	6.6	2203	162	1114.88
	MW-1014B		460	< 2.4	550	1700	< 0.033	11000	1400	2600	6.4	2850	178	1111.43
	MW-1014C		310	20	< 1.3	510	4.8	1600	260	720	6.6	1059	72	1106.80
	MW-1015A		77	< 1.5	< 2.7	85	< 0.005	6.5	10	120	7	193	162	1087.28
	MW-1015B		170	< 1.5	< 2.7	150	0.28	69	< 2.5	290	7.5	583	-44	1087.27
06/09														
	MW-1000PR		230	3.5	15	450	0.52	2200	280	690	6.5	904	158	1086.90
	MW-1002		47	< 1.5	< 2.7	49	< 0.005	< 1	5.2	64	6.6	120		1089.92
	MW-1002G		87	< 1.5	< 2.7	98	< 0.005	< 1	8.3	170	6.6	242		1089.84
	MW-1002G	(Dup)	86	< 1.5	< 2.7	98	< 0.005	< 1	8.7	150				
	MW-1004P		160	< 1.5	< 2.7	130	0.067	57	< 2.5	150	7.2	299	105	1104.32
	MW-1004S		52	< 1.5	< 2.7	77	0.016	< 1	28	95	6.3	189	202	1105.83

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
06/09														
	MW-1005		47	1.8	< 2.7	160	14	310	15	400	6.2	516		1137.78
	MW-1005P		240	2.1	< 2.7	200	1.2	65	< 2.5	270	7.1	488	-4	1136.49
	MW-1005S		170	5.9	< 2.7	150	4.2	210	< 2.5	240	7	332		1136.79
	MW-1010P		150	18	< 2.7	150	0.026	120	16	200	7.4	334	100	1086.83
	MW-1013		580	3.2	14	520	5.3	21000	51	710	6.1	1154	86	1110.60
	MW-1013A		320	< 2.4	< 13	460	0.044	2400	200	610	6.6	887	126	1096.57
	MW-1013B		580	3.9	300	2000	< 0.033	20000	1700	3200	6.2	3160	235	1096.97
	MW-1013B	(Dup)	630	3.9	270	2000	< 0.033	19000	1600	3200				
	MW-1013C		550	18	< 13	2000	9.8	9800	1900	3100	6.4	3251	51	1098.14
	MW-1014		170	< 2.4	30	290	< 0.033	320	170	460	6.3	710	176	1117.02
	MW-1014A		500	4.1	18	1200	0.12	200	970	1900	6.25	2195	180	1114.70
	MW-1014B		510	2.4	490	1800	< 0.033	13000	1300	2800	6.3	2893	216	1111.48
	MW-1014C		300	19	< 13	510	5	1600	260	720	6.6	1026	69	1106.86
	MW-1015A		81	< 1.5	< 13	83	< 0.033	6.4	11	130	6.8	196	172	1087.06
	MW-1015B		180	< 1.5	< 2.7	140	0.23	73	< 2.5	300	7.6	585	-46	1087.01
10/09														
	MW-1000PR		220	2.8	9.7	500	0.38	2600	270	610	6.4	929	93	1086.56
	MW-1002		51	< 1.5	12	56	< 0.0037	0.34	5.1	64	6.6	131		1088.96
	MW-1002G		80	< 1.5	< 0.31	110	< 0.0037	0.21	8	130	6.6	241		1088.91
	MW-1004P		160	< 1.5	< 0.31	150	1.3	350	< 2.5	150	7.2	315	24	1103.10
	MW-1004S		52	< 1.5	1.5	77	< 0.0037	2.3	24	110	6.2	186	182	1104.28
	MW-1005		33	< 1.5	1.2	230	11	300	15	370	6	724		1135.95
	MW-1005P		250	< 1.5	< 0.31	220	0.83	72	< 2.5	230	7.1	469	-1	1135.44
	MW-1005S		180	3.3	< 0.31	170	4	220	< 2.5	170	7	339		1135.59

Created By: SGL Checked By: DAT

Historical Groundwater Results (Quarterly Parameters)

Date	SamplePointName		Alk (mg/l)	As (ug/l)	Cu (ug/l)	Hard (mg/l)	Fe (mg/l)	Mn (ug/l)	Sulf (mg/l)	TDS (mg/l)	Field pH	Field Cond	Redox (mV)	Grd Water El (Feet)
10/09														
	MW-1005S	(Dup)	180	4.1	< 0.31	170	3.6	240	< 2.5	180				
	MW-1010P		150	25	< 0.31	160	0.02	110	18	160	7.4	327	74	1086.42
	MW-1013		600	< 2.4	6.8	1100	10	23000	40	700	6.1	1153	75	1110.93
	MW-1013A		320	< 2.4	1.4	380	0.012	1400	170	520	6.6	862	98	1096.23
	MW-1013B		600	< 2.4	360	2100	0.031	23000	1600	3000	6.2	3185	227	1096.47
	MW-1013C		510	15	< 0.31	2100	9.8	10000	1700	3000	6.3	3289	63	1097.80
	MW-1014		170	< 2.4	7.1	310	< 0.0037	270	170	440	6.3	735	167	1117.09
	MW-1014A		490	< 2.4	19	1300	0.076	330	940	1800	6.5	2173	173	1114.28
	MW-1014B		590	2.7	490	1900	0.01	13000	1500	2600	6.3	2964	209	1111.21
	MW-1014C		300	20	< 0.31	540	4.3	1700	230	670	6.6	1034	71	1106.57
	MW-1014C	(Dup)	290	20	< 0.31	520	4.2	1600	250	670	6.59	1045		
	MW-1015A		82	< 1.5	0.37	88	< 0.0037	7	11	98	6.8	192	105	1086.54
	MW-1015B		180	< 1.5	< 0.31	150	0.12	69	< 2.5	280	7.6	596	-13	1086.53
12/09														
	MW-1004P		130	< 0.8	< 2.7	140	0.63	180	< 2.5	110	7.1	300.7	20	1103.61
	MW-1004P	(Dup)	130	< 0.8	< 2.7	73	0.32	95	< 2.5	98				

Created By: SGL Checked By: DAT

Attachment 2

Statistical Results

Trend Graphs

Historical Data

(Groundwater - Annual Parameters)

Trend Analysis Results - Groundwater (Annual Parameters)
Year Ending 2009

	Barium	Cadmium	Calcium	Chloride	Chromium	Lead	Magnesium	Mercury	Potassium	Selenium	Silver	Sodium	Zinc
MW-1000PR													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Mann-Kendall S	-10	0	-9	5	2	-3	-12	0	-4	3	-2	0	-15
p-Level	0.096	1.000	0.136	0.359	0.860	0.720	0.036	1.000	0.334	0.720	0.860	1.000	0.002
Trend							-						-
Trend Results for All Data Since Oct. 1997													
Sample Size	15	15	15	9	15	15	15	15	7	15	15	7	23
Mann-Kendall S	11	-14	-80	27	14	6	-82	0	4	12	10	-8	-98
p-Level	0.626	0.527	0.000	0.004	0.527	0.808	0.000	1.000	0.667	0.592	0.662	0.310	0.009
Trend			-	+			-						-
MW-1002													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	0	0	-1	2	-1	0	0	0	4	2	2	-3	0
p-Level	1.000	1.000	1.000	0.750	1.000	1.000	1.000	1.000	0.334	0.816	0.816	0.542	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	11	11	10	6	11	11	10	11	6	11	11	6	21
Mann-Kendall S	-24	-10	-20	9	-6	0	-19	0	5	8	8	-6	0
p-Level	0.073	0.494	0.090	0.136	0.705	1.000	0.108	1.000	0.470	0.595	0.595	0.371	1.000
Trend													
MW-1002G													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	2	0	-2	4	0	0	-6	0	0	0	0	-3	0
p-Level	0.816	1.000	0.816	0.334	1.000	1.000	0.234	1.000	1.000	1.000	1.000	0.542	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	11	11	10	6	11	11	10	11	6	11	11	6	21
Mann-Kendall S	-8	-10	-8	11	-9	0	-13	0	1	-9	0	-1	-10
p-Level	0.595	0.494	0.542	0.056	0.542	1.000	0.292	1.000	1.000	0.542	1.000	1.000	0.788
Trend													
MW-1004P													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	-3	2	-3	-1	0	0	-6	0	-6	5	0	-4	-2
p-Level	0.650	0.816	0.650	1.000	1.000	1.000	0.234	1.000	0.084	0.359	1.000	0.334	0.816
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	13	13	13	7	13	13	13	13	7	13	13	7	22
Mann-Kendall S	4	1	1	2	-23	0	3	0	-6	21	0	-1	15
p-Level	0.858	1.000	1.000	0.886	0.184	1.048	0.905	1.048	0.472	0.228	1.048	1.000	0.696
Trend													
MW-1004S													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	0	0	3	4	0	4	0	0	-2	4	0	-1	0
p-Level	1.000	1.000	0.650	0.334	1.000	0.484	1.000	1.000	0.750	0.484	1.000	1.000	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	13	13	13	7	13	13	13	13	7	13	13	7	22
Mann-Kendall S	52	-10	58	14	-28	12	51	0	-5	5	0	2	0
p-Level	0.000	0.590	0.000	0.050	0.100	0.510	0.001	1.048	0.562	0.812	1.048	0.886	1.000
Trend	+		+				+						

Trend Analysis Results - Groundwater (Annual Parameters)
Year Ending 2009

	Barium	Cadmium	Calcium	Chloride	Chromium	Lead	Magnesium	Mercury	Potassium	Selenium	Silver	Sodium	Zinc
MW-1005													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	0	1	-7	-2	-1	0	-5	0	-4	0	-4	-2	0
p-Level	1.000	1.000	0.159	0.750	1.000	1.000	0.359	1.000	0.334	1.000	0.484	0.750	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	11	11	10	6	11	11	10	11	6	11	11	6	21
Mann-Kendall S	-16	13	-26	-11	-20	0	-22	0	-3	0	2	-2	0
p-Level	0.250	0.358	0.022	0.056	0.142	1.000	0.059	1.000	0.720	1.000	0.940	0.860	1.000
Trend													
MW-1005P													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	-3	0	-2	2	0	2	-5	0	-2	2	0	6	-4
p-Level	0.650	1.000	0.816	0.750	1.000	0.816	0.359	1.000	0.750	0.816	1.000	0.084	0.484
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	11	11	11	6	11	11	11	11	6	11	11	6	21
Mann-Kendall S	-9	-13	-9	7	-6	8	-7	0	5	8	0	6	12
p-Level	0.542	0.358	0.542	0.272	0.705	0.595	0.648	1.000	0.470	0.595	1.000	0.371	0.742
Trend													
MW-1005S													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	-2	0	-3	0	2	0	-7	0	0	4	2	-5	0
p-Level	0.816	1.000	0.650	1.000	0.816	1.000	0.159	1.000	1.000	0.484	0.816	0.209	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	11	11	10	6	11	11	10	11	6	11	11	6	21
Mann-Kendall S	-3	0	-4	-3	-1	0	1	0	4	3	8	-2	0
p-Level	0.880	1.000	0.795	0.720	1.000	1.000	1.000	1.000	0.595	0.880	0.595	0.860	1.000
Trend													
MW-1010P													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Mann-Kendall S	-6	0	-6	4	0	1	-4	0	-1	0	0	-4	0
p-Level	0.371	1.000	0.371	0.484	1.000	1.000	0.595	1.000	1.000	1.000	1.000	0.334	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	15	15	15	9	15	15	15	15	7	15	15	7	23
Mann-Kendall S	41	-21	50	20	0	10	41	0	-1	-17	-4	-9	0
p-Level	0.046	0.328	0.014	0.044	1.000	0.662	0.046	1.000	1.000	0.436	0.884	0.238	1.000
Trend													
MW-1013													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	5	5	5	5	4	4	5	5	4	5
Mann-Kendall S	-7	0	-2	-6	0	1	-4	0	-5	2	0	-4	0
p-Level	0.159	1.000	0.816	0.234	1.000	1.000	0.484	1.000	0.209	0.816	1.000	0.334	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	5	5	5	5	5	5	5	4	4	5	5	4	5
Mann-Kendall S	-7	0	-2	-6	0	1	-4	0	-5	2	0	-4	0
p-Level	0.159	1.000	0.816	0.234	1.000	1.000	0.484	1.000	0.209	0.816	1.000	0.334	1.000
Trend													

Trend Analysis Results - Groundwater (Annual Parameters)
Year Ending 2009

	Barium	Cadmium	Calcium	Chloride	Chromium	Lead	Magnesium	Mercury	Potassium	Selenium	Silver	Sodium	Zinc
MW-1013A													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	5	5	5	5	4	4	5	5	4	5
Mann-Kendall S	-10	0	-3	2	0	-4	-4	0	-3	0	2	-4	-4
p-Level	0.016	1.000	0.650	0.816	1.000	0.484	0.484	1.000	0.542	1.000	0.816	0.334	0.484
Trend	-												
Trend Results for All Data Since Oct. 1997													
Sample Size	5	5	5	5	5	5	5	4	4	5	5	4	5
Mann-Kendall S	-10	0	-3	2	0	-4	-4	0	-3	0	2	-4	-4
p-Level	0.016	1.000	0.650	0.816	1.000	0.484	0.484	1.000	0.542	1.000	0.816	0.334	0.484
Trend													
MW-1013B													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Mann-Kendall S	0	0	-12	0	0	0	-11	0	-4	0	0	-4	-9
p-Level	1.000	1.000	0.036	1.000	1.000	1.000	0.056	1.000	0.334	1.000	1.000	0.334	0.136
Trend			-										
Trend Results for All Data Since Oct. 1997													
Sample Size	17	17	18	12	17	17	18	17	10	17	17	10	25
Mann-Kendall S	0	-7	-21	17	-69	4	-51	0	-22	-16	-16	-17	207
p-Level	1.000	0.808	0.454	0.280	0.004	0.904	0.058	1.000	0.059	0.542	0.542	0.156	0.000
Trend					-								+
MW-1013C													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Mann-Kendall S	3	3	-9	3	-5	1	-3	0	-4	-1	0	-4	-3
p-Level	0.720	0.720	0.136	0.650	0.470	1.000	0.720	1.000	0.334	1.000	1.000	0.334	0.720
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	17	17	18	12	17	17	18	17	10	17	17	10	25
Mann-Kendall S	14	1	5	39	-7	12	43	0	-11	-7	-15	1	-114
p-Level	0.598	0.984	0.882	0.007	0.808	0.656	0.112	1.000	0.380	0.808	0.570	1.000	0.008
Trend				+									-
MW-1014													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	5	5	5	5	4	4	5	5	4	5
Mann-Kendall S	0	2	-6	1	0	0	-5	0	-4	0	2	-2	-7
p-Level	1.000	0.816	0.234	1.000	1.000	1.000	0.359	1.000	0.334	1.000	0.816	0.750	0.159
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	5	5	5	5	5	5	5	4	4	5	5	4	5
Mann-Kendall S	0	2	-6	1	0	0	-5	0	-4	0	2	-2	-7
p-Level	1.000	0.816	0.234	1.000	1.000	1.000	0.359	1.000	0.334	1.000	0.816	0.750	0.159
Trend													
MW-1014A													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Mann-Kendall S	0	0	-9	-5	-5	-5	-6	0	-4	-1	-5	2	-3
p-Level	1.000	1.000	0.136	0.359	0.470	0.470	0.371	1.000	0.334	1.000	0.470	0.750	0.720
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	14	14	15	9	14	14	15	14	7	14	14	7	22
Mann-Kendall S	-30	0	-49	5	-18	3	-36	0	-18	7	-1	15	34
p-Level	0.113	1.000	0.016	0.687	0.359	0.914	0.083	1.000	0.006	0.748	1.000	0.030	0.357
Trend									-				

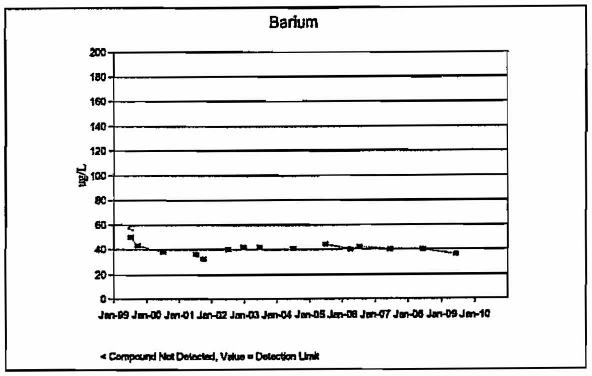
Trend Analysis Results - Groundwater (Annual Parameters)
Year Ending 2009

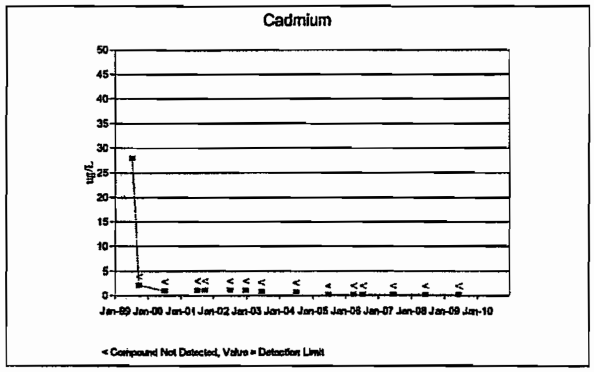
	Barium	Cadmium	Calcium	Chloride	Chromium	Lead	Magnesium	Mercury	Potassium	Selenium	Silver	Sodium	Zinc
MW-1014B													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Mann-Kendall S	0	1	-6	6	-1	5	-3	0	-3	0	1	-4	-4
p-Level	1.000	1.000	0.371	0.234	1.000	0.470	0.720	1.000	0.542	1.000	1.000	0.334	0.595
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	17	17	18	12	17	17	18	17	10	17	17	10	25
Mann-Kendall S	0	-89	-68	24	4	16	-77	0	-16	-41	20	-14	-165
p-Level	1.000	0.000	0.009	0.116	0.904	0.542	0.002	1.000	0.186	0.100	0.440	0.254	0.000
Trend		-	-				-						-
MW-1014C													
Trend Results for Most Recent 5 Years													
Sample Size	6	6	6	5	6	6	6	6	4	6	6	4	6
Menn-Kendall S	0	1	-12	2	0	0	-15	0	-5	0	0	-4	-12
p-Level	1.000	1.000	0.036	0.816	1.000	1.000	0.002	1.000	0.209	1.000	1.000	0.334	0.036
Trend			-				-						-
Trend Results for All Data Since Oct. 1997													
Sample Size	17	17	18	12	17	17	18	17	10	17	17	10	25
Mann-Kendall S	63	12	-133	42	-13	4	-130	0	-13	-27	-4	-9	-285
p-Level	0.009	0.656	0.000	0.004	0.627	0.904	0.000	1.000	0.292	0.289	0.904	0.484	0.000
Trend	+		-	+			-						-
MW-1015A													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	-5	2	-1	4	0	5	-6	0	-2	0	0	-4	0
p-Level	0.359	0.816	1.000	0.334	1.000	0.359	0.234	1.000	0.750	1.000	1.000	0.334	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	20	20	10	5	20	20	10	20	5	20	20	5	25
Mann-Kendall S	-169	17	3	6	0	35	-6	0	-6	0	-11	-5	0
p-Level	0.000	0.608	0.862	0.234	1.000	0.274	0.664	1.000	0.234	1.000	0.749	0.359	1.000
Trend	-												
MW-1015B													
Trend Results for Most Recent 5 Years													
Sample Size	5	5	5	4	5	5	5	5	4	5	5	4	5
Mann-Kendall S	1	0	-1	3	0	4	-2	0	-2	2	0	0	0
p-Level	1.000	1.000	1.000	0.542	1.000	0.484	0.816	1.000	0.750	0.816	1.000	1.000	1.000
Trend													
Trend Results for All Data Since Oct. 1997													
Sample Size	20	20	10	5	20	20	10	20	5	20	20	5	25
Mann-Kendall S	-42	0	13	7	15	19	15	0	2	17	0	4	0
p-Level	0.186	1.000	0.292	0.159	0.654	0.564	0.216	1.000	0.816	0.608	1.000	0.484	1.000
Trend													

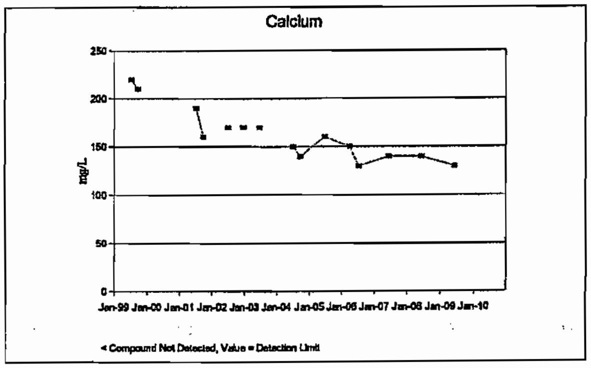
Notes: Overall increasing trend denoted by "+".
Overall decreasing trend denoted by "-"
Long term trend tests performed at a Type I (two-tailed) error rate of 0.01.
5-Year Trend tests performed at a Type I (two-tailed) error rate of 0.05.

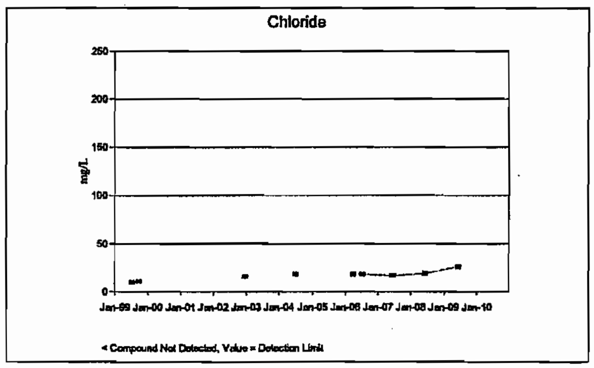
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

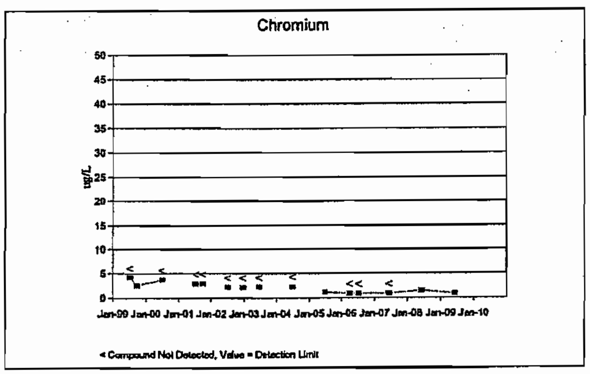
MW-1000P-R

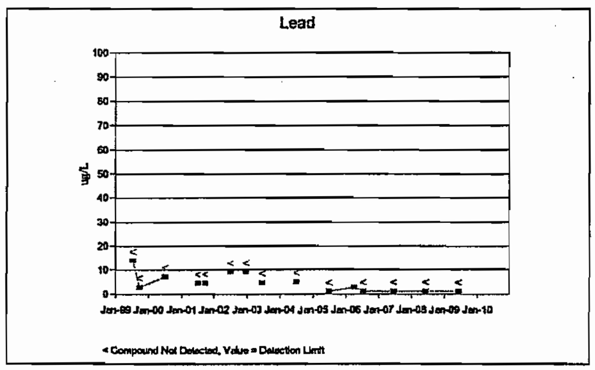


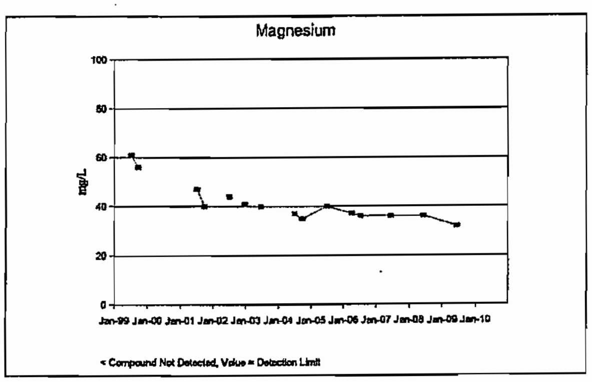


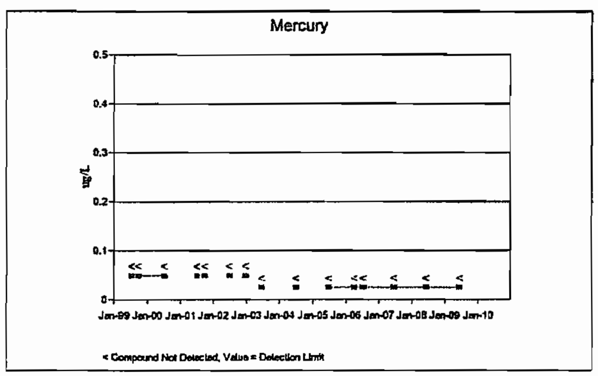








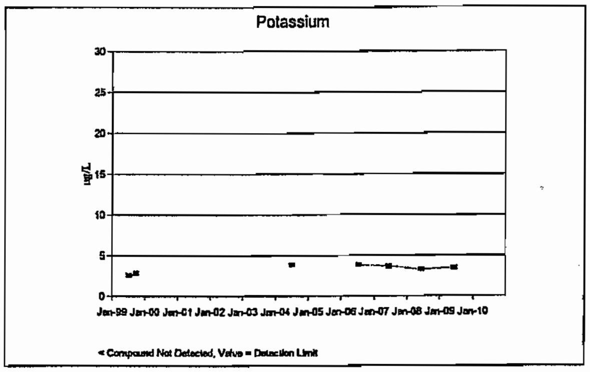


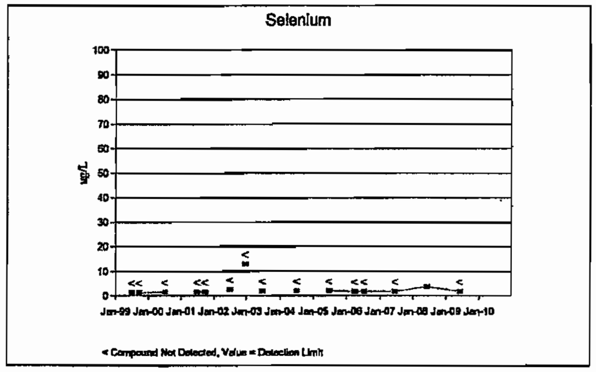


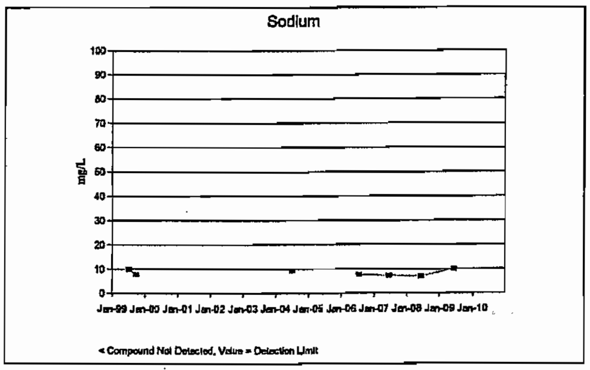
Created By: SGL   Checked By: DAT

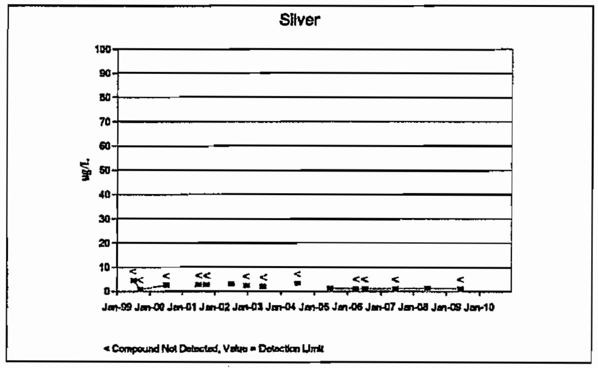
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

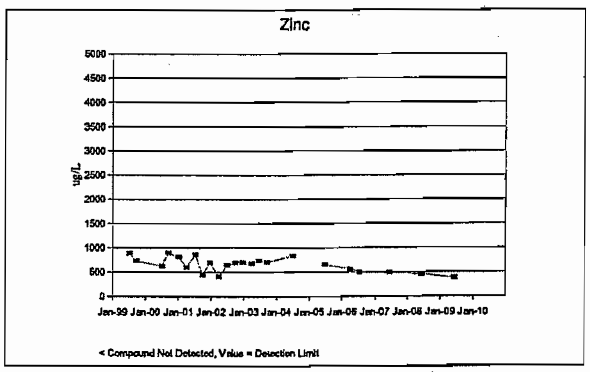
MW-1000P-R







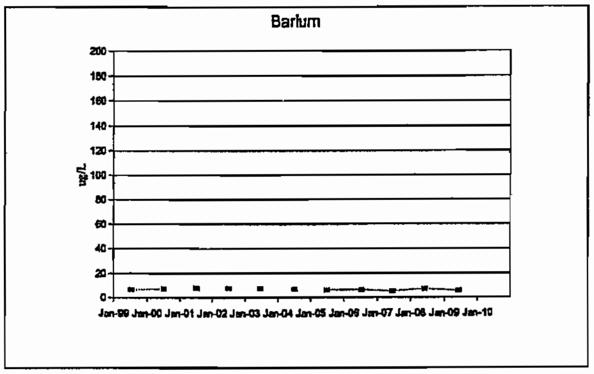


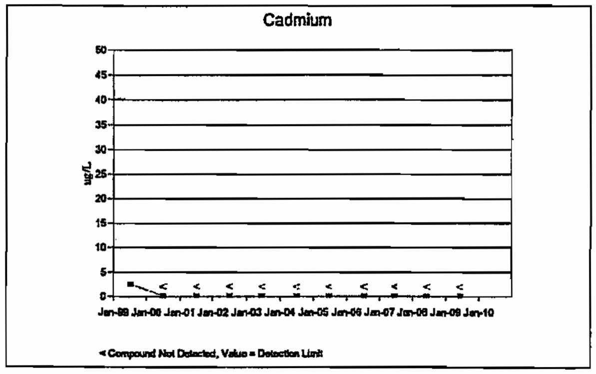


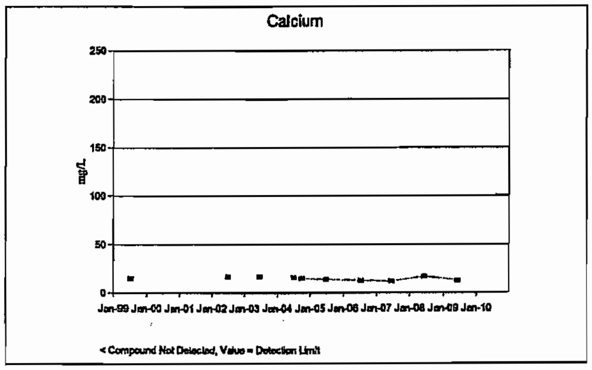
Created By: SGL Checked By: DAT

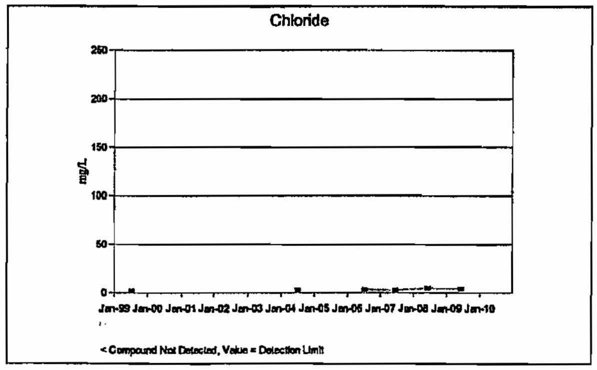
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

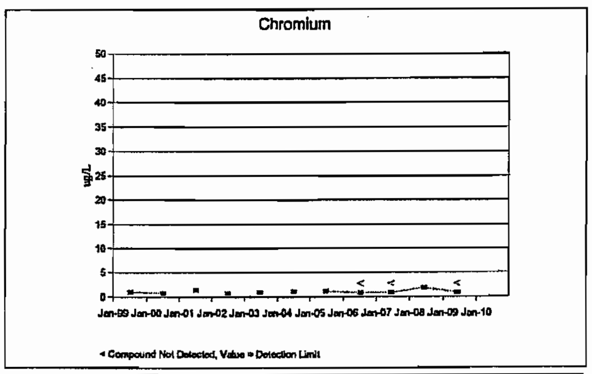
MW-1002

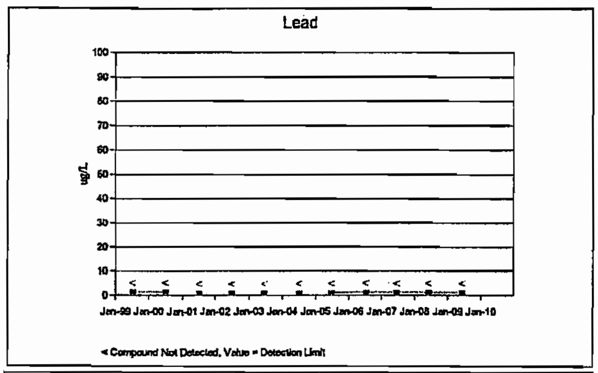


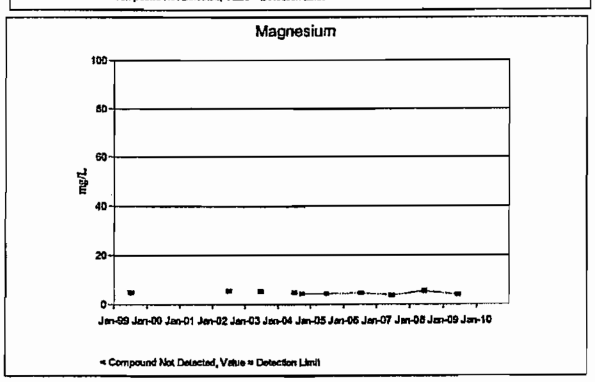


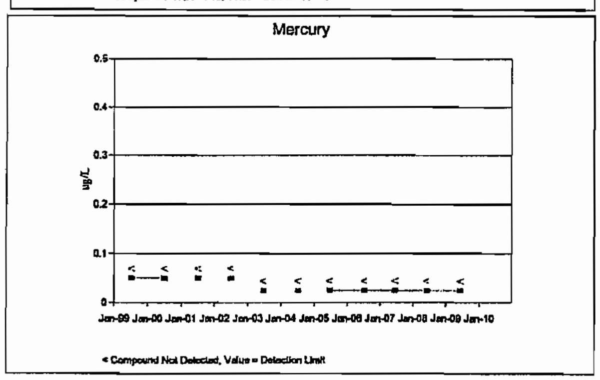








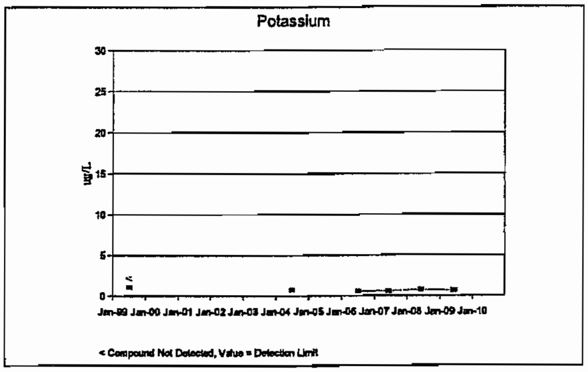


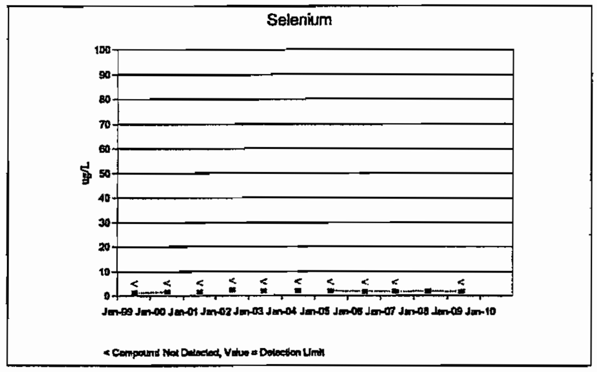


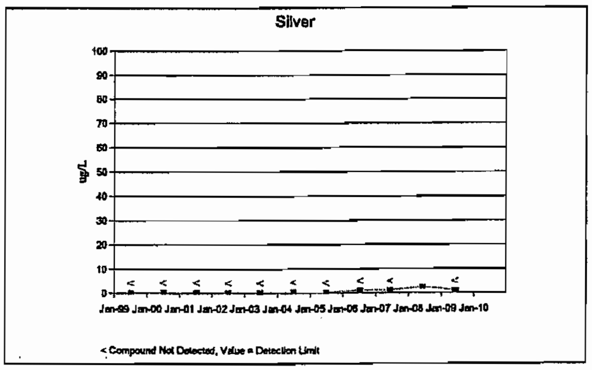
Created By: SGL Checked By: DAT

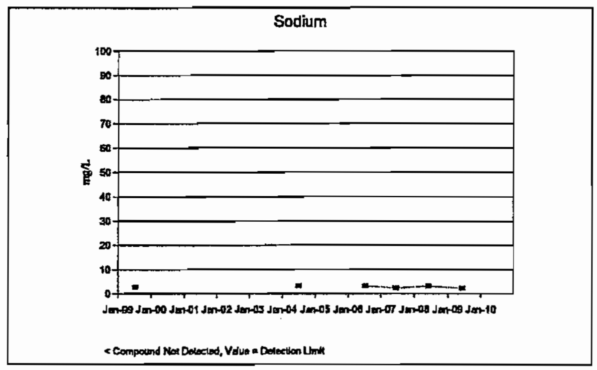
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

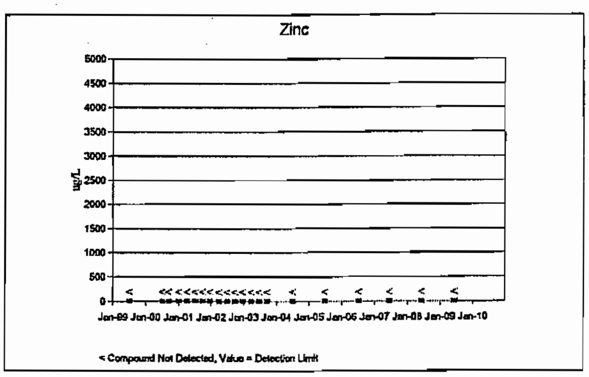
MW-1002







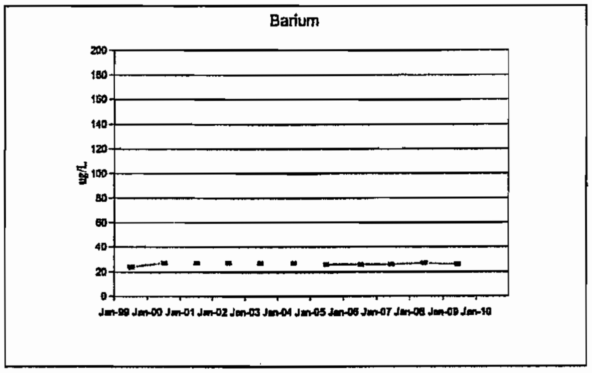


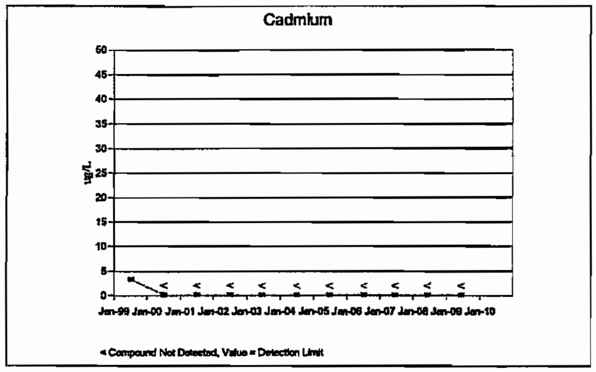


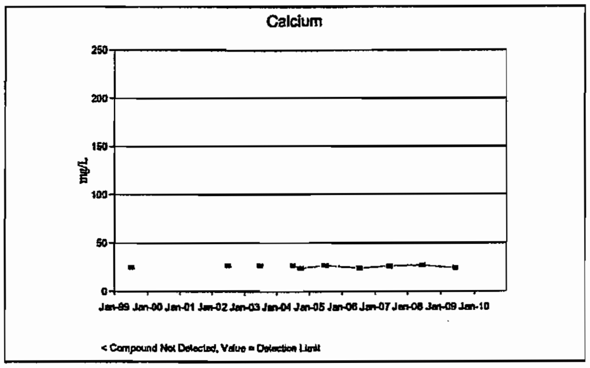
Created By: SGL Checked By: DAT

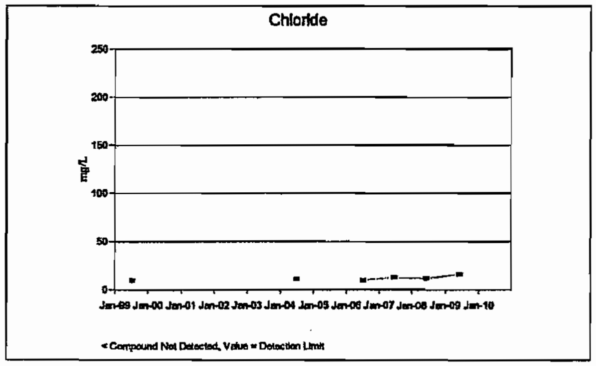
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

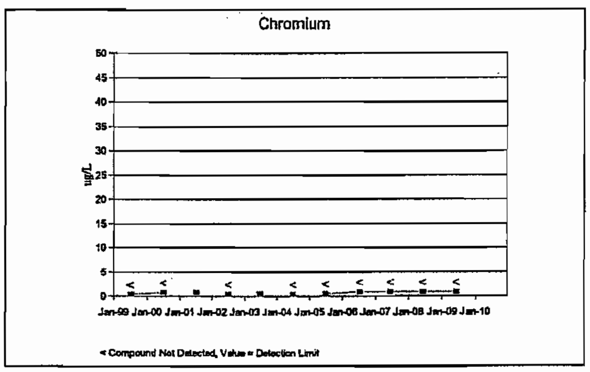
MW-1002G

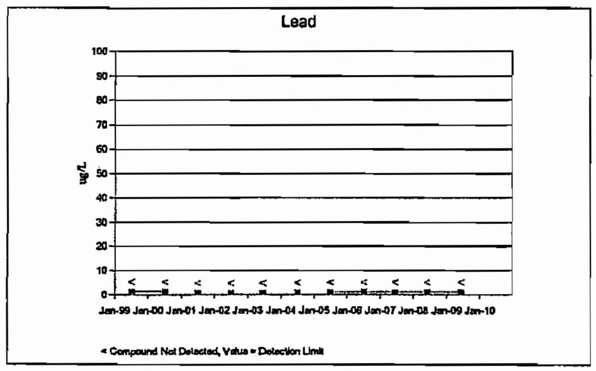


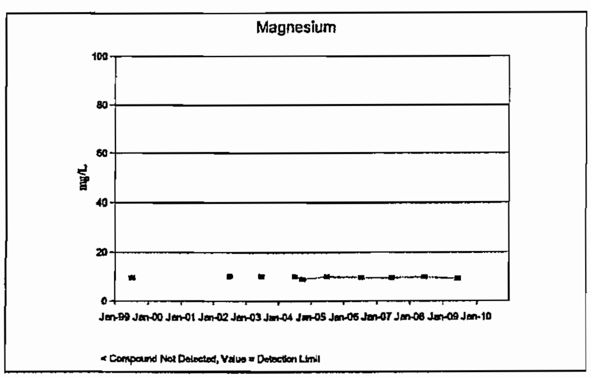


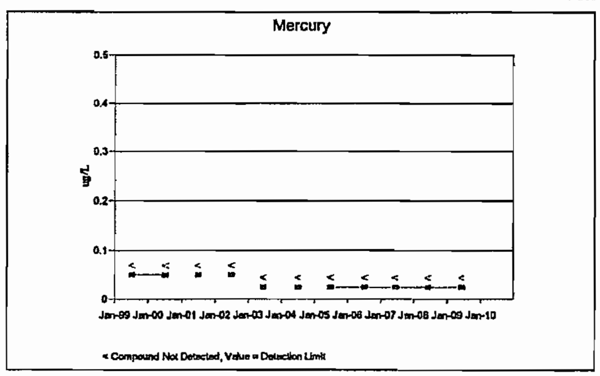








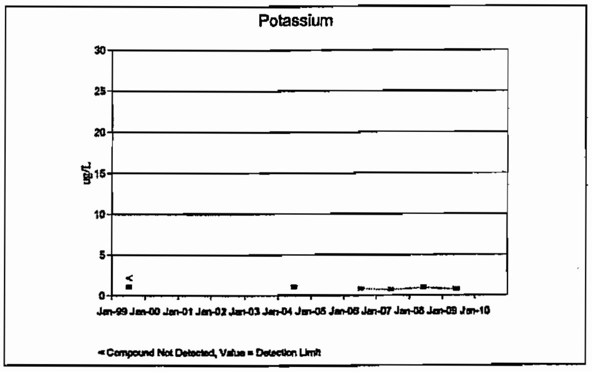


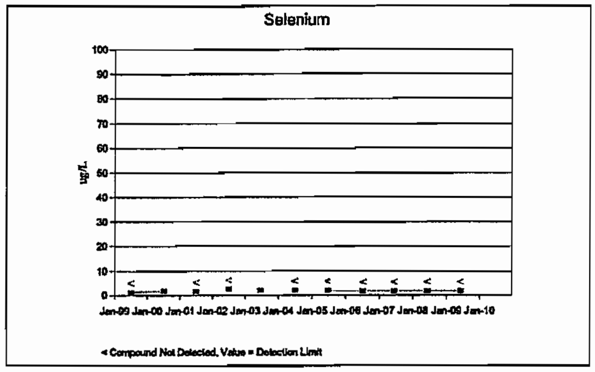


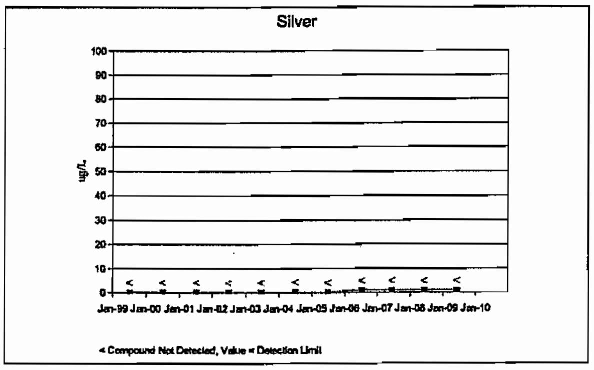
Created By: SGL Checked By: DAT

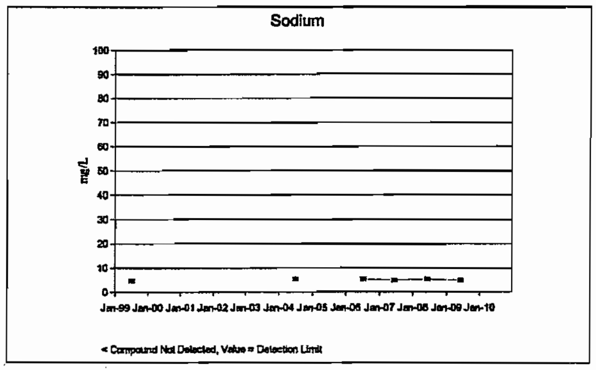
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

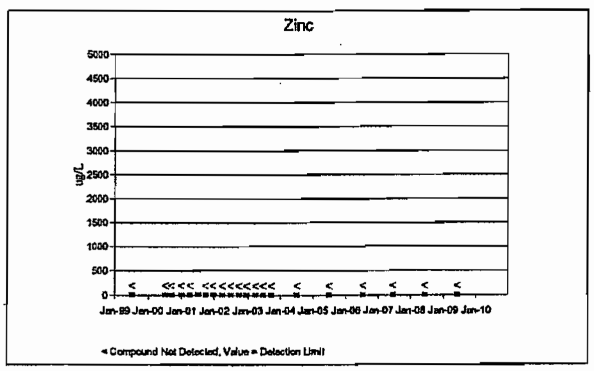
MW-1002G







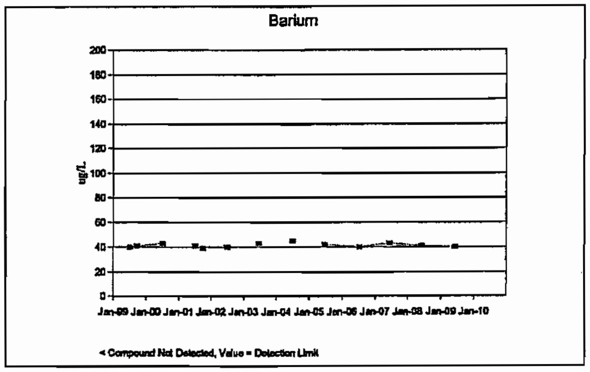


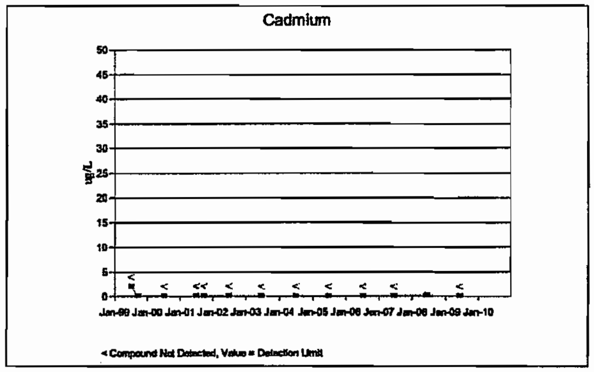


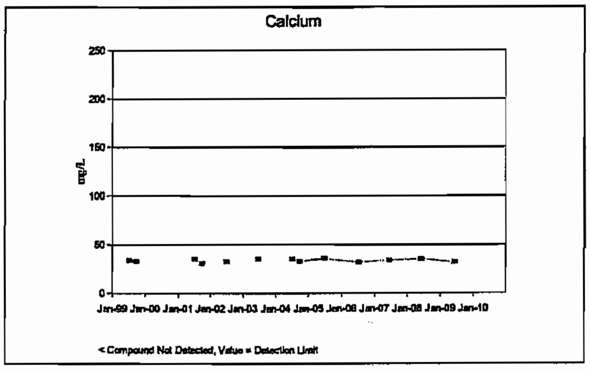
Created By: SGL Checked By: DAT

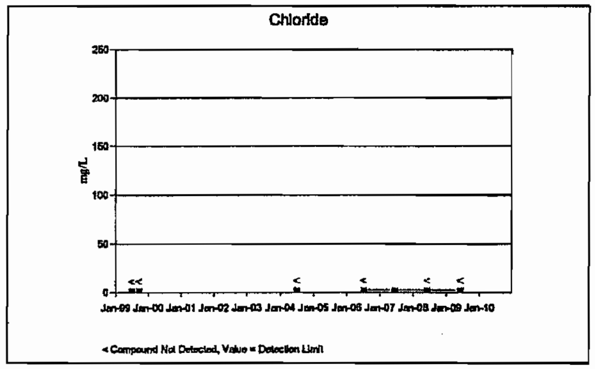
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

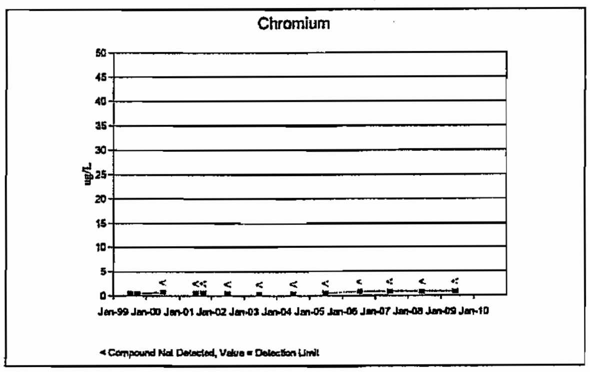
MW-1004P

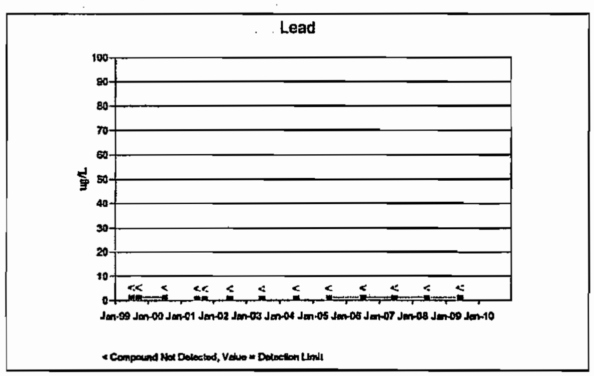


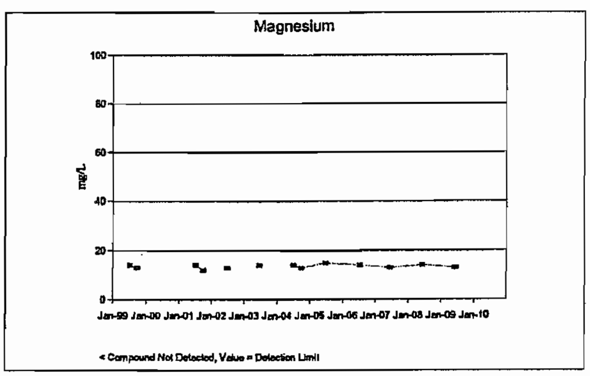


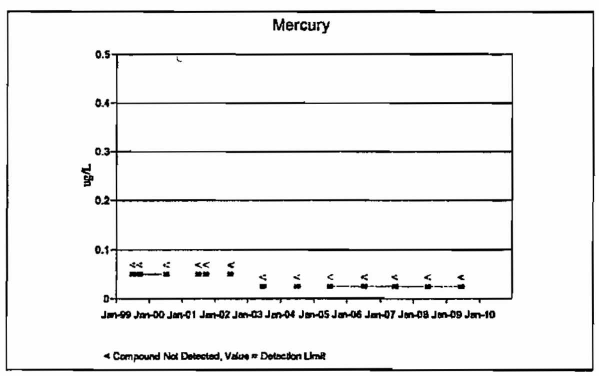








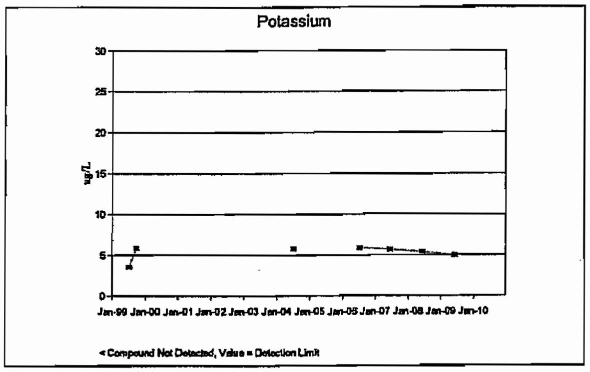


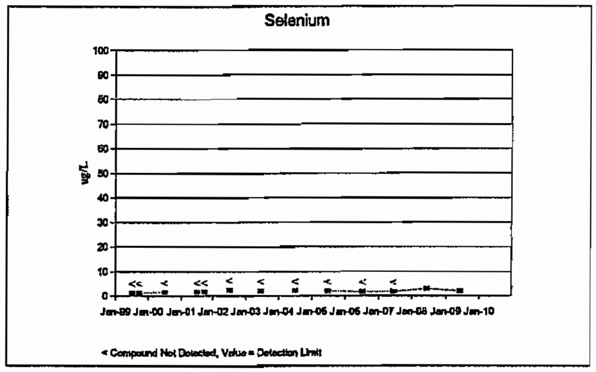


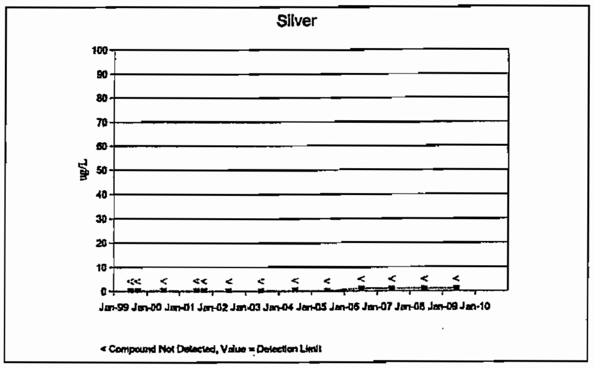
Created By: SGL Checked By: DAT

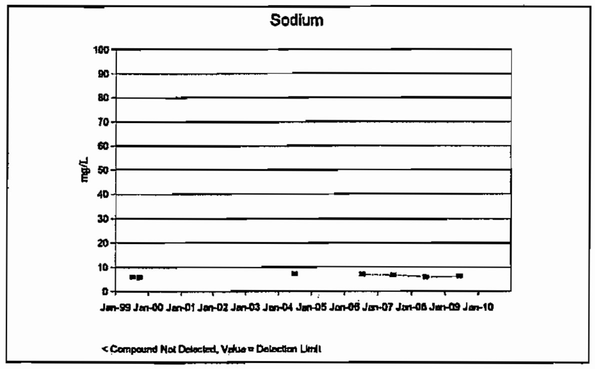
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

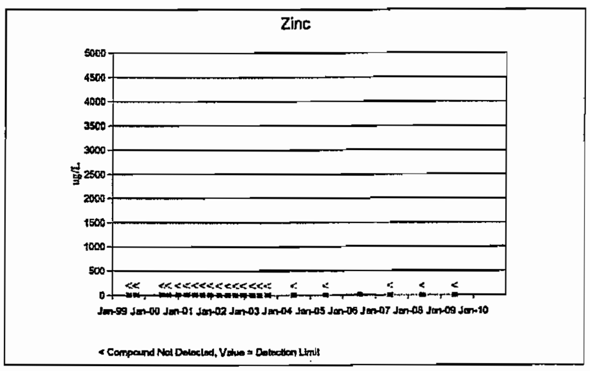
MW-1004P







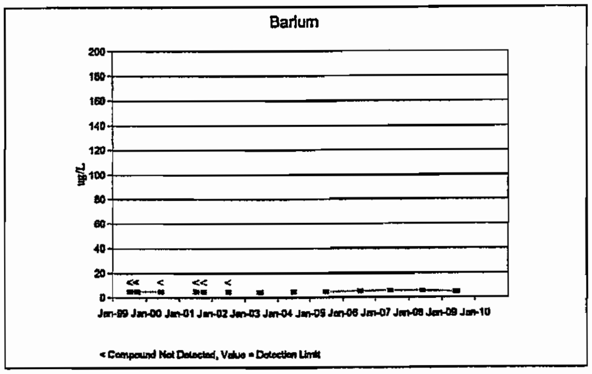


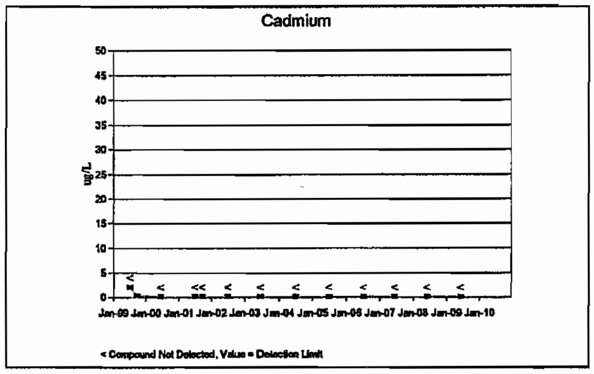


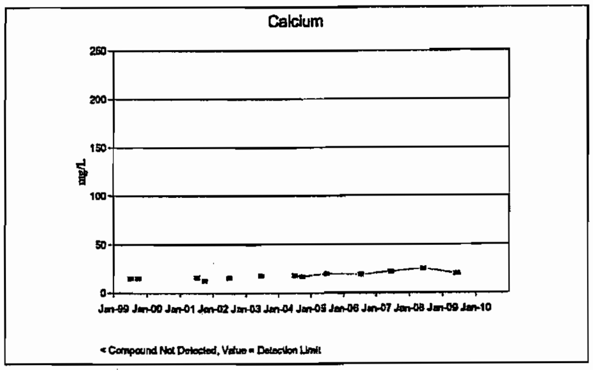
Created By: SGL Checked By: DAT

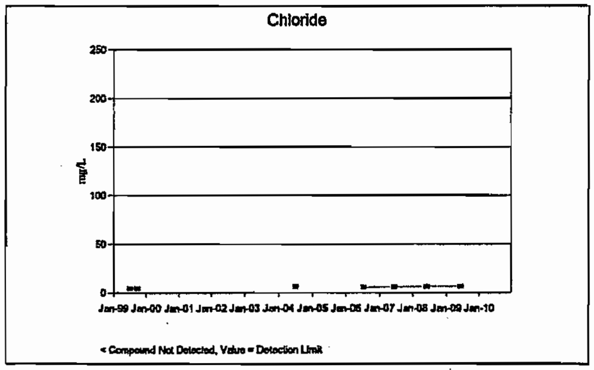
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

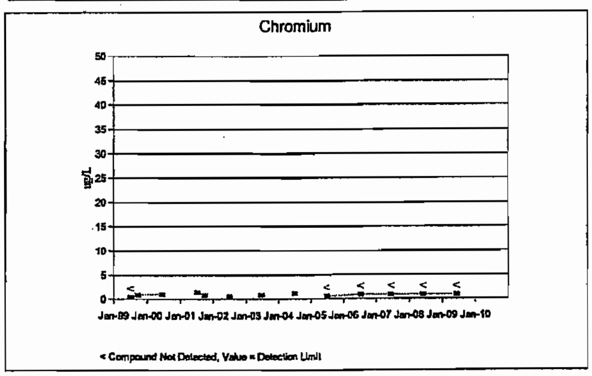
MW-1004S

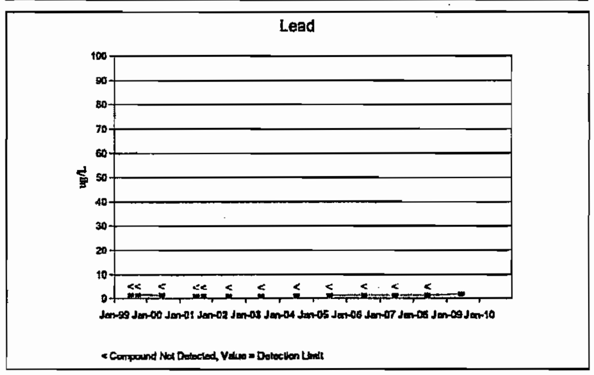


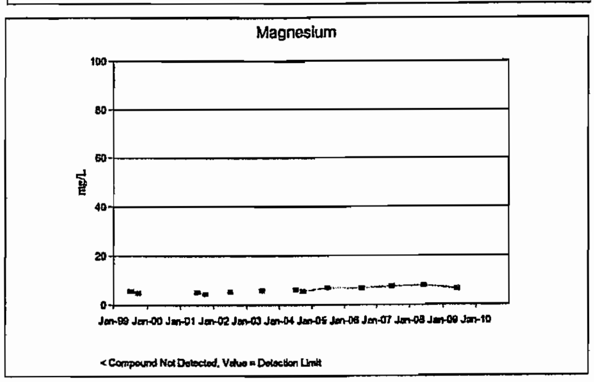


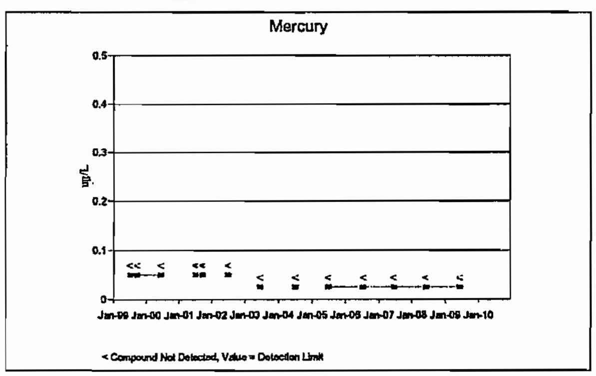








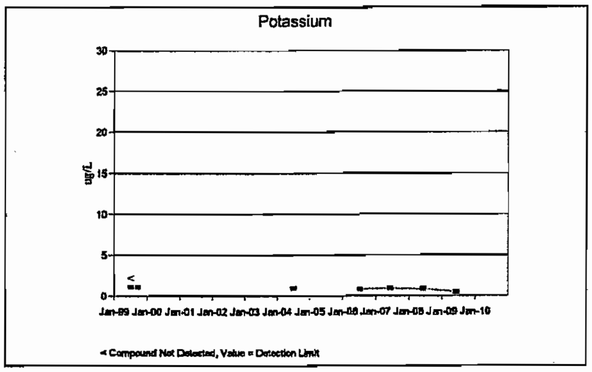


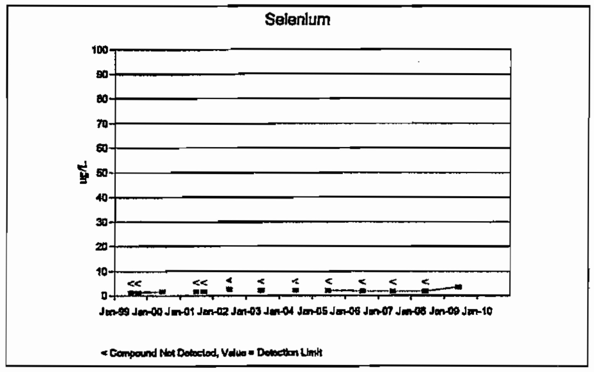


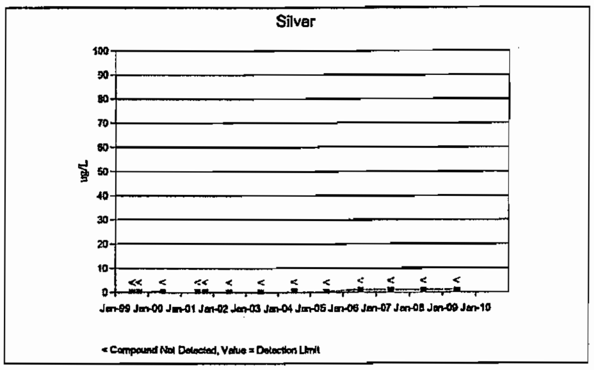
Created By: SGL Checked By: DAT

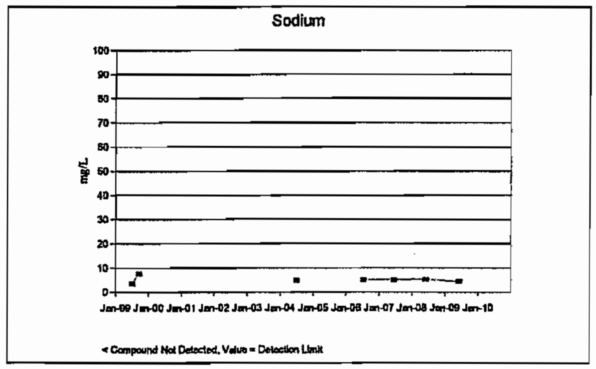
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

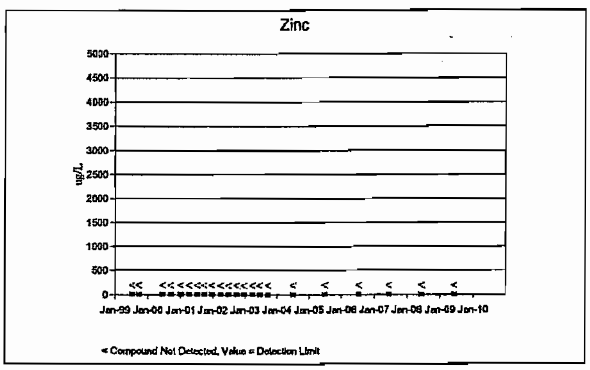
MW-1004S







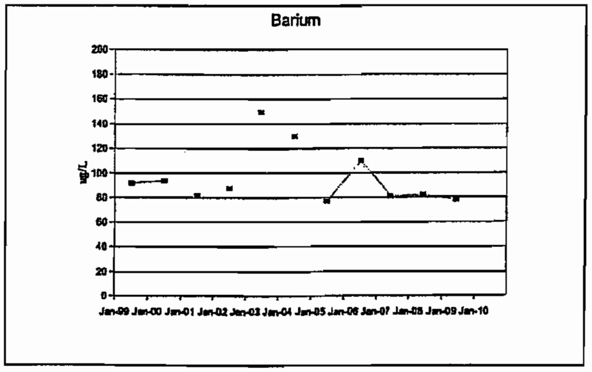


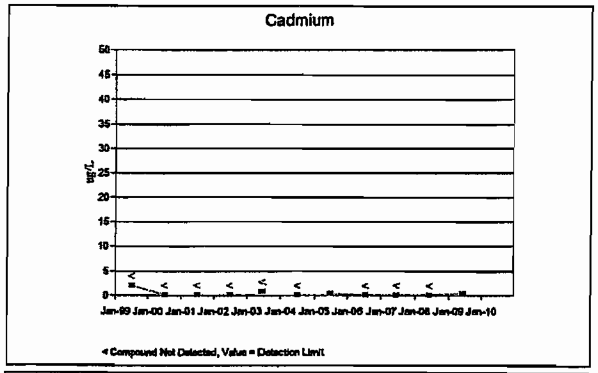


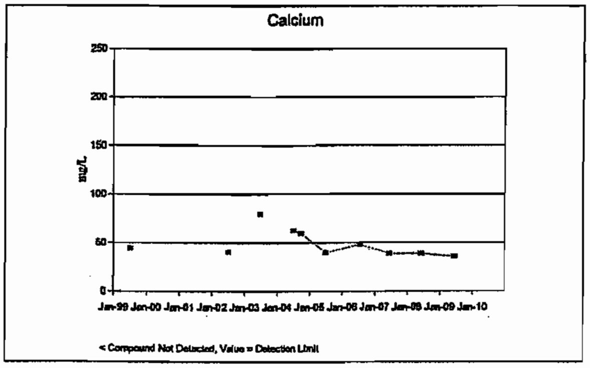
Created By: SGL Checked By: DAT

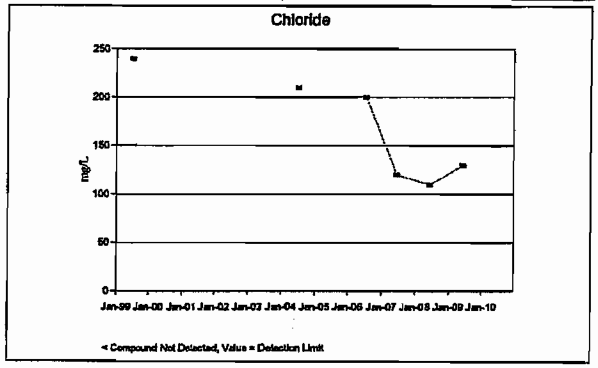
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

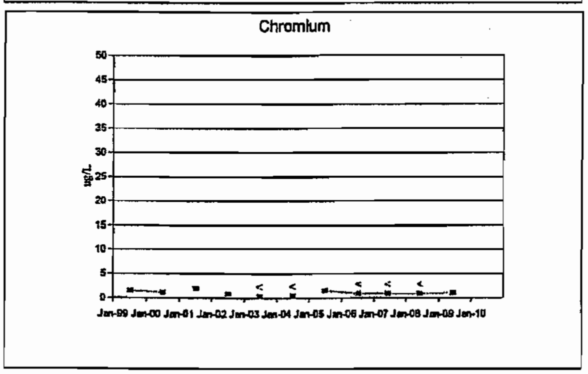
MW-1005

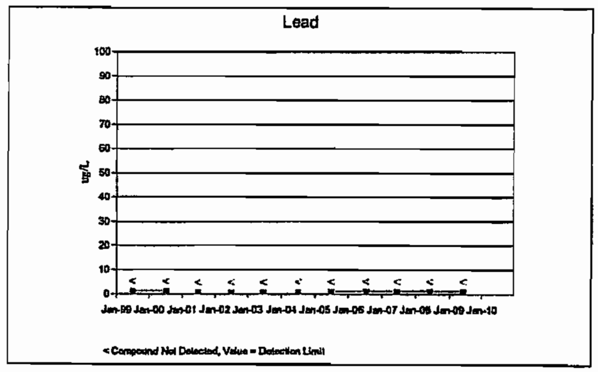


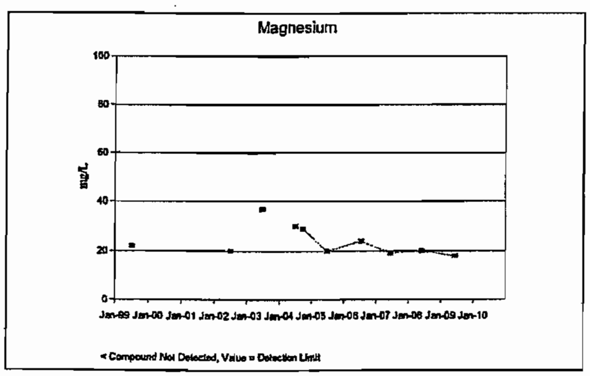


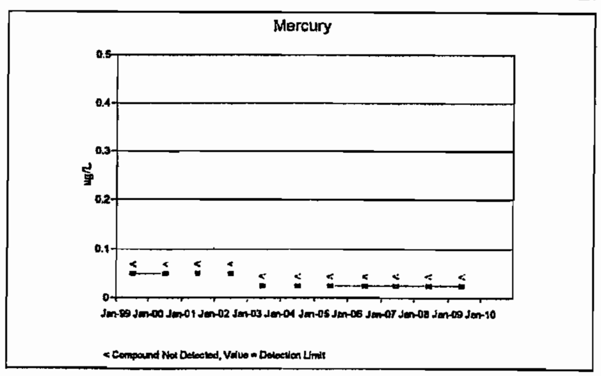








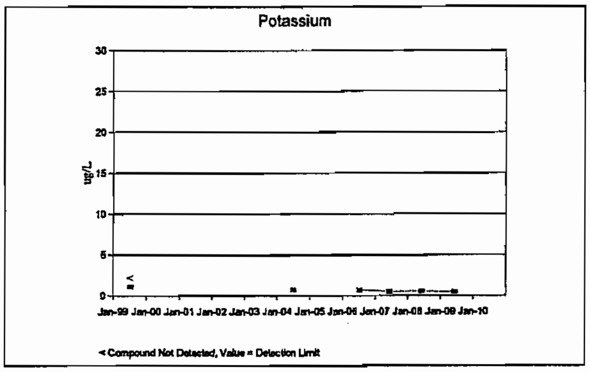


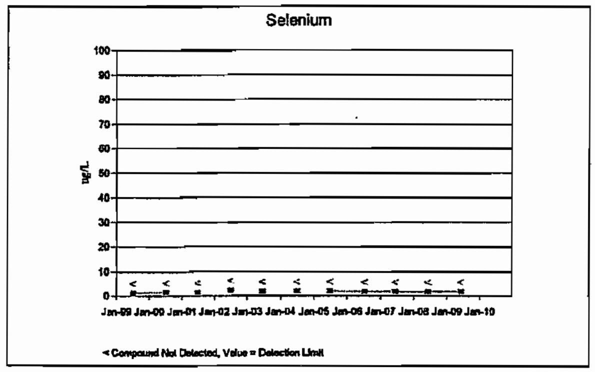


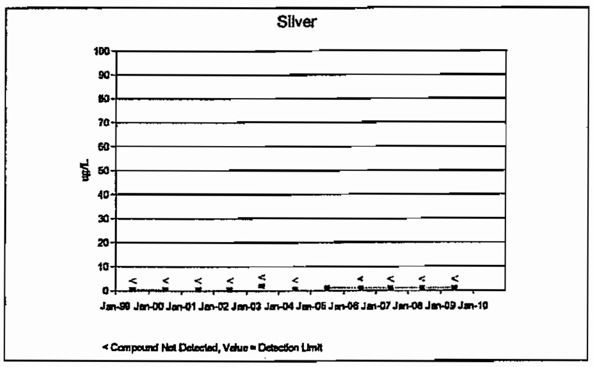
Created By: SGL Checked By: DAT

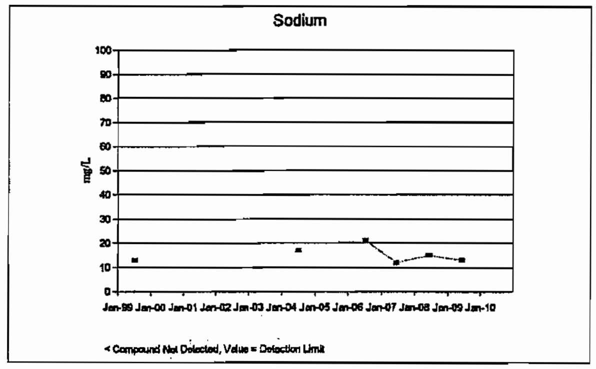
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

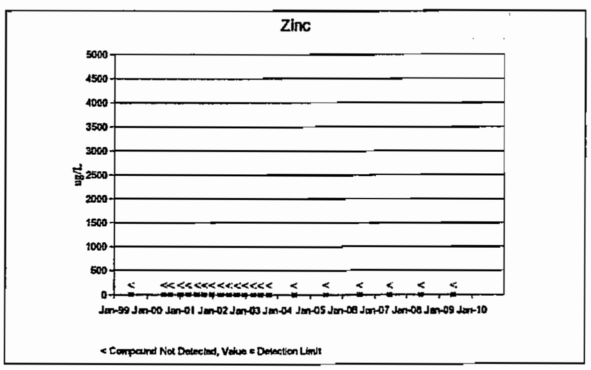
MW-1005







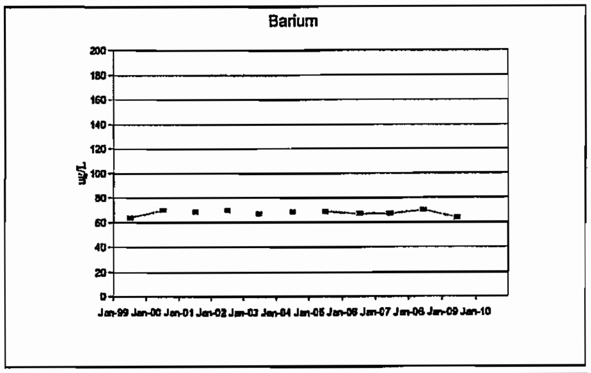


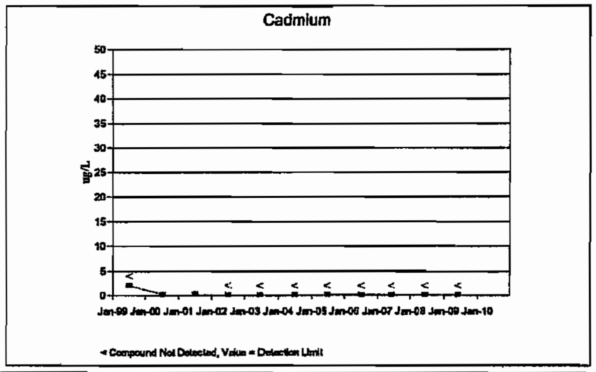


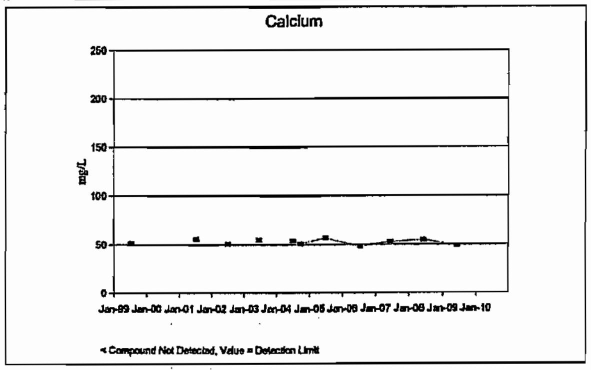
Created By: SGL Checked By: DAT

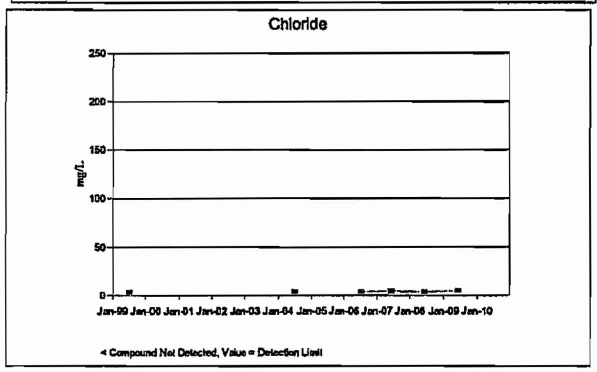
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

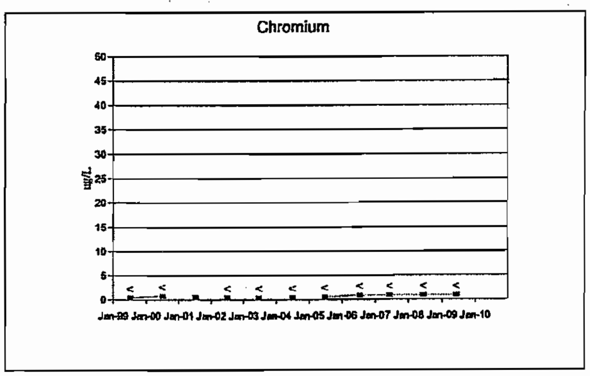
MW-1005P

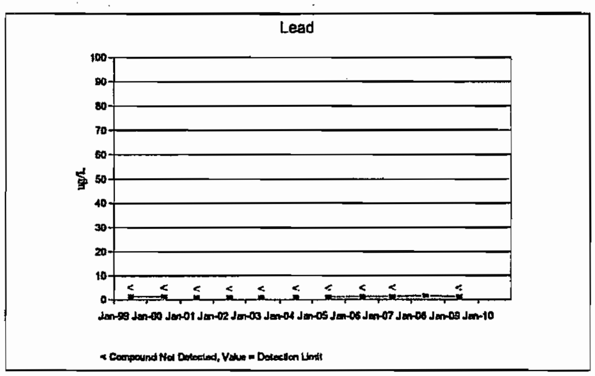


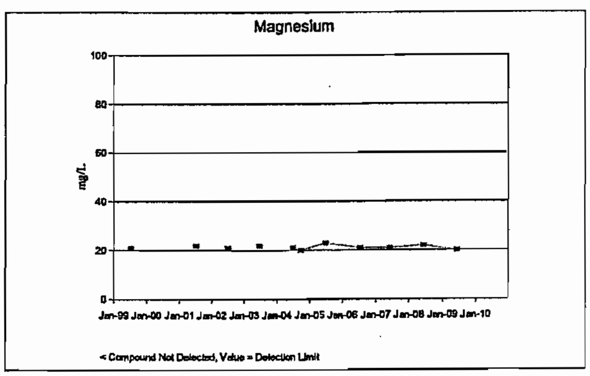


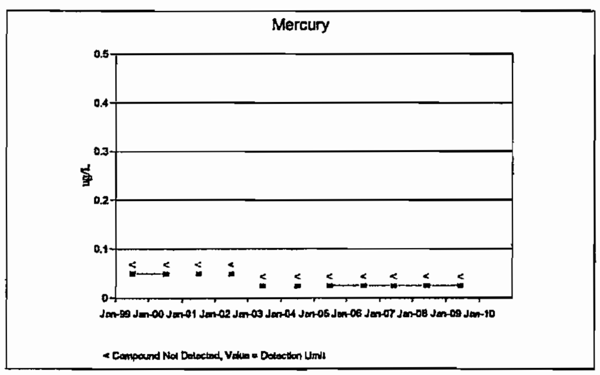








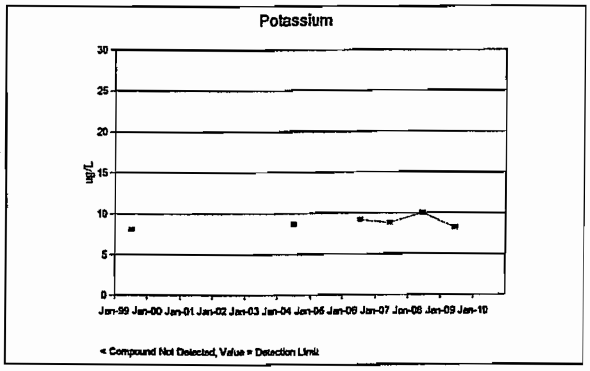


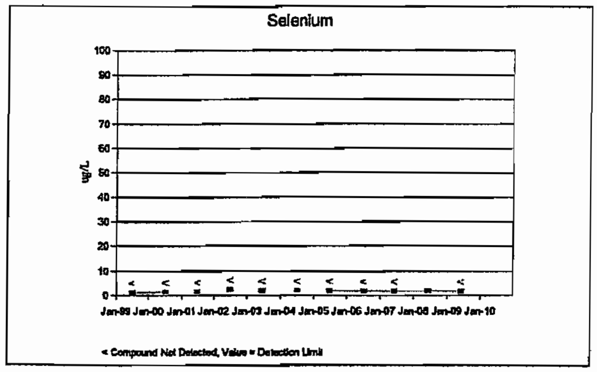


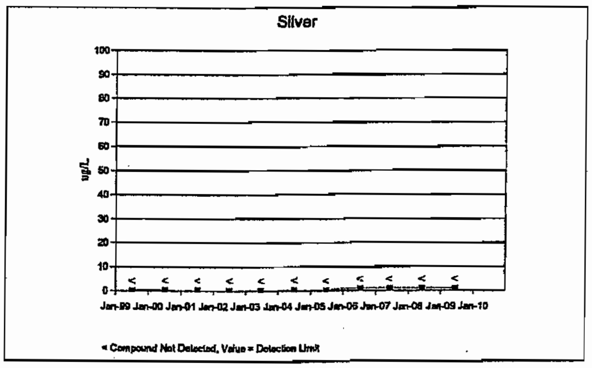
Created By: SGL Checked By: DAT

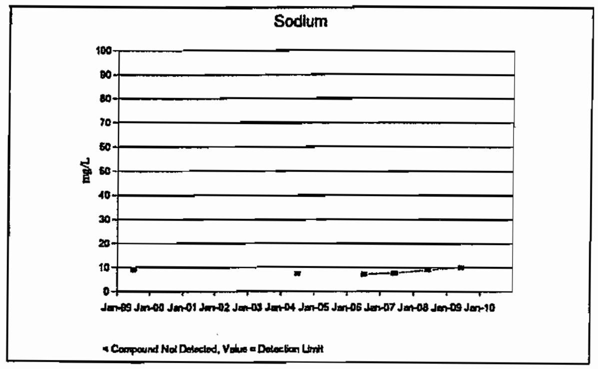
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

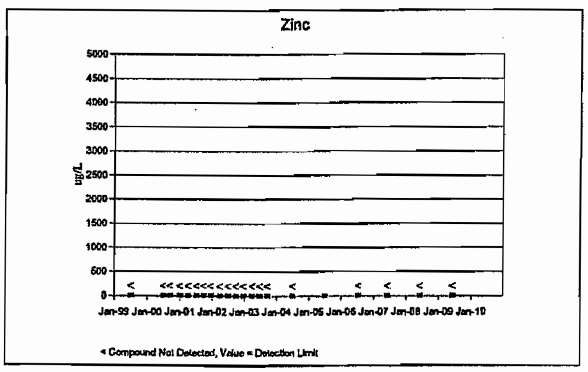
MW-1005P







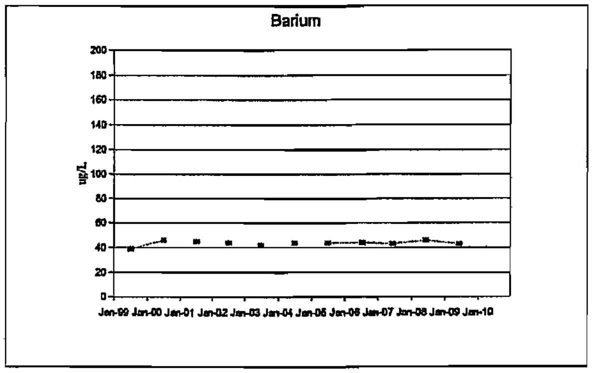


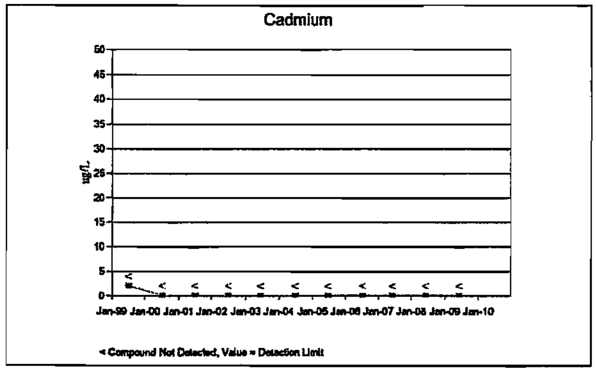


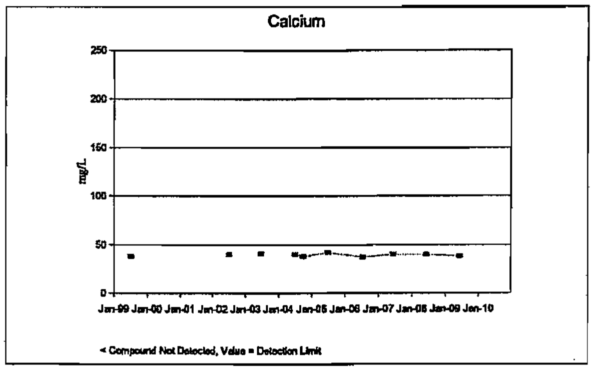
Created By: SGL   Checked By: DAT

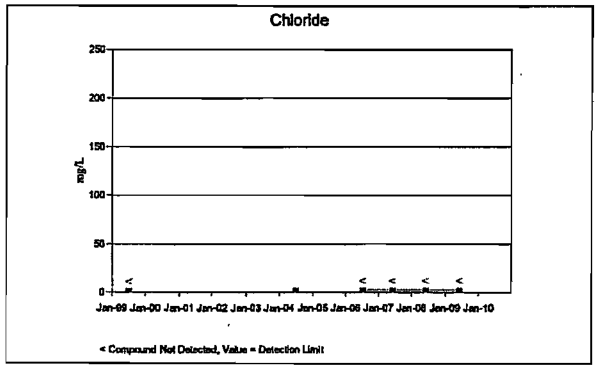
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

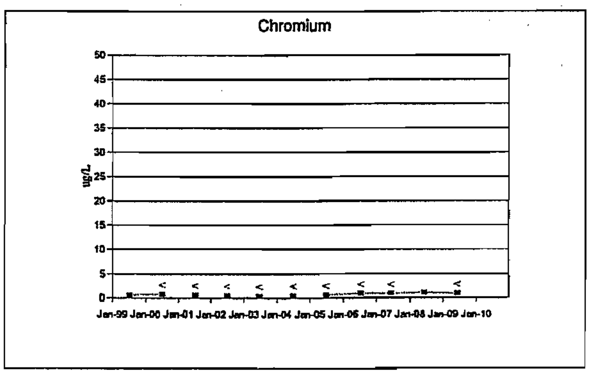
MW-1005S

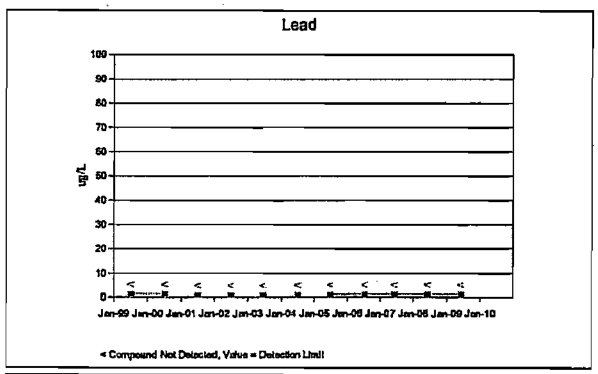


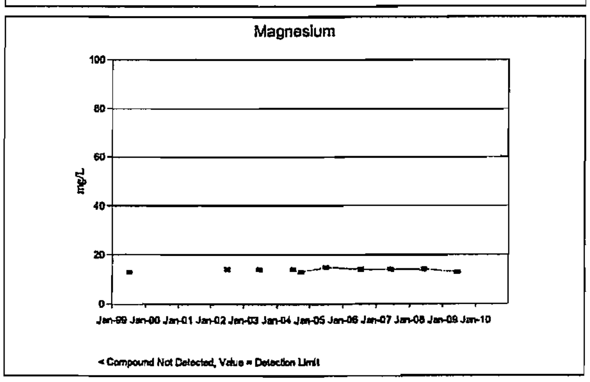


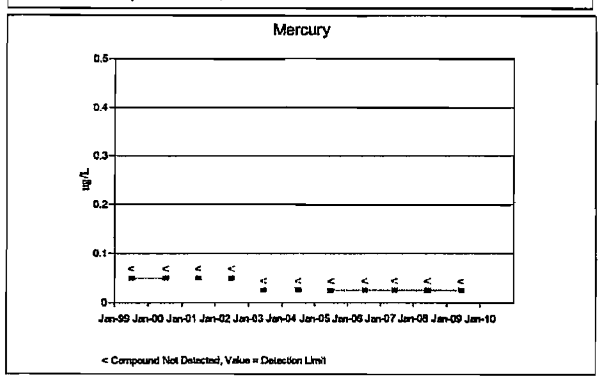








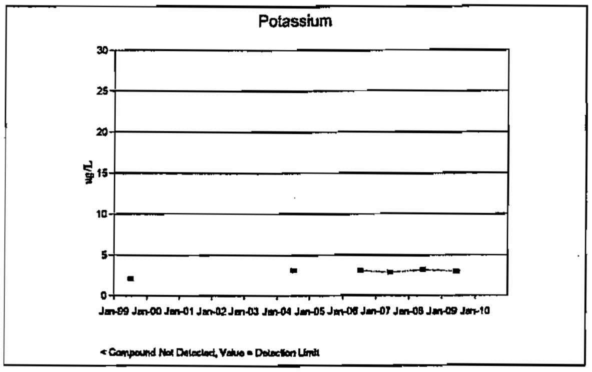


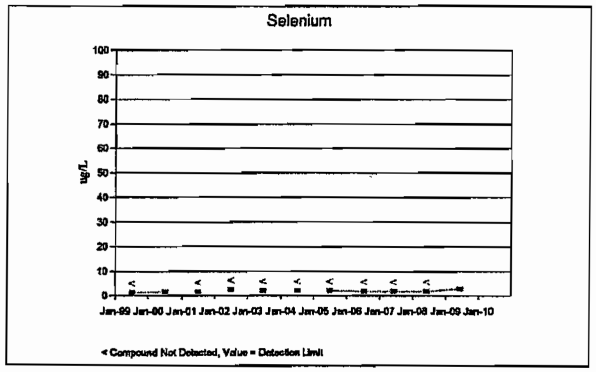


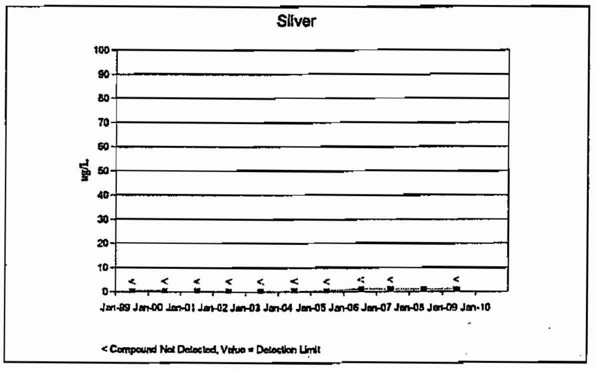
Created By: SGL Checked By: DAT

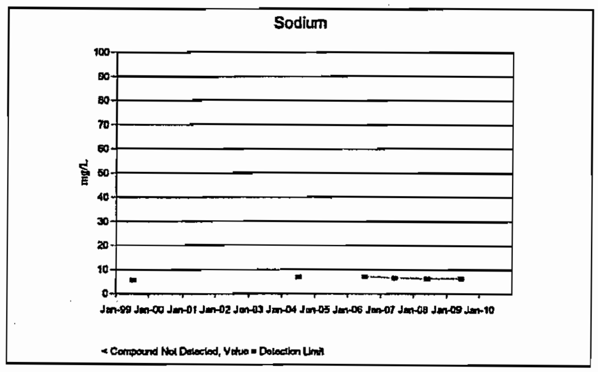
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

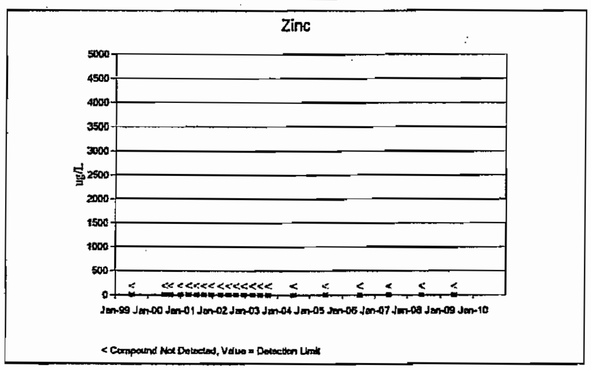
MW-1005S







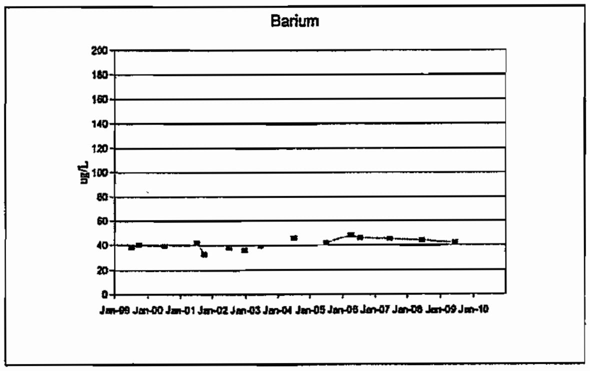


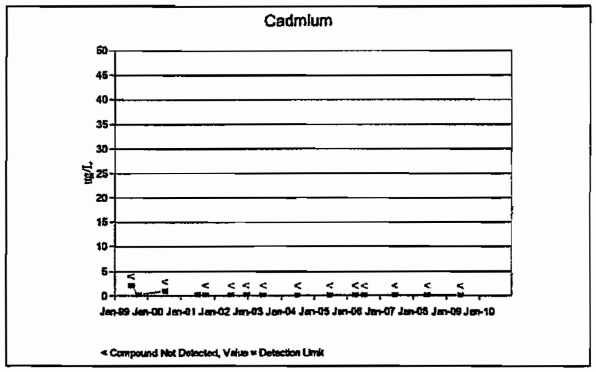


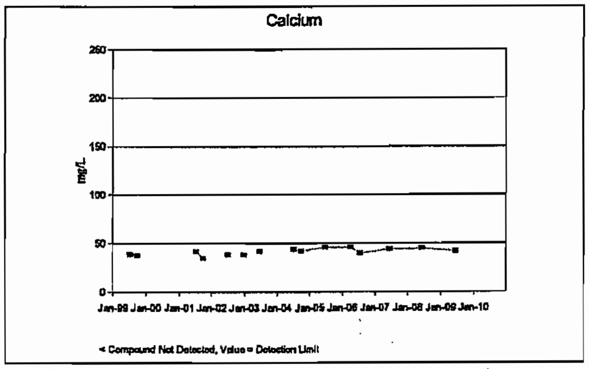
Created By: SGL Checked By: DAT

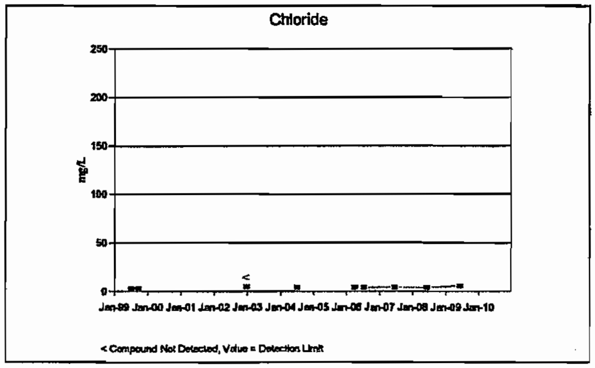
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

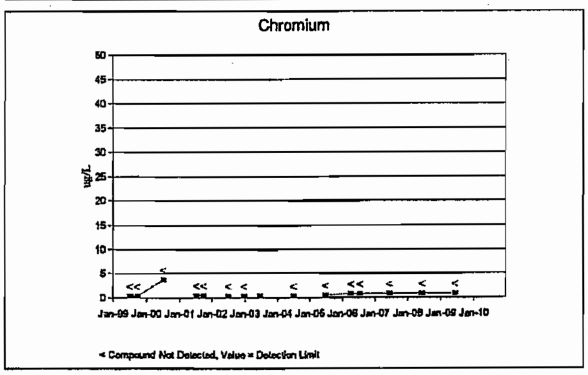
MW-1010P

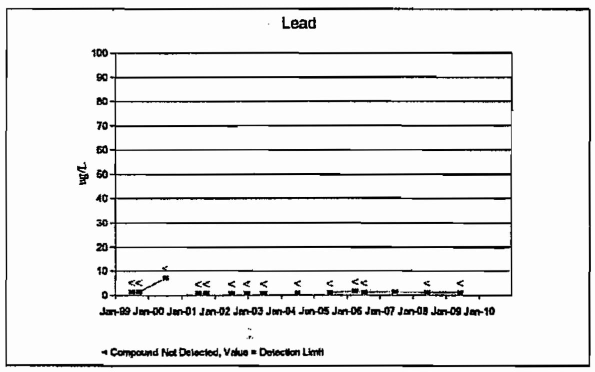


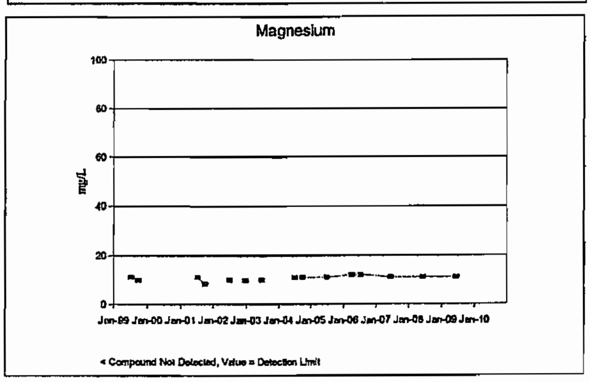


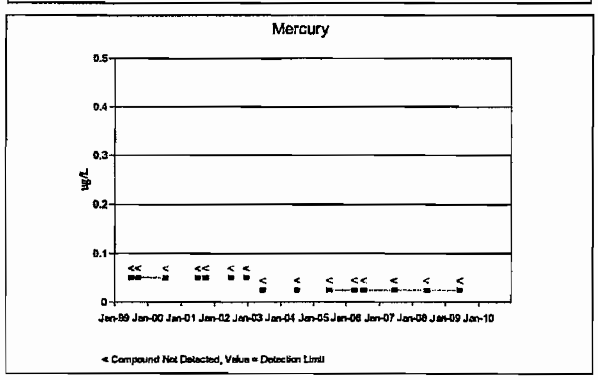








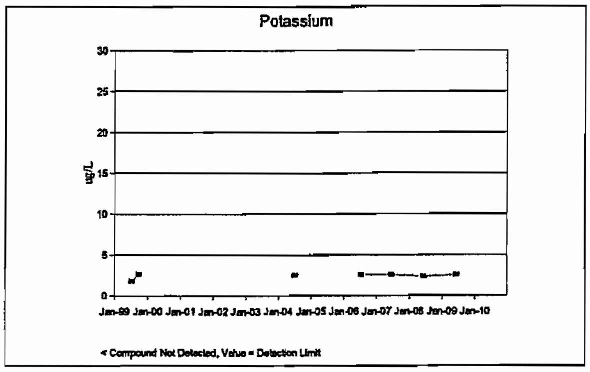


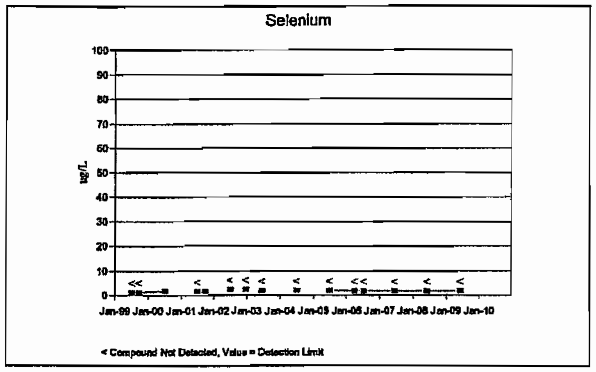


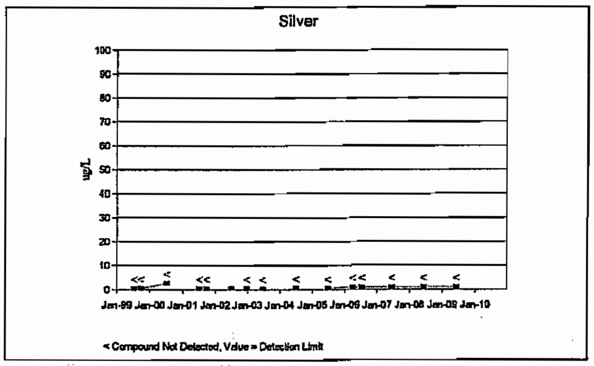
Created By: SGL Checked By: DAT

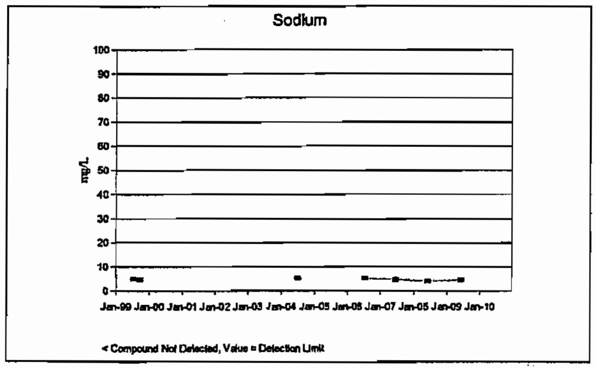
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

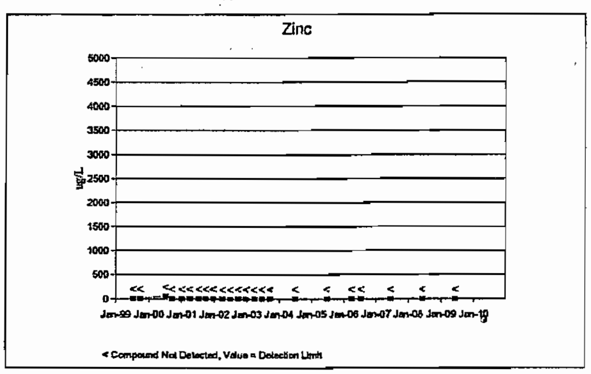
MW-1010P







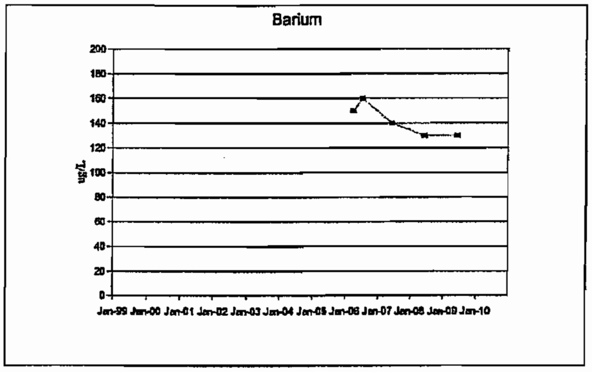


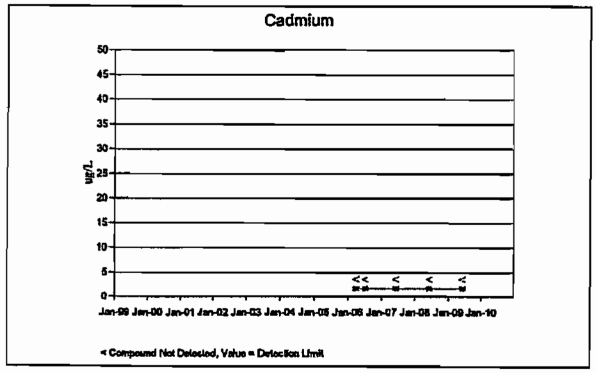


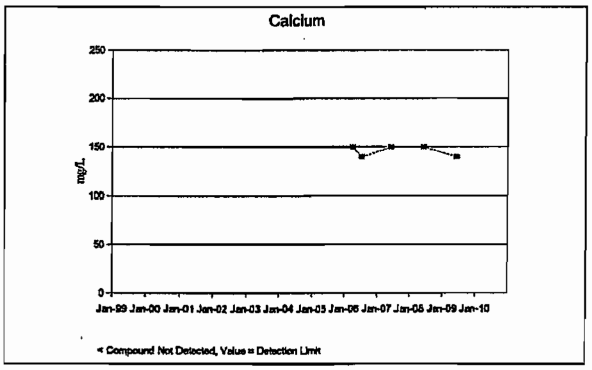
Created By: SGL Checked By: DAT

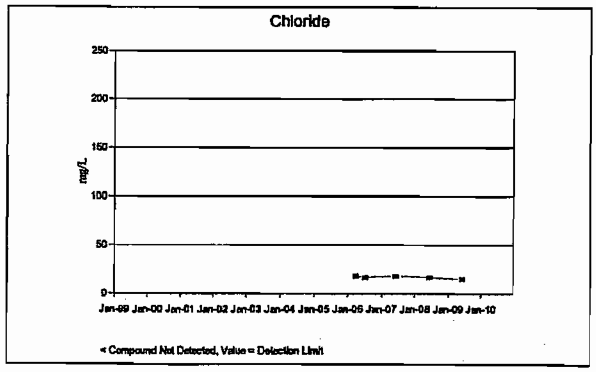
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

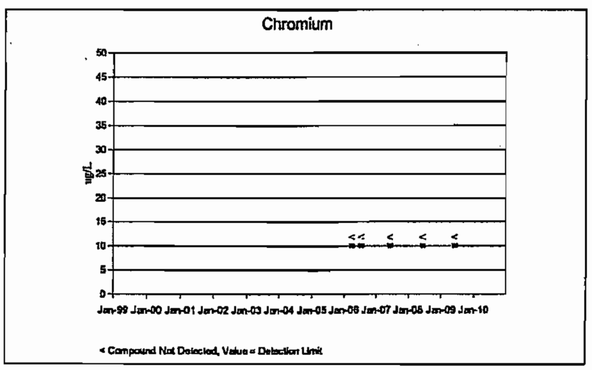
MW-1013

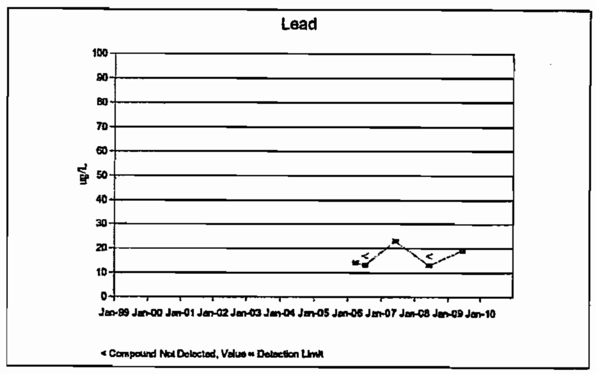


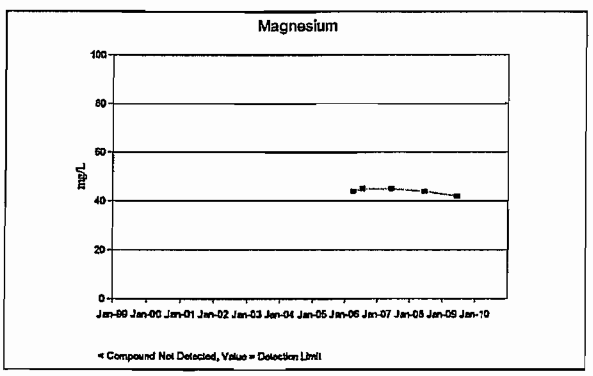


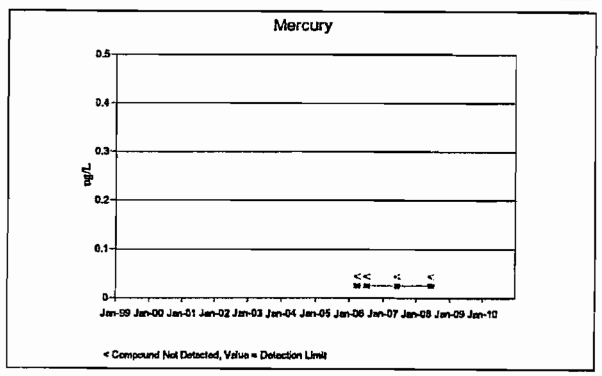








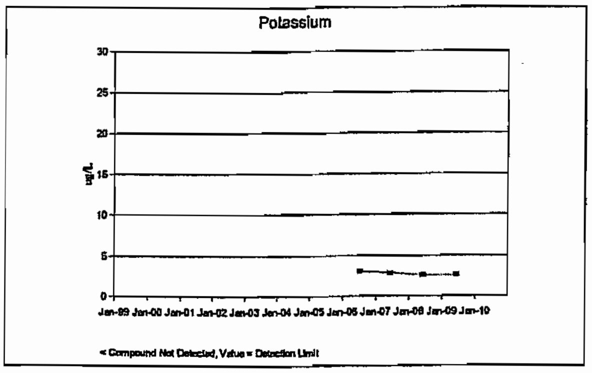


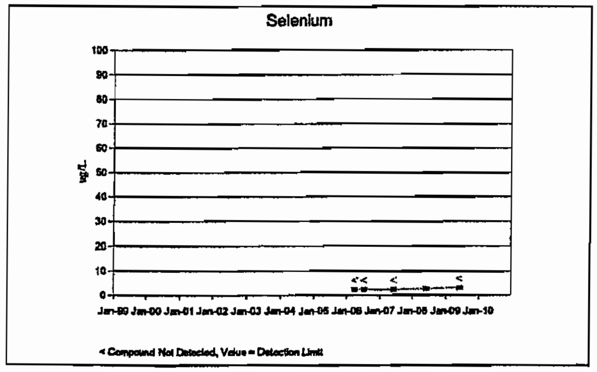


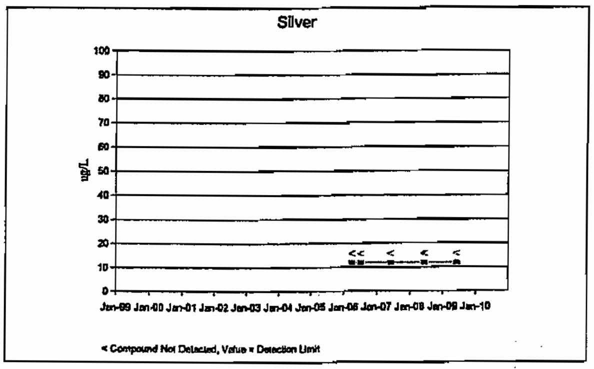
Created By: SGL Checked By: DAT

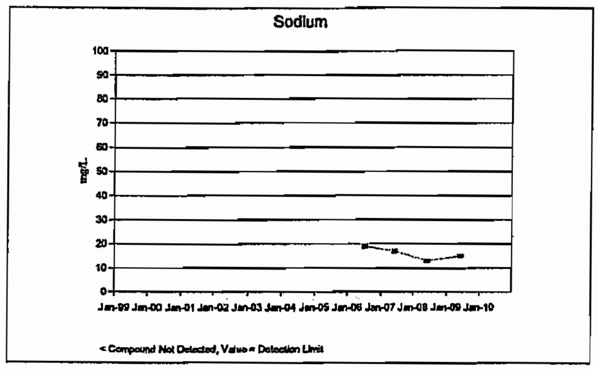
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

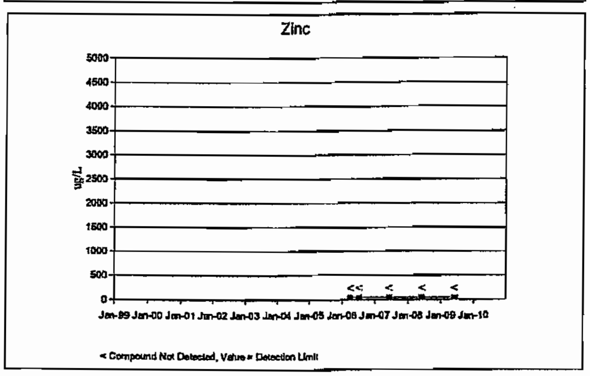
MW-1013







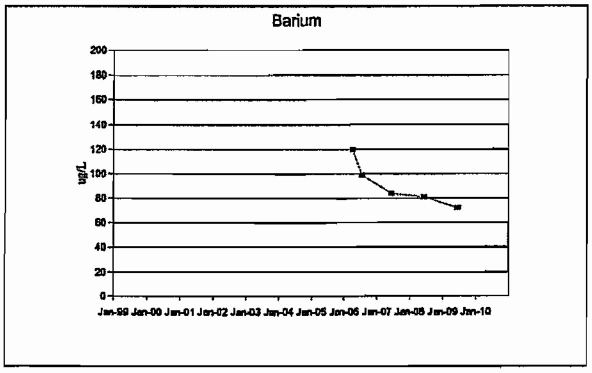


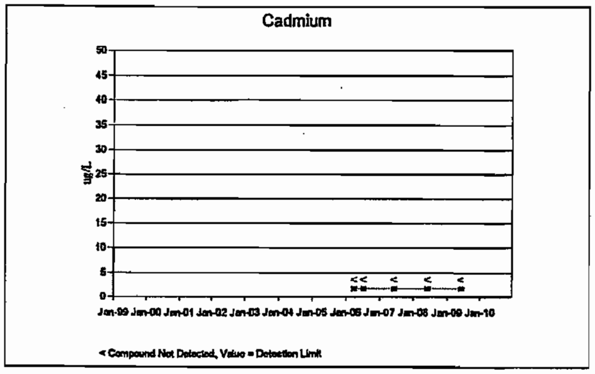


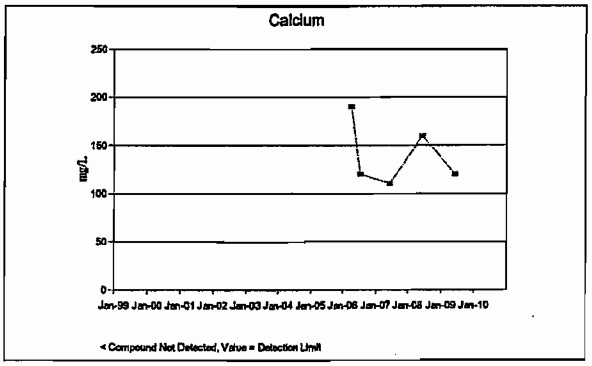
Created By: SGL Checked By: DAT

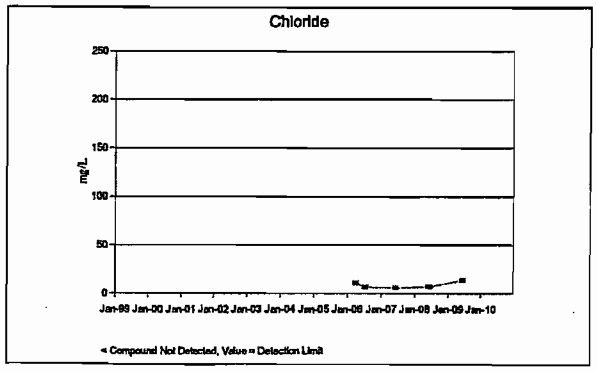
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

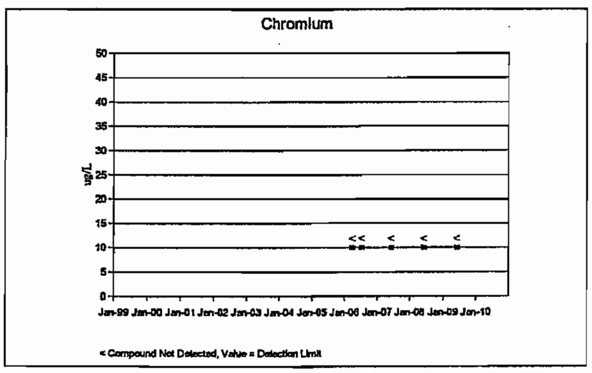
MW-1013A

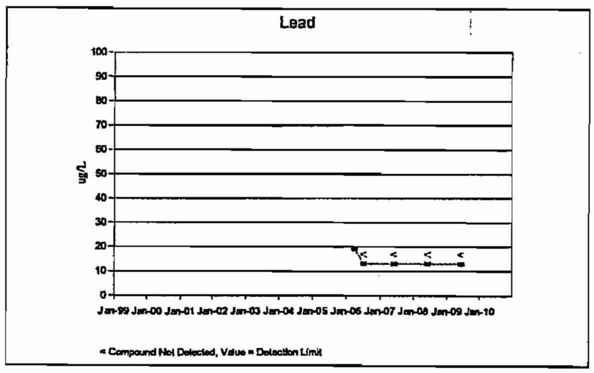


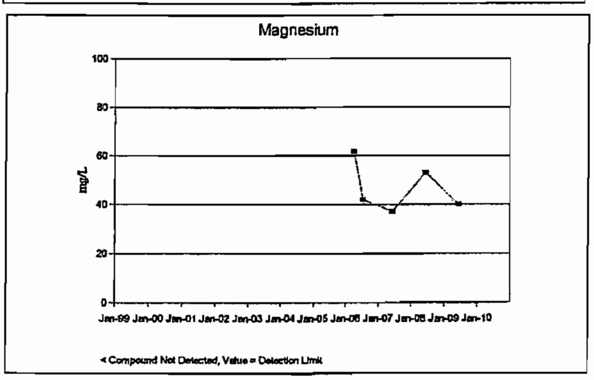


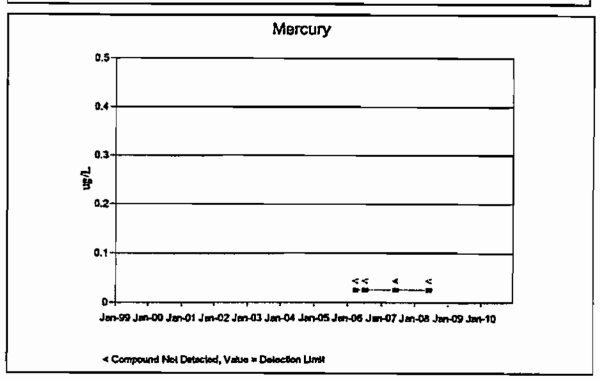








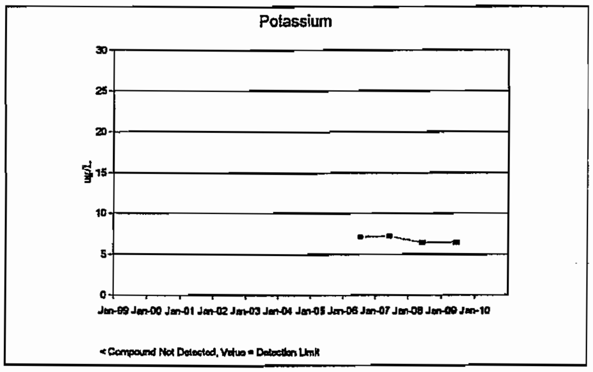


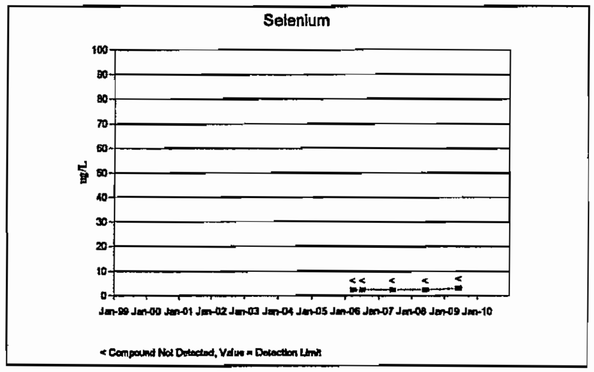


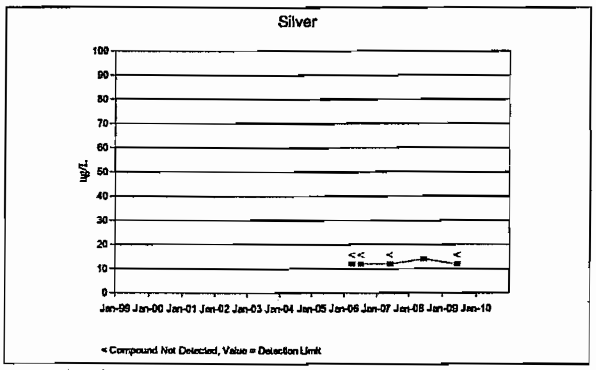
Created By: SGL Checked By: DAT

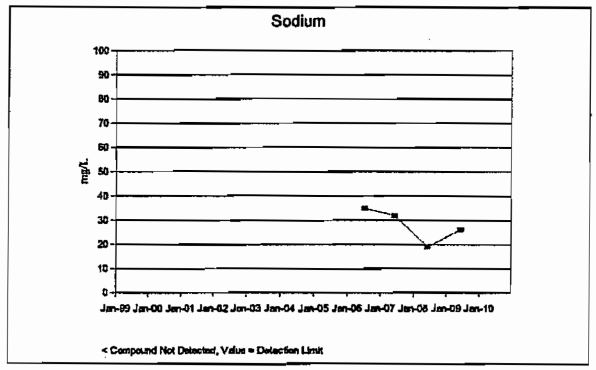
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

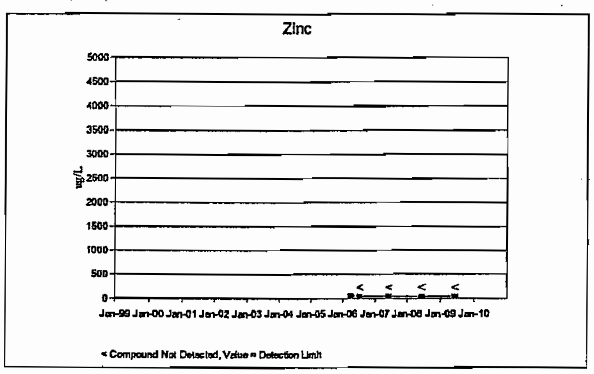
MW-1013A







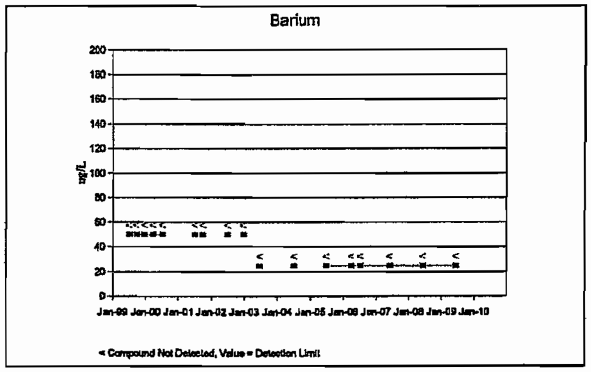


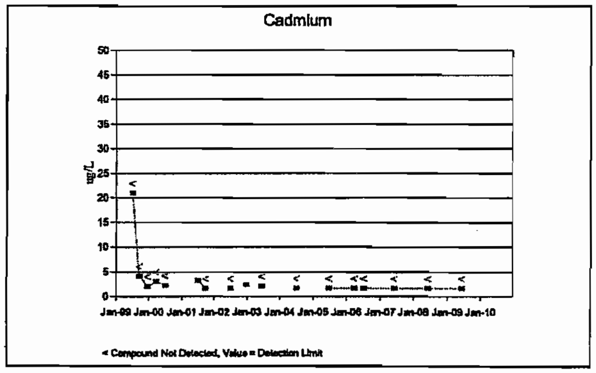


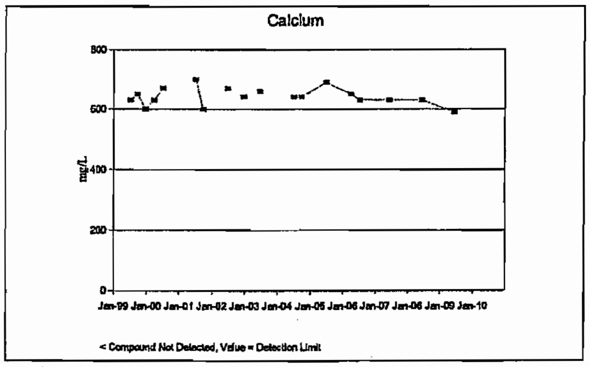
Created By: SGL Checked By: DAT

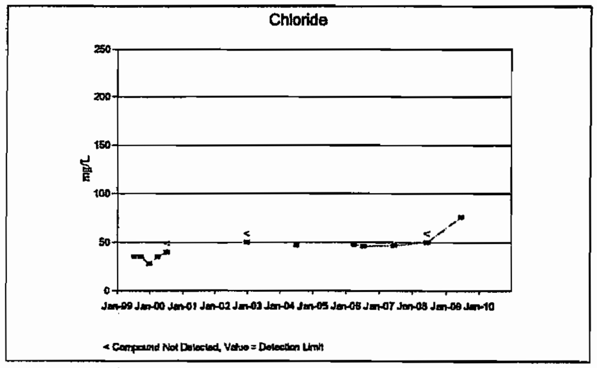
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

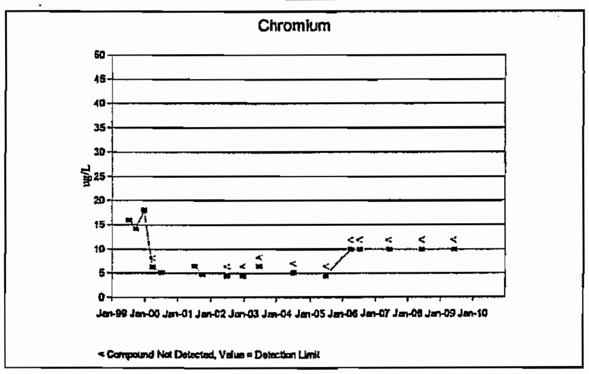
MW-1013B

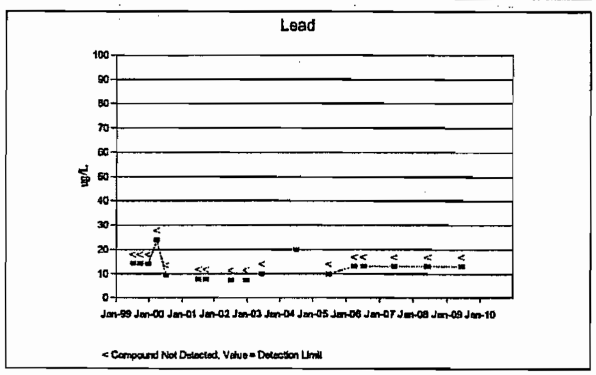


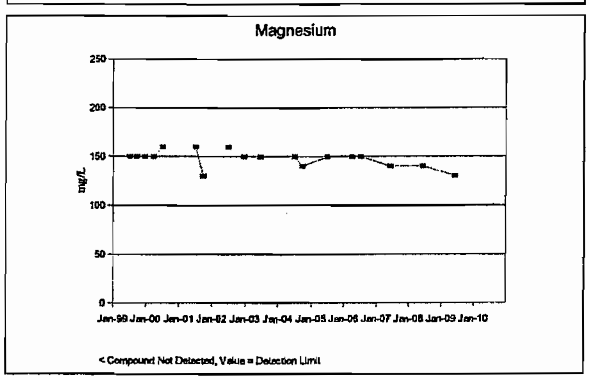


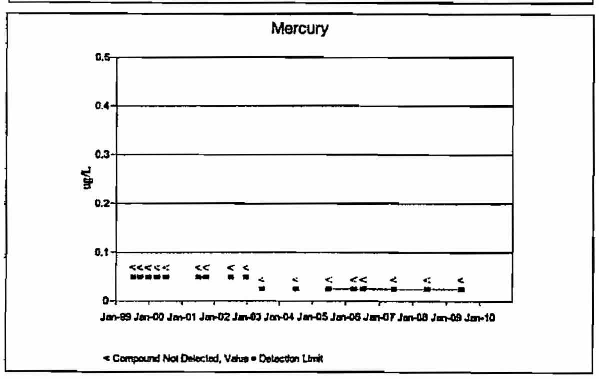








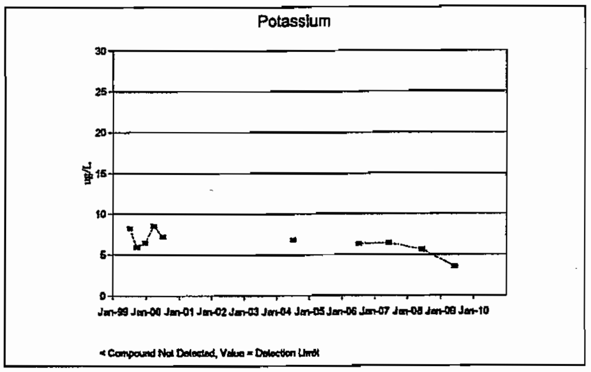


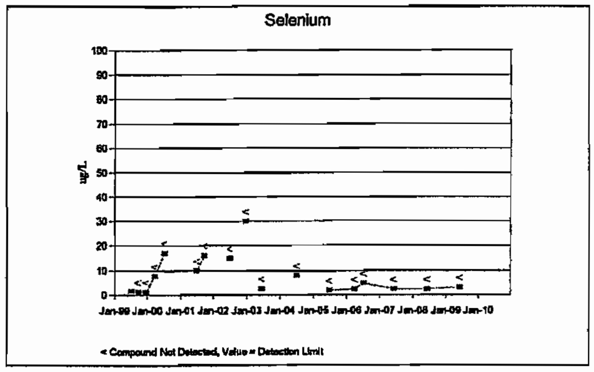


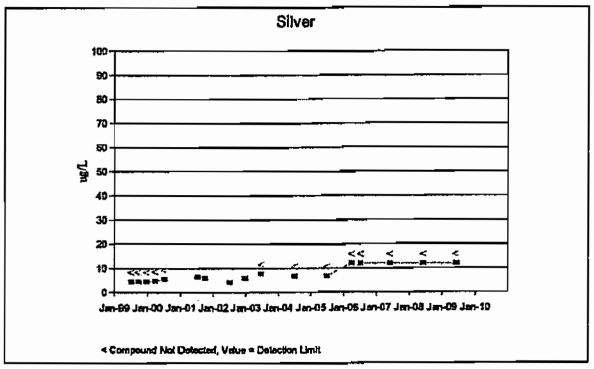
Created By: SGL Checked By: DAT

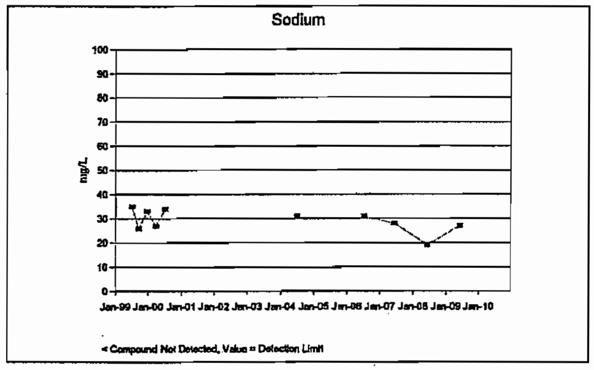
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

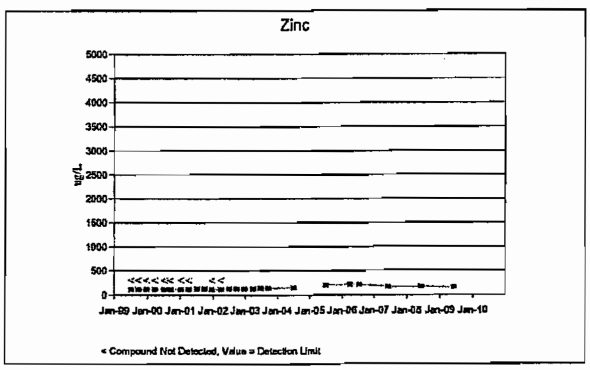
MW-1013B







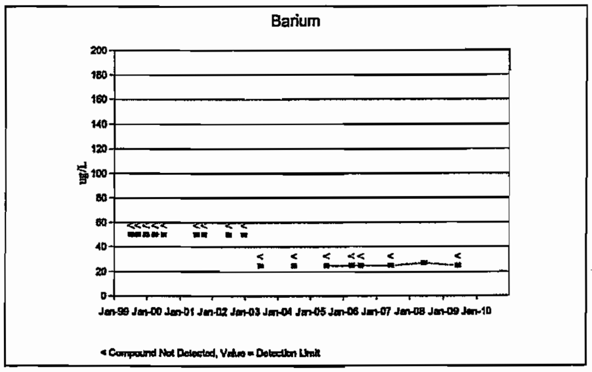


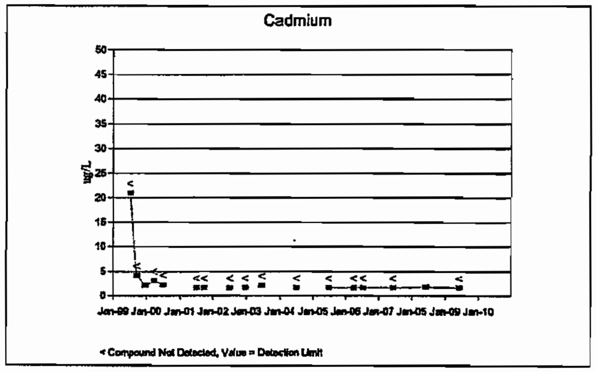


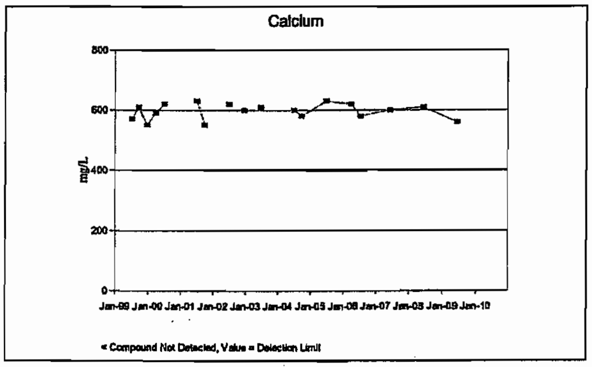
Created By: SGL Checked By: DAT

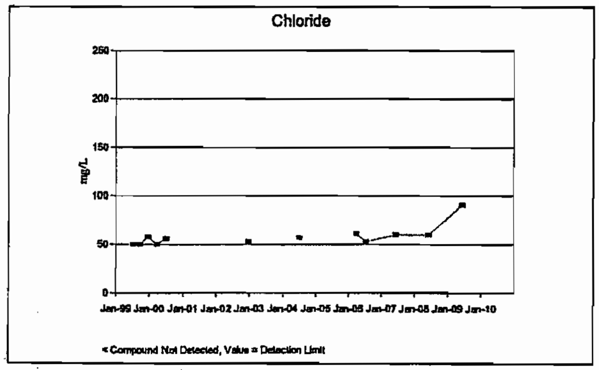
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

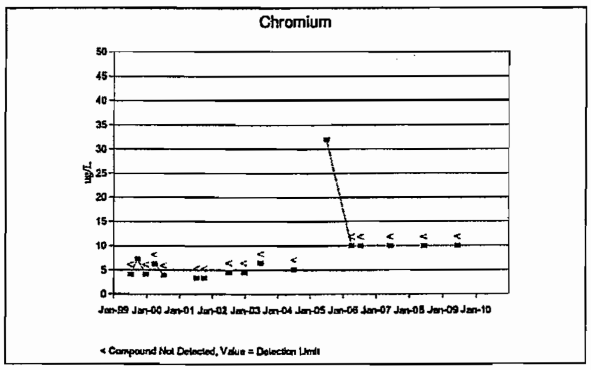
MW-1013C

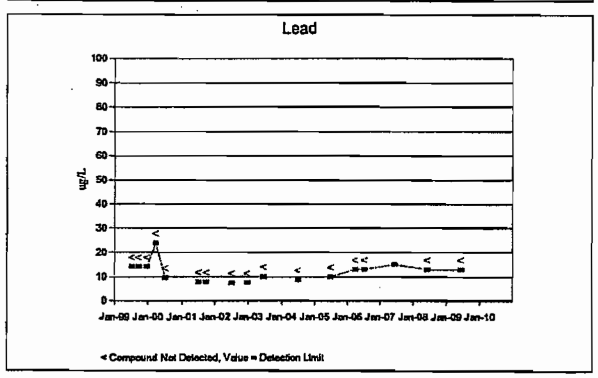


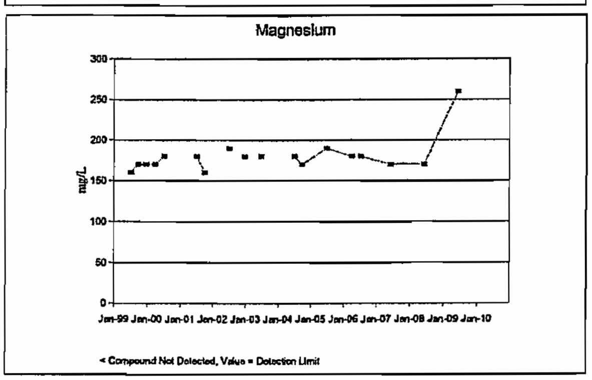


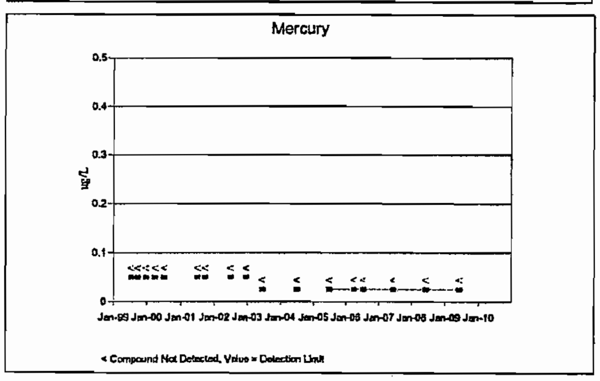








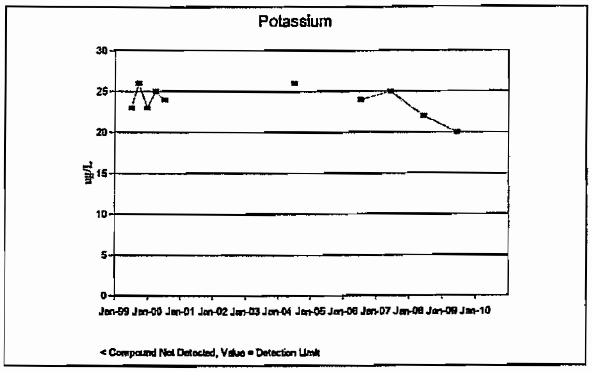


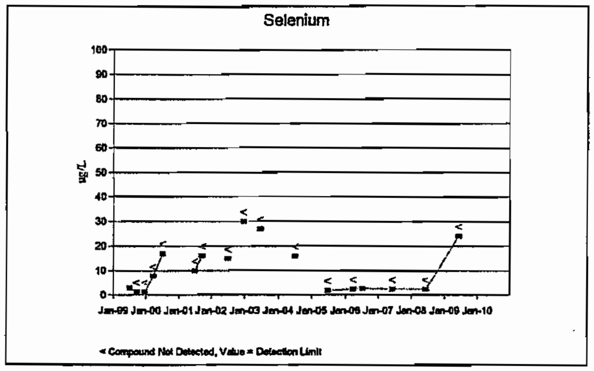


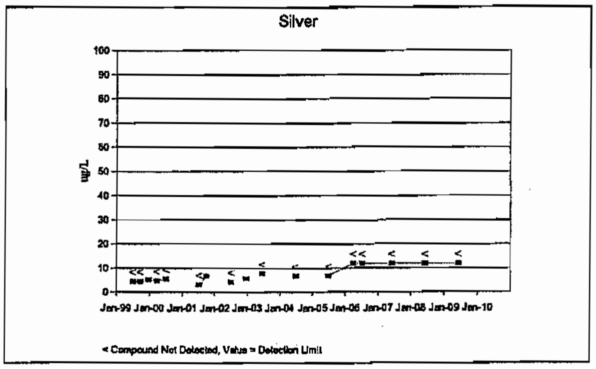
Created By: SGL   Checked By: DAT

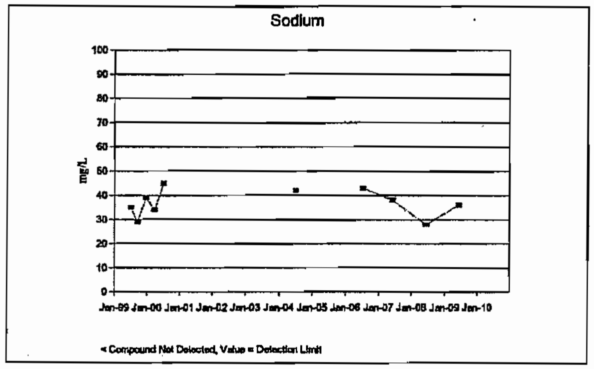
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

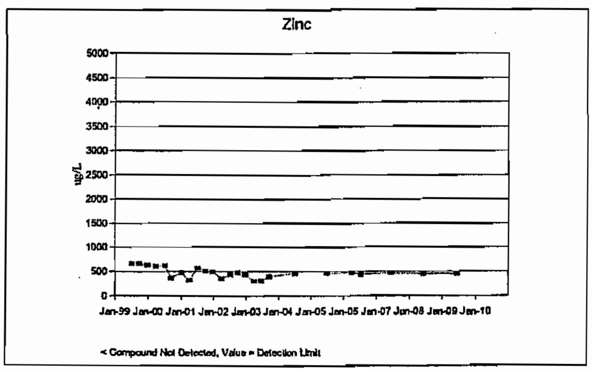
MW-1013C







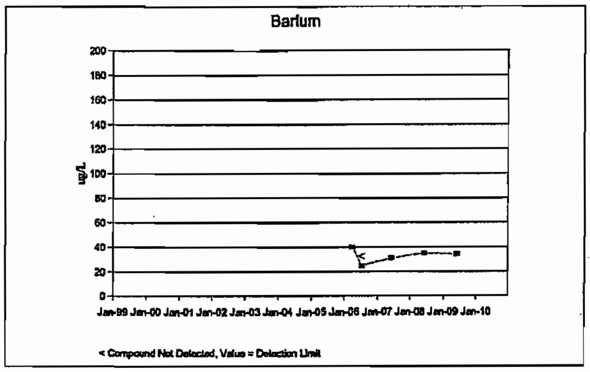


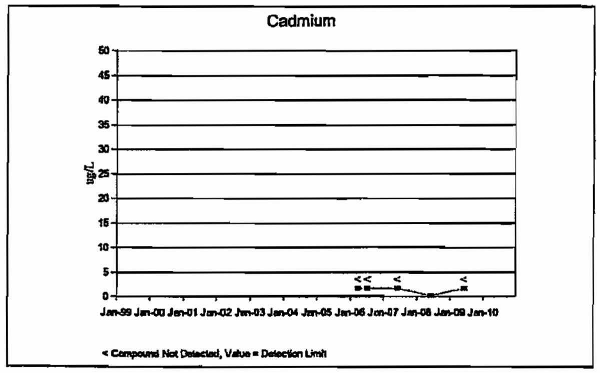


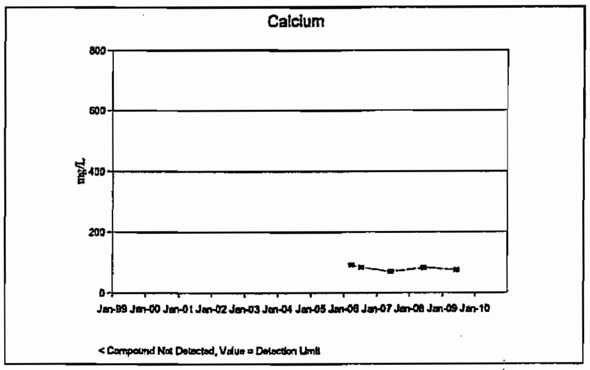
Created By: SGL Checked By: DAT

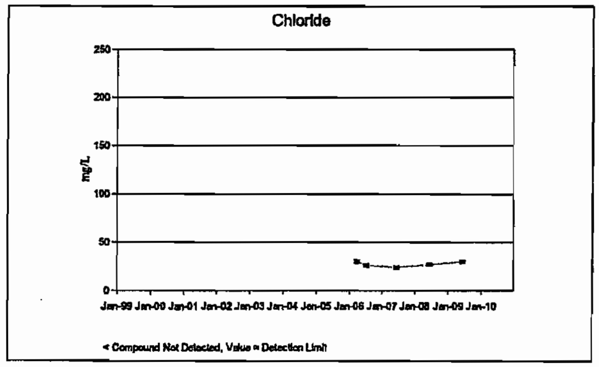
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

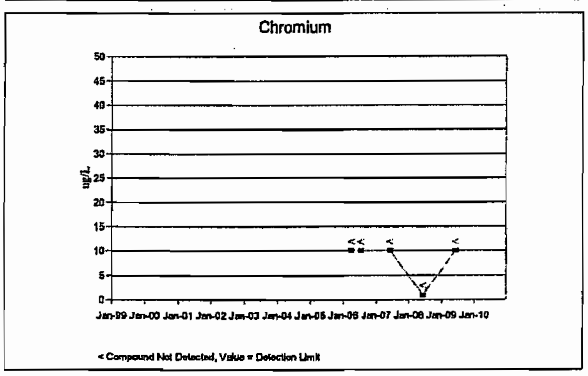
MW-1014

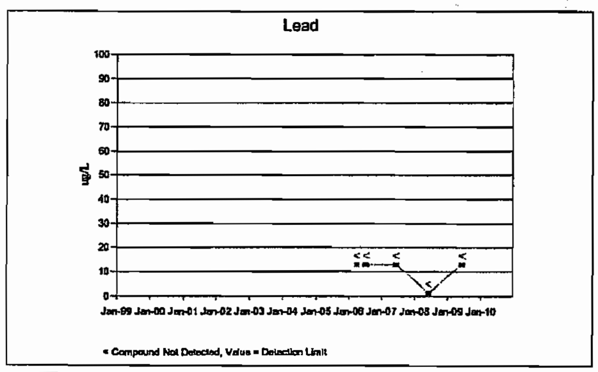


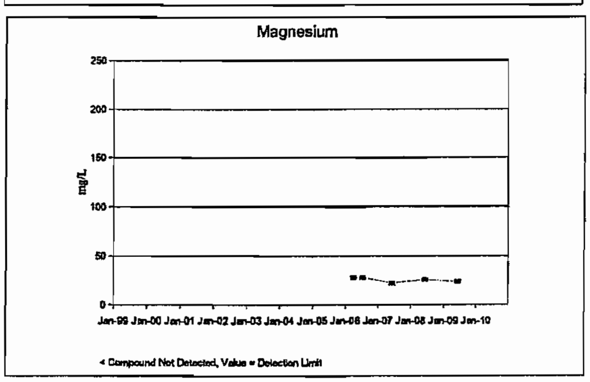


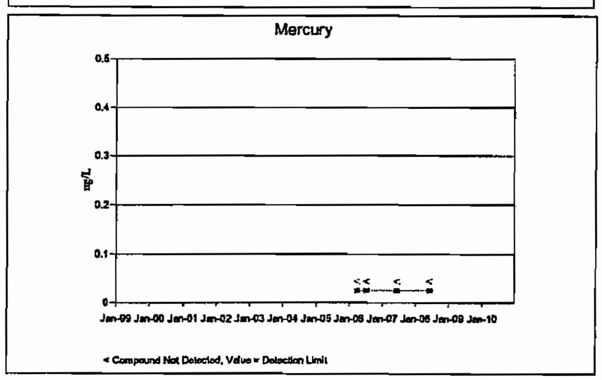








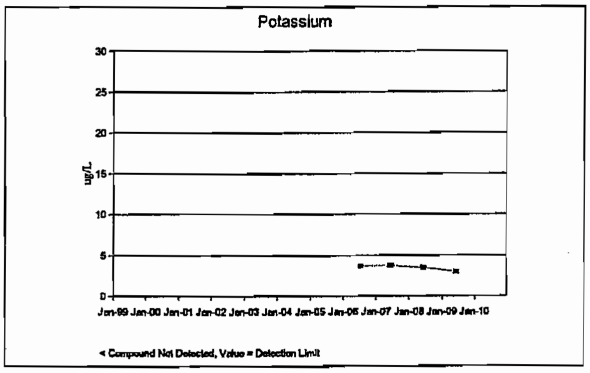


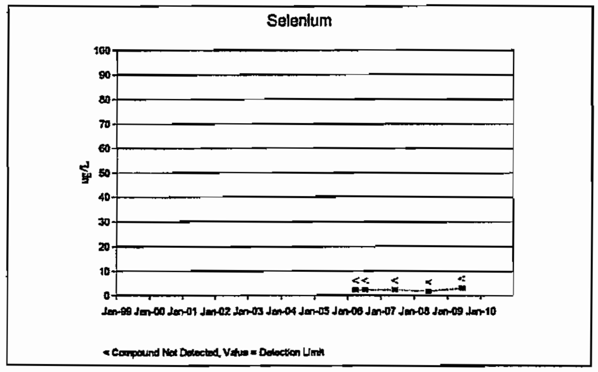


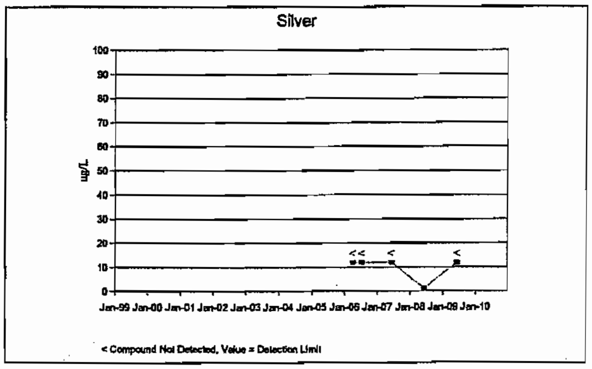
Created By: SGL Checked By: DAT

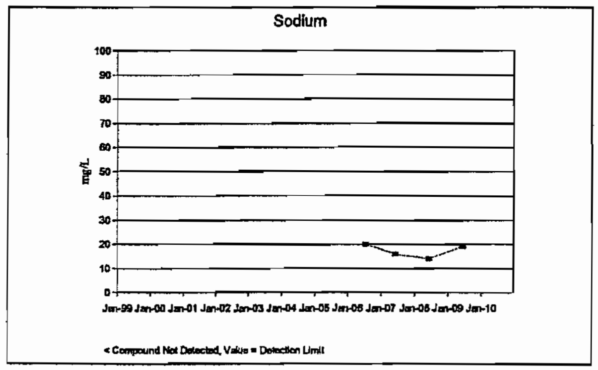
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

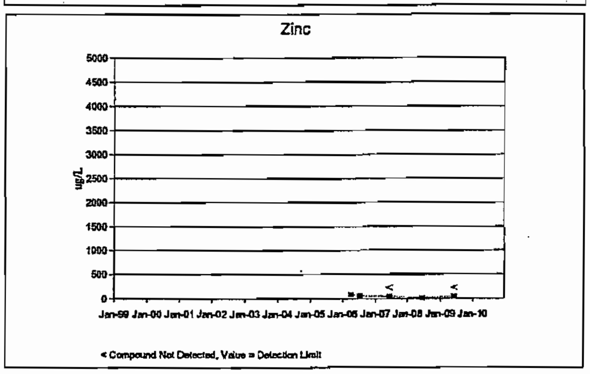
MW-1014







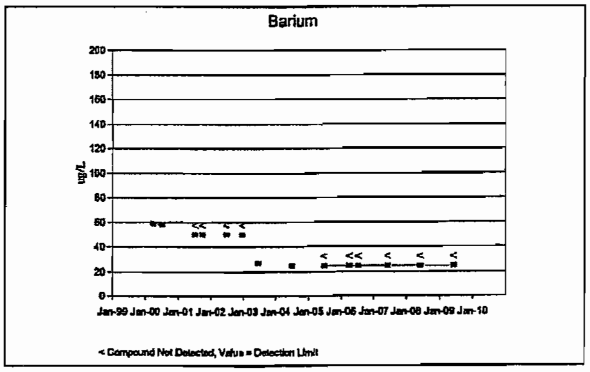


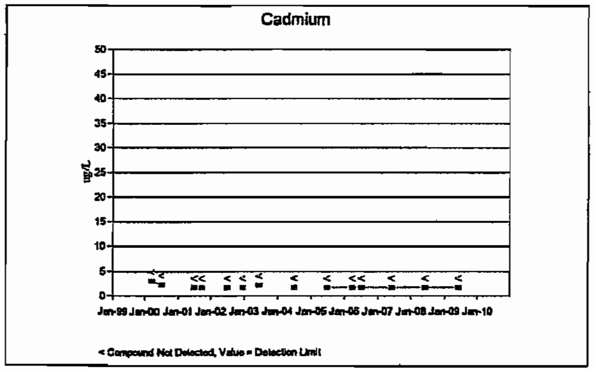


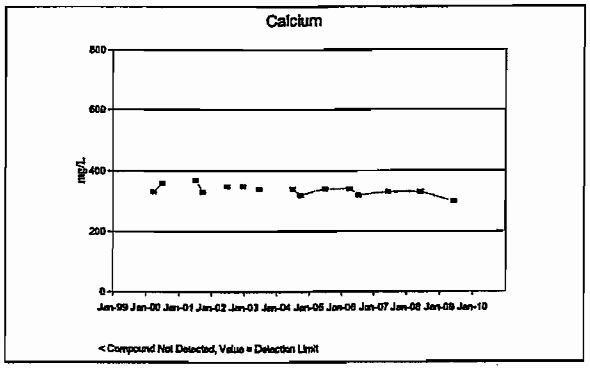
Created By: SGL Checked By: DAT

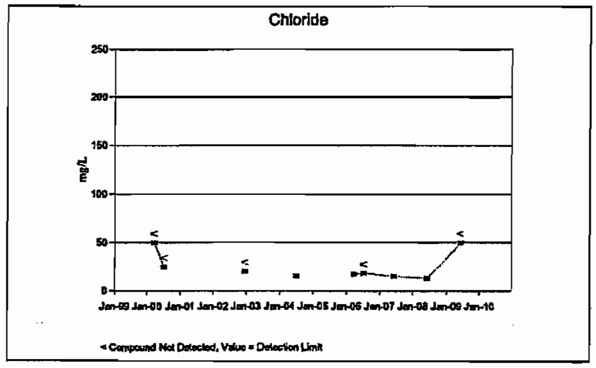
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

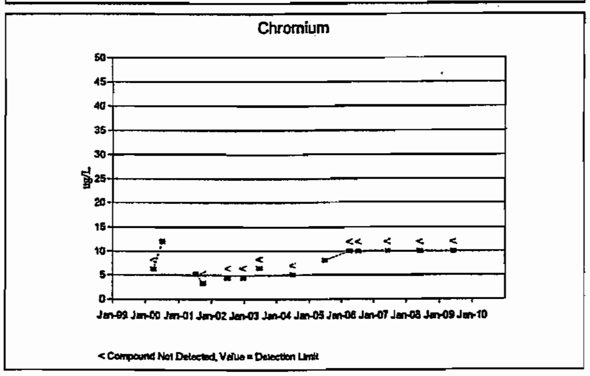
MW-1014A

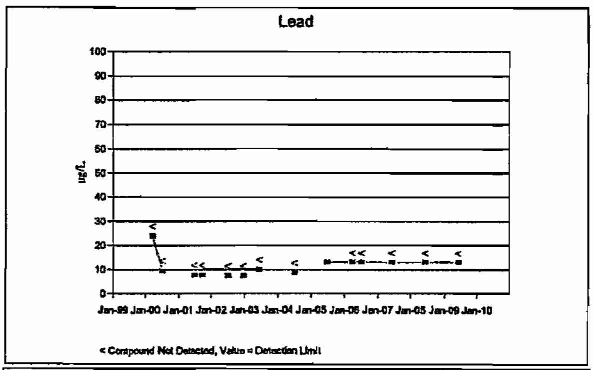


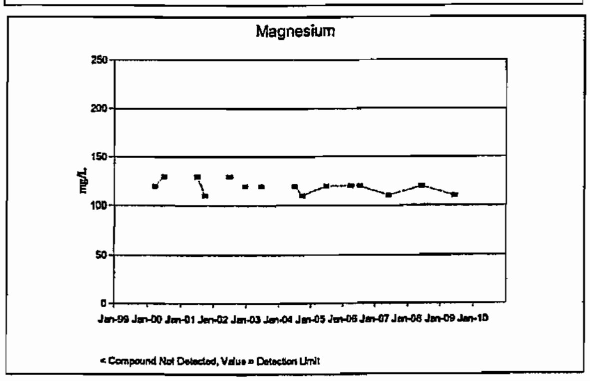


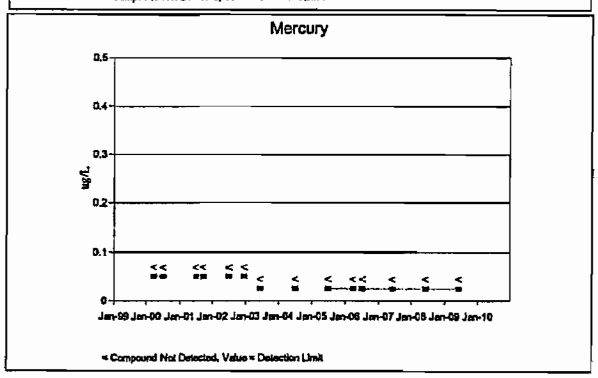








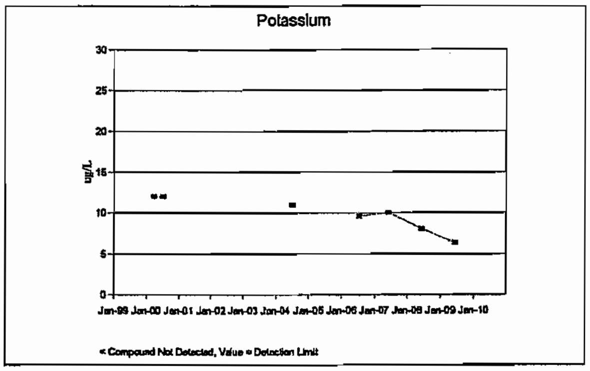


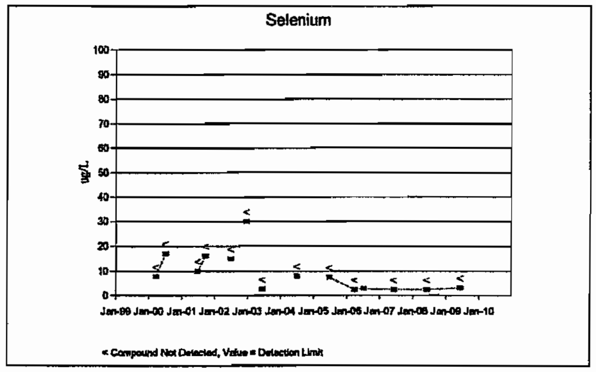


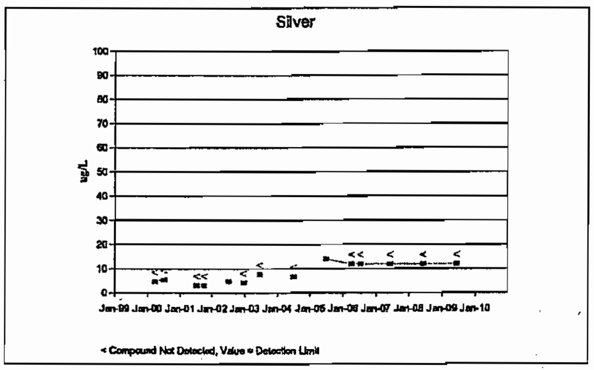
Created By: SGL Checked By: DAT

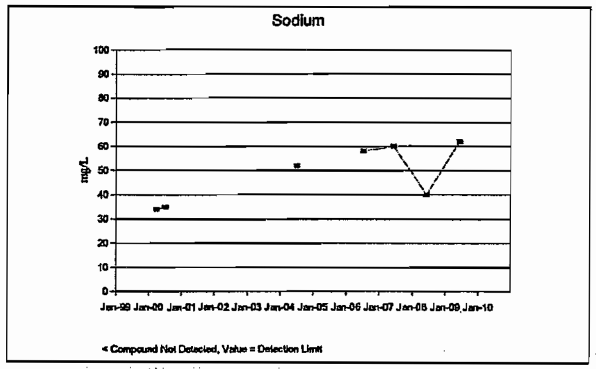
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

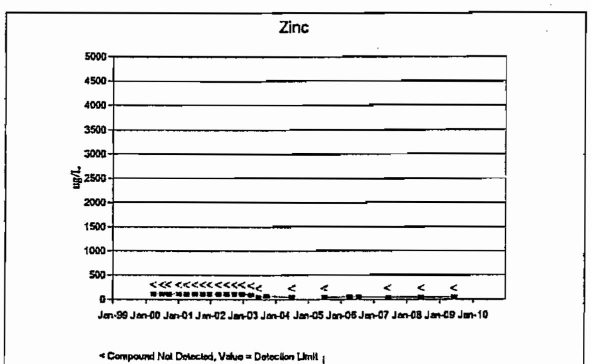
MW-1014A







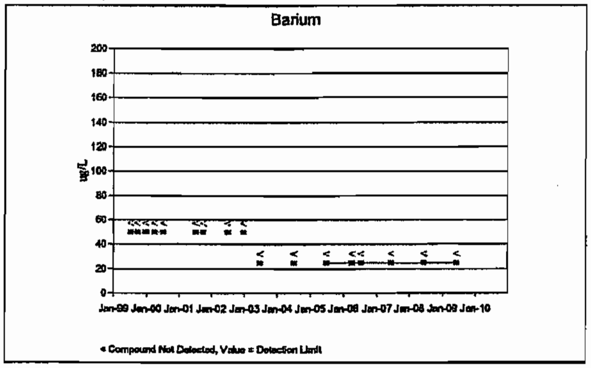


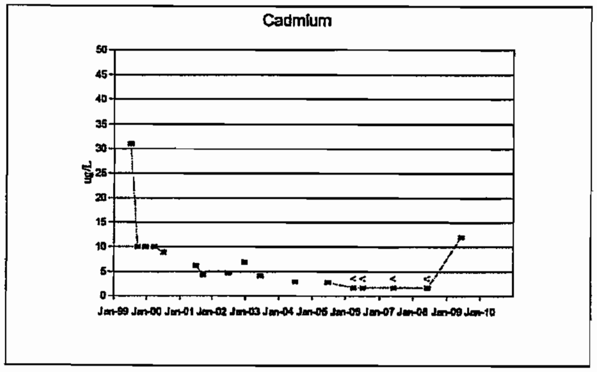


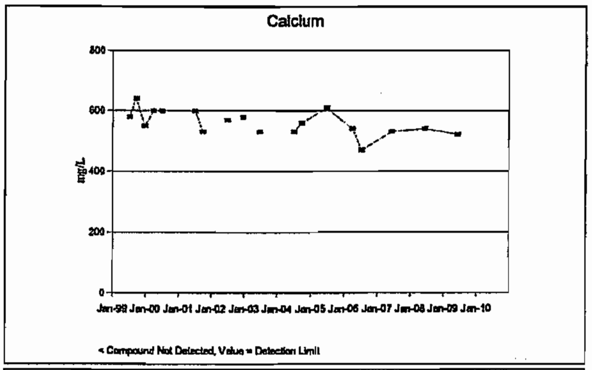
Created By: SGL Checked By: DAT

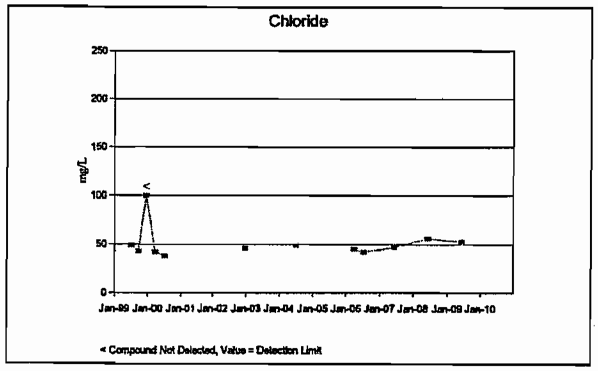
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

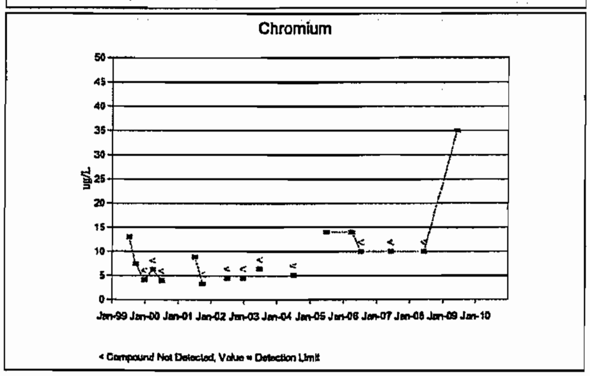
MW-1014B

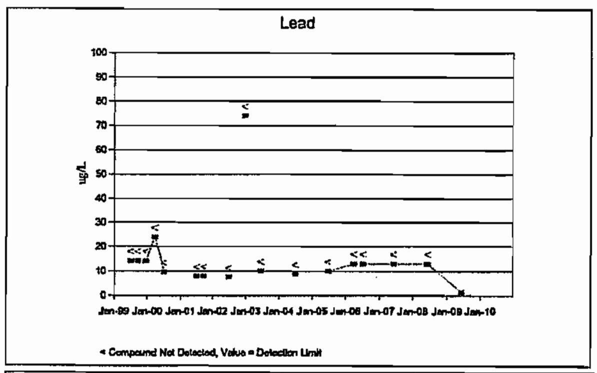


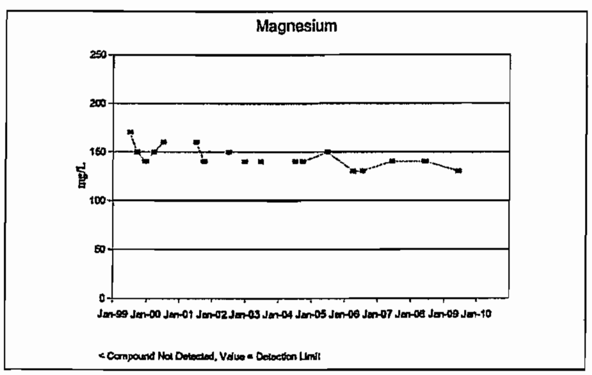


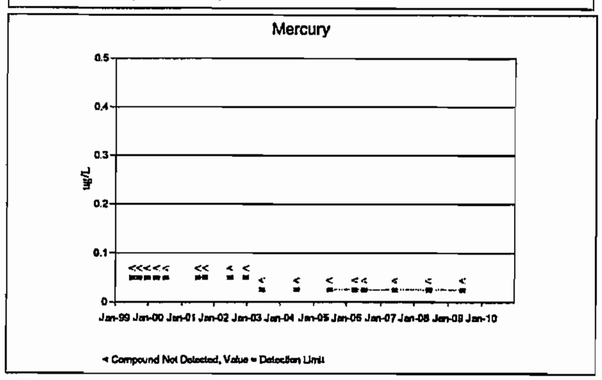








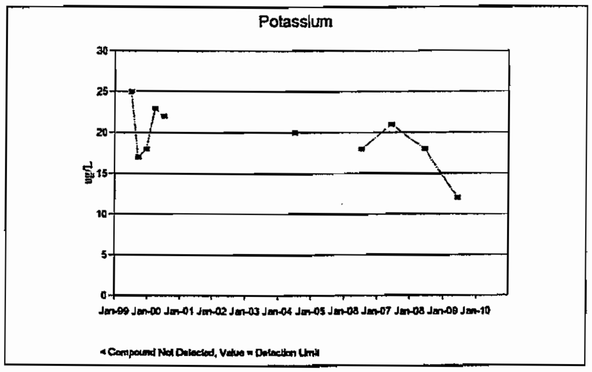


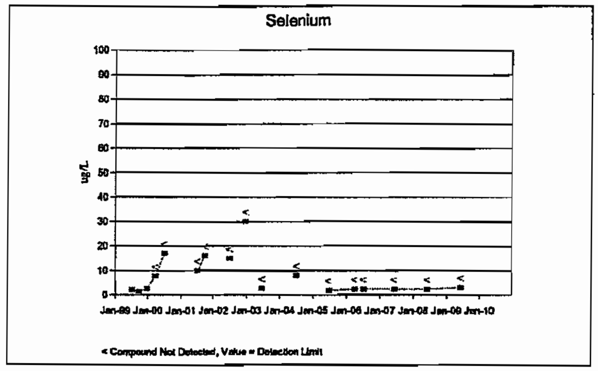


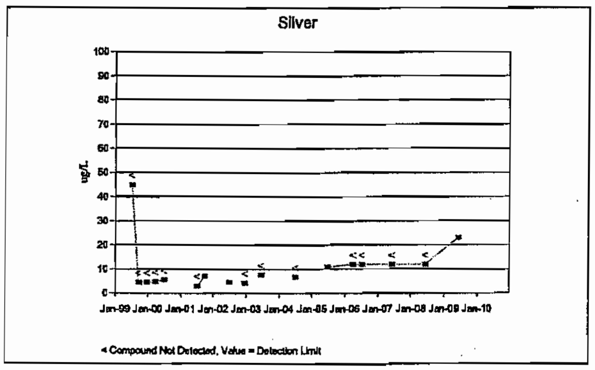
Created By: SGL Checked By: DAT

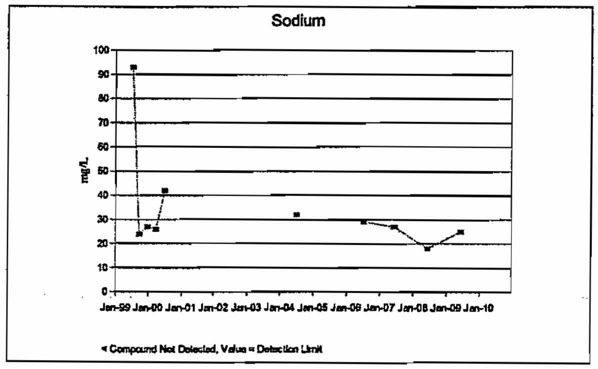
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

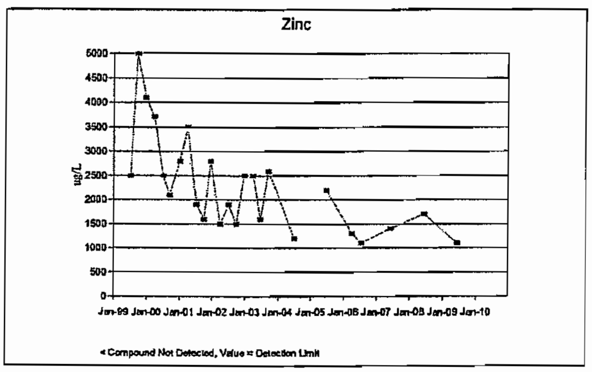
MW-1014B







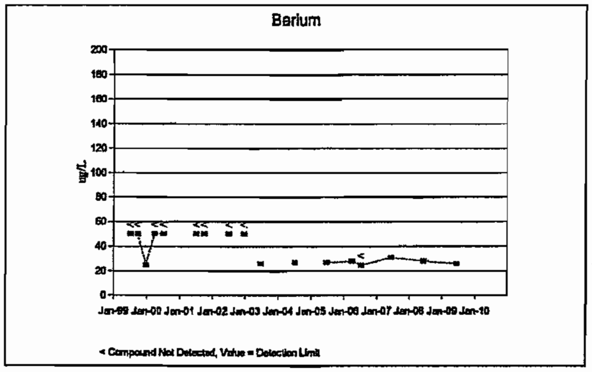


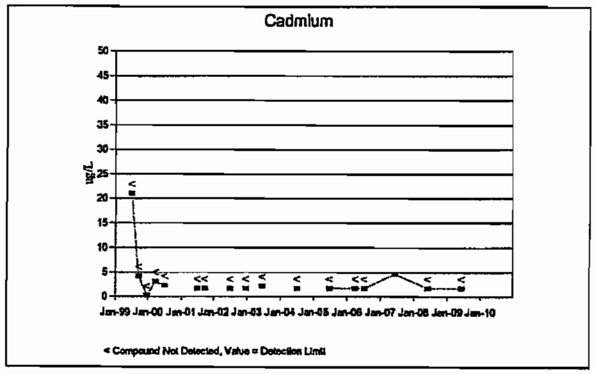


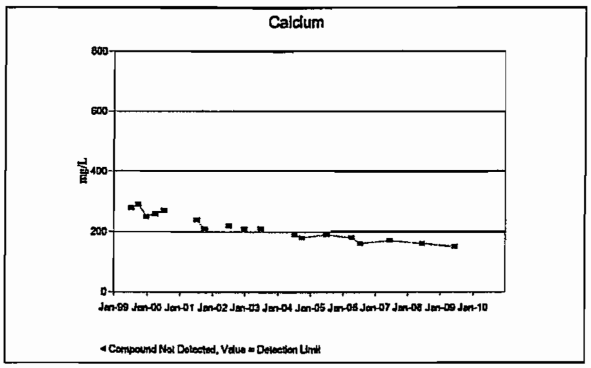
Created By: SGL Checked By: DAT

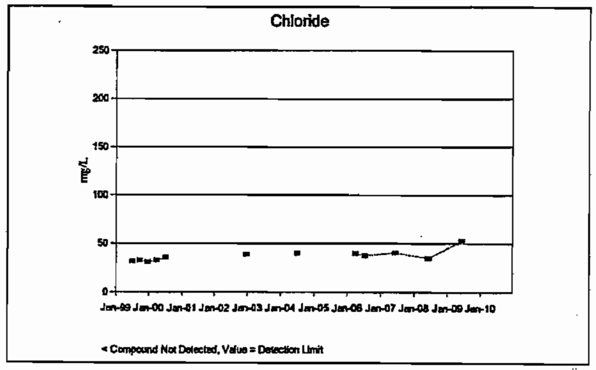
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

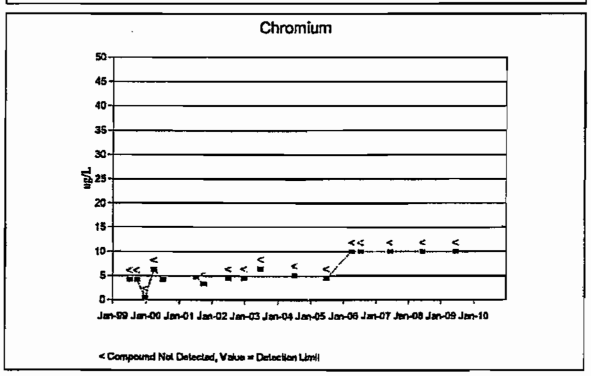
MW-1014C

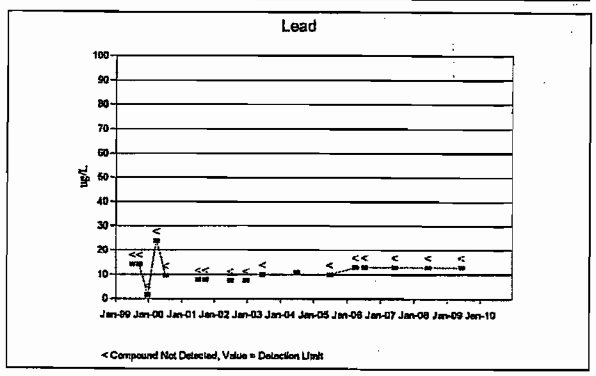


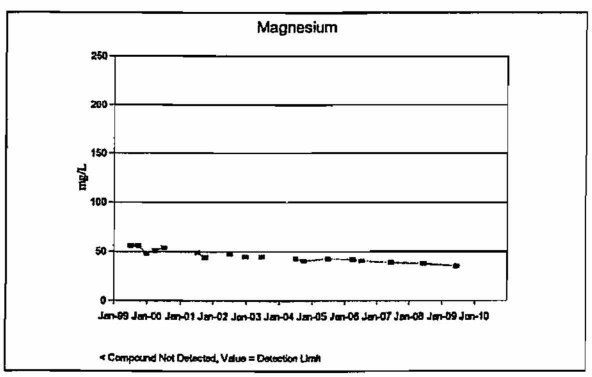


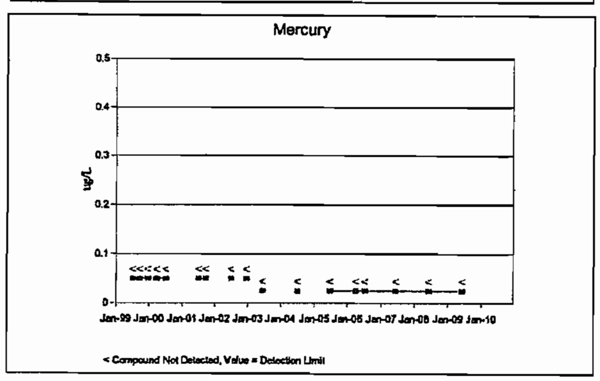








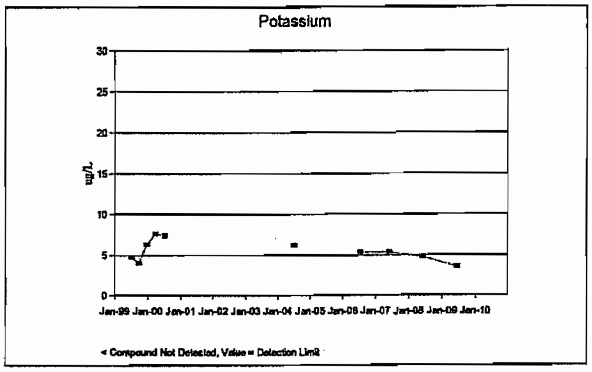


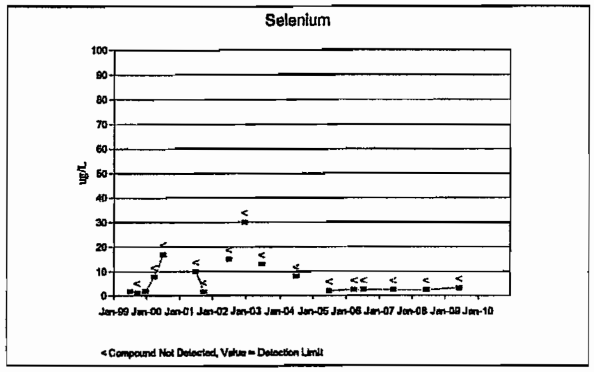


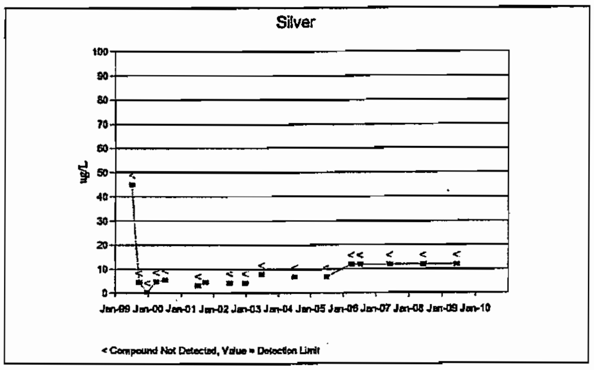
Created By: SGL   Checked By: DAT

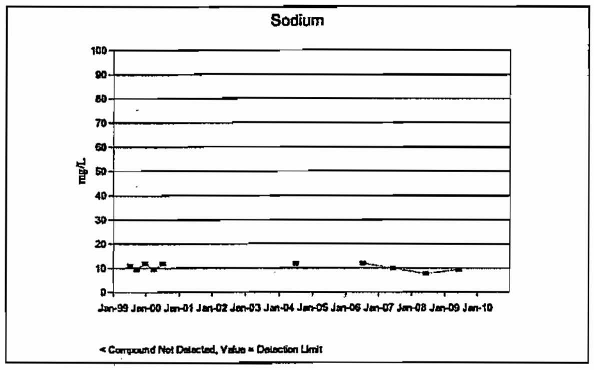
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

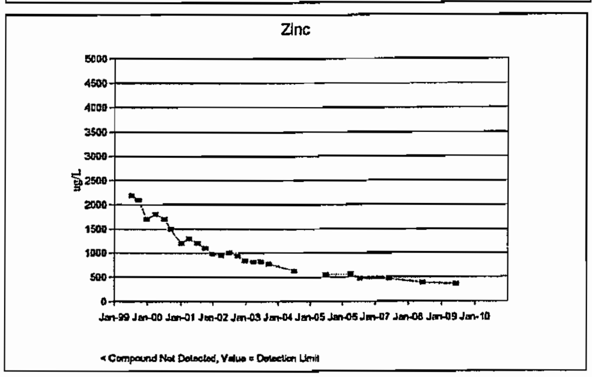
MW-1014C







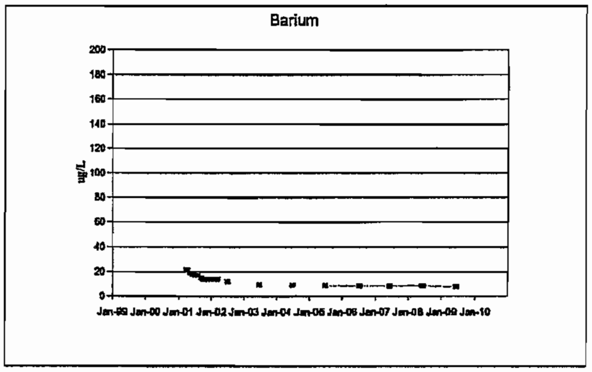


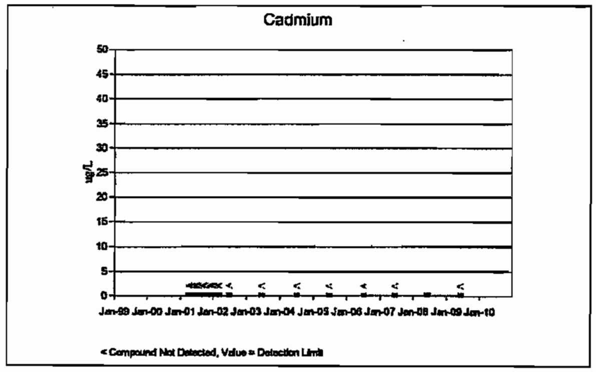


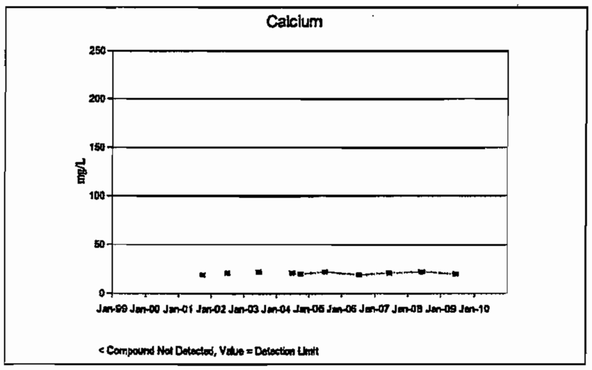
Created By: SGL Checked By: DAT

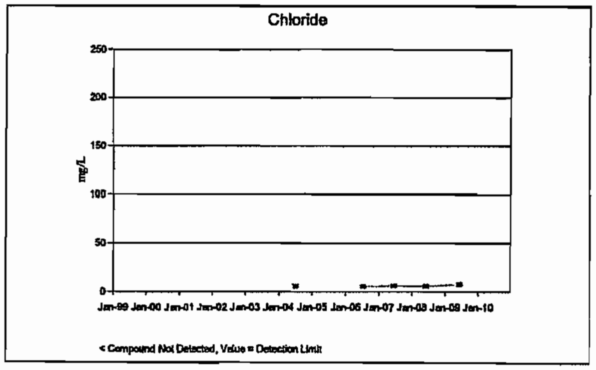
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

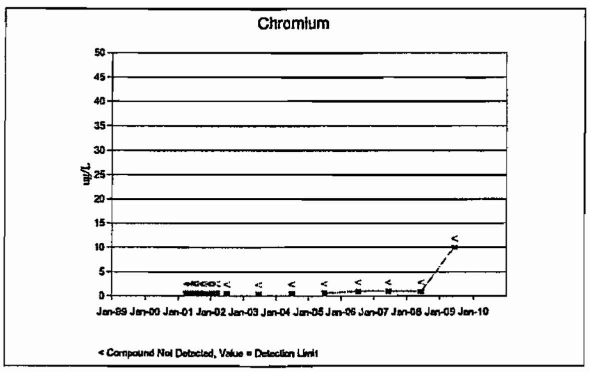
MW-1015A

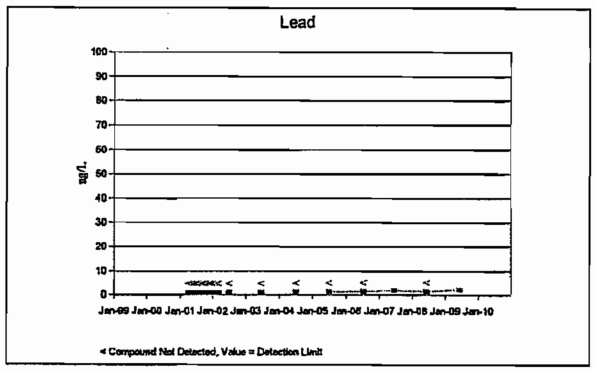


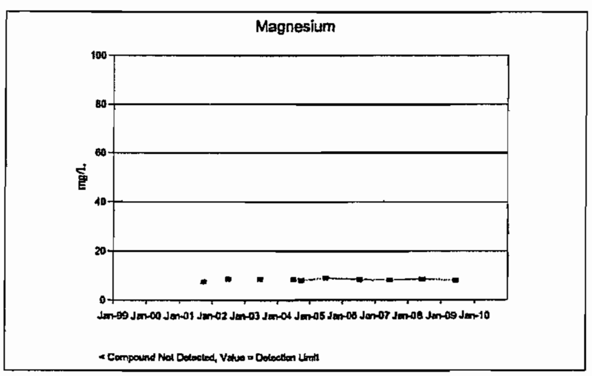


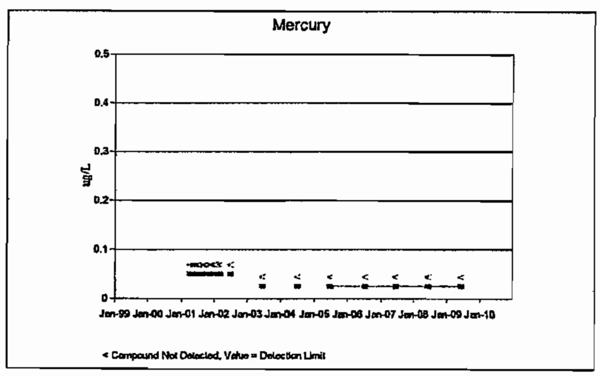








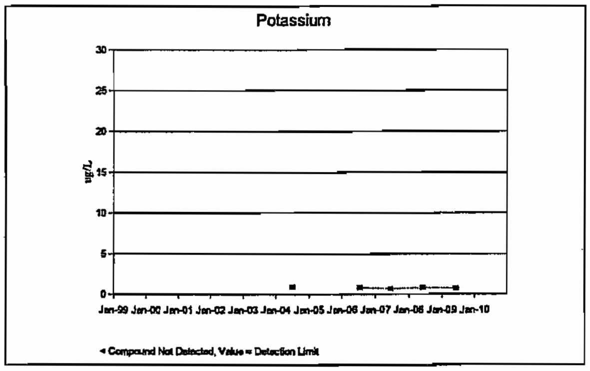


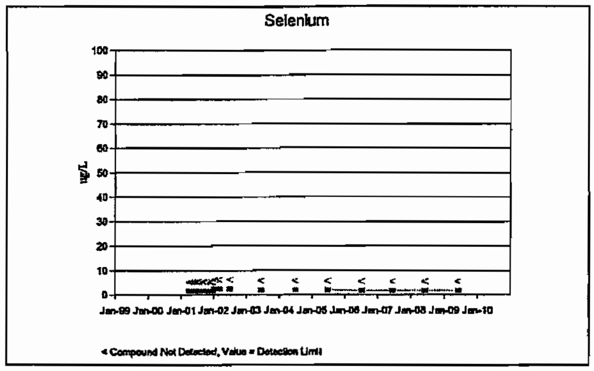


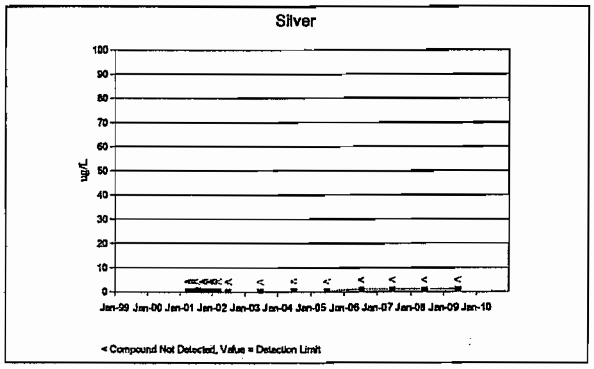
Created By: SGL   Checked By: DAT

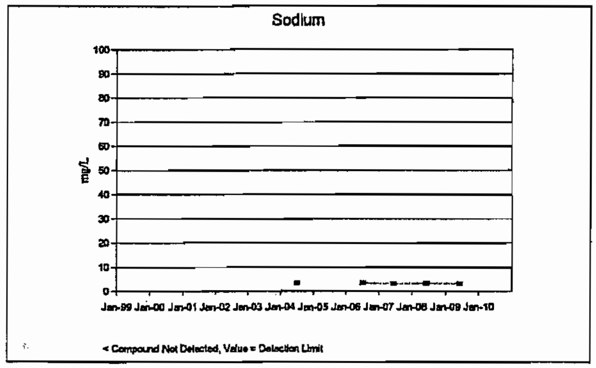
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

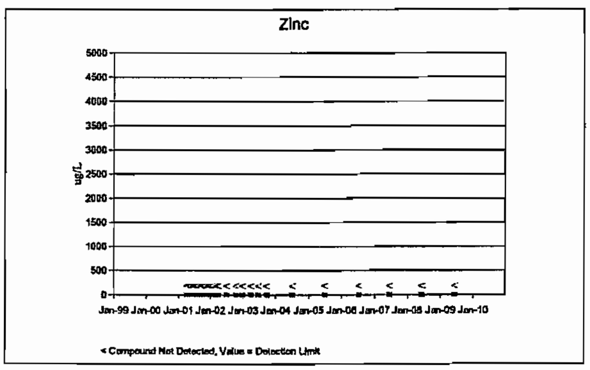
MW-1015A







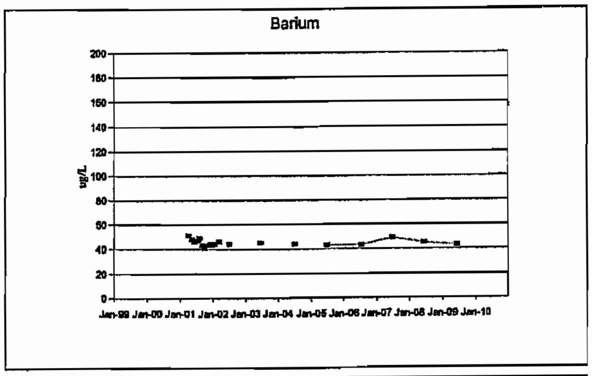


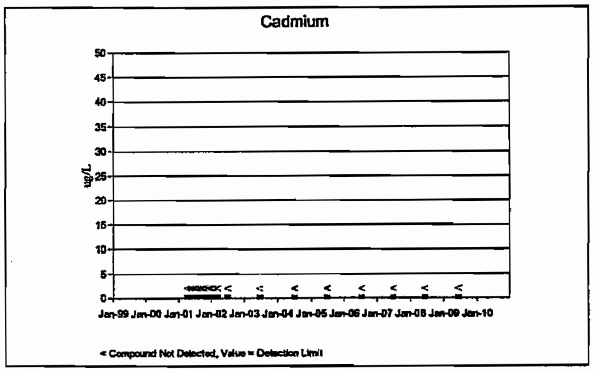


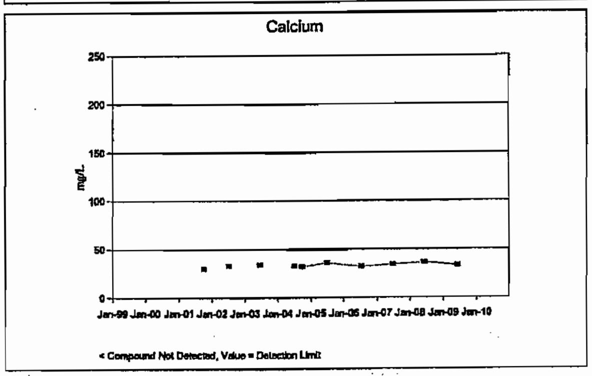
Created By: SGL Checked By: DAT

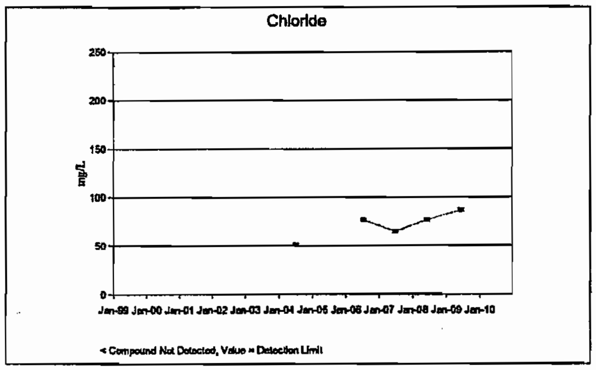
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

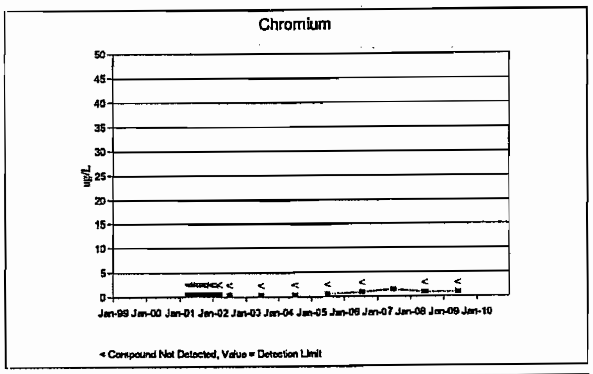
MW-1015B

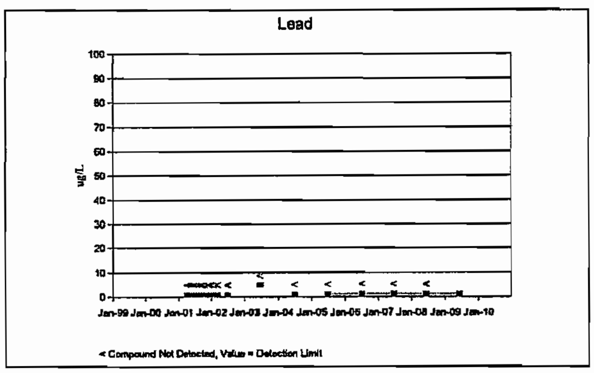


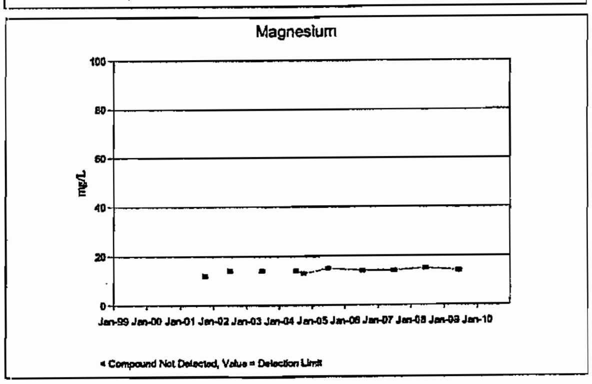


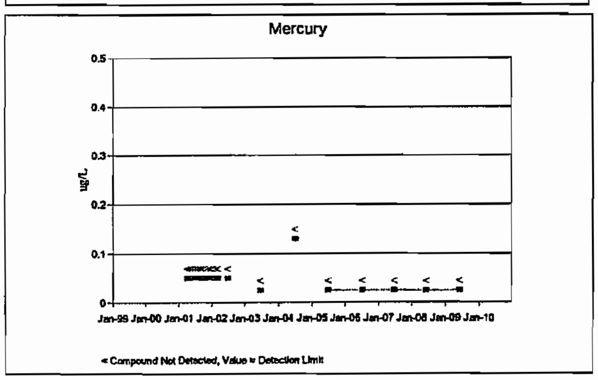








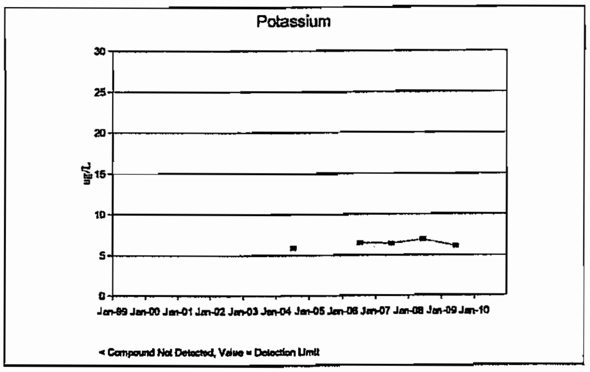


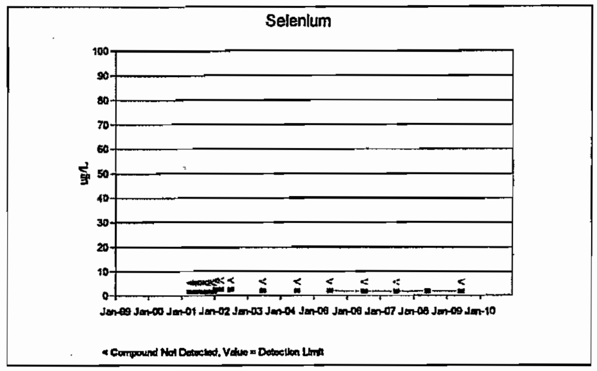


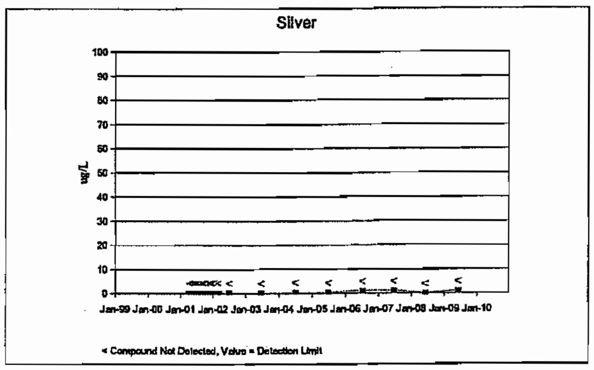
Created By: SGL Checked By: DAT

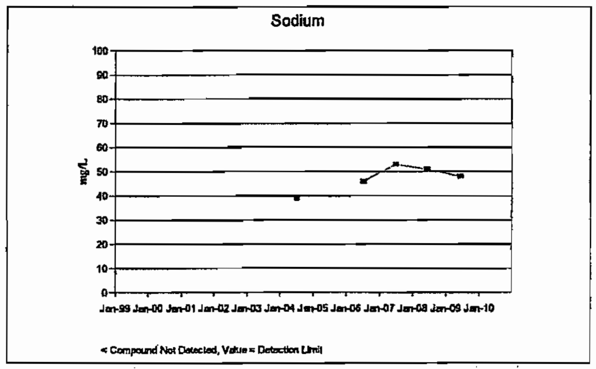
Flambeau Mining Company
Groundwater Quality Results (Annual Monitoring)

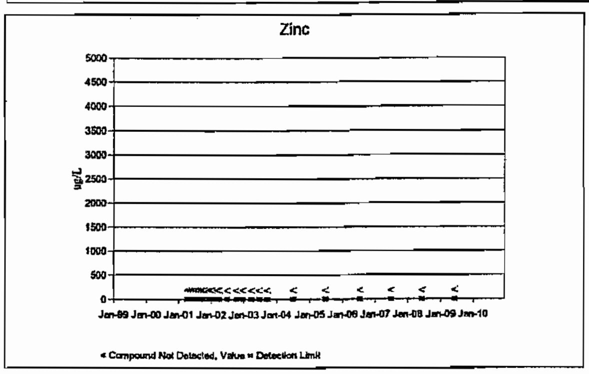
MW-1015B











Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName		Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/99															
	MW-1000PR		< 50	28	220	10	< 4.2	< 14	61	< 0.05	2.6	< 1.3	< 4.5	10	890
	MW-1000PR	(Dup)	< 50	< 21	220	10	< 4.2	< 14	62	< 0.05	2.8	1.6	< 4.5	10	880
	MW-1002		6.6	2.6	15	2	1	< 1.4	4.9	< 0.05	< 1.1	< 1.3	< 0.45	2.8	< 12
	MW-1002G		24	3.4	25	9.7	< 0.42	< 1.4	9.5	< 0.05	< 1.1	< 1.3	< 0.45	4.7	< 12
	MW-1004P		40	< 2.1	34	< 1.7	0.58	< 1.4	14	< 0.05	3.6	< 1.3	< 0.45	6	< 12
	MW-1004S		< 5	< 2.1	15	4.4	< 0.42	< 1.4	5.6	< 0.05	< 1.1	< 1.3	< 0.45	3.6	< 12
	MW-1005		92	< 2.1	44	240	1.5	< 1.4	22	< 0.05	< 1.1	< 1.3	< 0.45	13	< 12
	MW-1005P		64	< 2.1	52	3.5	< 0.42	< 1.4	21	< 0.05	8.1	< 1.3	< 0.45	9	< 12
	MW-1005S		39	< 2.1	38	< 1.7	0.57	< 1.4	13	< 0.05	2.1	< 1.3	< 0.45	5.6	< 12
	MW-1010P		38	< 2.1	39	2.9	< 0.42	< 1.4	11	< 0.05	1.8	< 1.3	< 0.45	5.1	< 12
	MW-1013B		< 50	< 21	630	35	16	< 14	150	< 0.05	8.2	1.7	< 4.5	35	< 120
	MW-1013C		< 50	< 21	570	50	< 4.2	< 14	160	< 0.05	23	3	< 4.5	35	660
	MW-1014B		< 50	31	580	49	13	< 14	170	< 0.05	25	2.2	< 45	93	2500
	MW-1014C		< 50	< 21	280	32	< 4.2	< 14	56	< 0.05	4.8	1.8	< 45	11	2200
10/99															
	MW-1000PR		43	< 2.1	210	11	2.6	< 2.9	56	< 0.05	2.9	< 1.3	< 0.9	7.9	730
	MW-1004P		41	0.22	33	< 1.7	0.53	< 1.4	13	< 0.05	5.9	< 1.3	< 0.45	5.8	< 12
	MW-1004S		< 5	0.38	15	4.4	0.88	< 1.4	4.9	< 0.05	1.1	< 1.3	< 0.45	7.7	< 12
	MW-1010P		40	0.29	38	3.1	< 0.42	< 1.4	9.8	< 0.05	2.7	< 1.3	< 0.45	4.7	< 12
	MW-1010P	(Dup)	41	< 0.21	40	2.6	< 0.42	< 1.4	10	< 0.05	2.6	< 1.3	< 0.45	3.7	< 12
	MW-1013B		< 50	< 4.2	650	35	14	< 14	150	< 0.05	5.9	< 1.3	< 4.5	26	< 120
	MW-1013C		< 50	< 4.2	610	50	7.2	< 14	170	< 0.05	26	< 1.3	< 4.5	29	660
	MW-1014B		< 50	10	640	43	7.4	< 14	150	< 0.05	17	1.4	< 4.5	24	5000
	MW-1014C		< 50	< 4.2	290	33	< 4.2	< 14	56	< 0.05	4	< 1.3	< 4.5	9.6	2100

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName		Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
01/00															
	MW-1013B		< 50	< 2.1	600	28	18	< 14	150	< 0.05	6.4	< 1.3	< 4.5	33	< 120
	MW-1013C		< 50	2.1	550	58	< 4.2	< 14	170	< 0.05	23	< 1.3	5.2	39	630
	MW-1014B		< 50	10	550	< 100	< 4.2	< 14	140	< 0.05	18	2.6	< 4.5	27	4100
	MW-1014C		25	< 0.21	250	31	< 0.42	< 1.4	48	< 0.05	6.3	1.9	< 0.45	12	1700
	MW-1014C	(Dup)	25	< 0.21	230	30	2	2	46	< 0.05	6.3	1.6	< 0.45	11	1600
04/00															
	MW-1013B		< 50	< 3.1	630	35	< 6.2	< 24	150	< 0.05	8.5	< 7.8	< 4.7	27	< 120
	MW-1013C		< 50	< 3.1	590	50	< 6.2	< 24	170	< 0.05	25	< 7.8	< 4.7	34	610
	MW-1014A		59	< 3.1	330	< 50	< 6.2	< 24	120	< 0.05	12	< 7.8	< 4.7	34	< 120
	MW-1014B		< 50	10	600	42	< 6.2	< 24	150	< 0.05	23	< 7.8	< 4.7	26	3700
	MW-1014C		< 50	< 3.1	260	33	< 6.2	< 24	51	< 0.05	7.6	< 7.8	< 4.7	9.4	1800
07/00															
	MW-1000PR		38	< 1			< 3.7	< 7.2		< 0.05		< 1.6	< 2.7		620
	MW-1002		7.3	< 0.21			0.77	< 1.4		< 0.05		< 1.6	< 0.55		< 12
	MW-1002G		27	< 0.21			< 0.74	< 1.4		< 0.05		1.9	< 0.55		< 12
	MW-1004P		43	< 0.21			< 0.74	< 1.4		< 0.05		< 1.6	< 0.55		< 12
	MW-1004S		< 5	< 0.21			1	< 1.4		< 0.05		1.7	< 0.55		< 12
	MW-1005		94	< 0.21			1.1	< 1.4		< 0.05		< 1.6	< 0.55		< 12
	MW-1005P		70	0.28			< 0.74	< 1.4		< 0.05		< 1.6	< 0.55		< 12
	MW-1005S		46	< 0.21			< 0.74	< 1.4		< 0.05		1.6	< 0.55		< 12
	MW-1010P		39	< 1			< 3.7	< 7.2		< 0.05		1.8	< 2.7		< 60
	MW-1010P	(Dup)	39	0.69			< 0.74	< 1.4		< 0.05		< 1.6	< 0.55		< 12
	MW-1013B		< 50	< 2.3	670	< 40	5.1	< 9.6	160	< 0.05	7.2	< 17	< 5.5	34	< 120
	MW-1013C		< 50	< 2.3	620	56	< 4	< 9.6	180	< 0.05	24	< 17	< 5.5	45	620

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/00														
	MW-1014A	58	< 2.3	360	< 25	12	< 9.6	130	< 0.05	12	< 17	< 5.5	35	< 120
	MW-1014B	< 50	8.9	600	38	< 4	< 9.6	160	< 0.05	22	< 17	< 5.5	42	2500
	MW-1014C	< 50	< 2.3	270	36	4.2	< 9.6	54	< 0.05	7.4	< 17	< 5.5	12	1700
10/00														
	MW-1000PR													900
	MW-1002													< 12
	MW-1002G													< 12
	MW-1004P													< 12
	MW-1004P (Dup)													< 12
	MW-1004S													< 12
	MW-1005													< 12
	MW-1005P													< 12
	MW-1005S													< 12
	MW-1010P													< 12
	MW-1013B													< 120
	MW-1013C													370
	MW-1014A													< 120
	MW-1014B													2100
	MW-1014C													1500
01/01														
	MW-1000PR													810
	MW-1002													< 12
	MW-1002G													< 12
	MW-1004P													< 12

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName		Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
01/01															
	MW-1004S														< 12
	MW-1005														< 12
	MW-1005P														< 12
	MW-1005S														< 12
	MW-1010P														< 12
	MW-1013B														< 120
	MW-1013C														480
	MW-1013C	(Dup)													470
	MW-1014A														< 120
	MW-1014B														2800
	MW-1014C														1200
04/01															
	MW-1000PR														600
	MW-1002														< 12
	MW-1002G														< 12
	MW-1002G	(Dup)													< 12
	MW-1004P														< 12
	MW-1004S														< 12
	MW-1005														< 12
	MW-1005P														< 12
	MW-1005S														< 12
	MW-1010P														< 12
	MW-1013B														< 120
	MW-1013C														330

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
04/01														
	MW-1014A													< 120
	MW-1014B													3500
	MW-1014C													1300
	MW-1015A	22	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	51	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
05/01														
	MW-1015A	19	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	48	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
06/01														
	MW-1015A	18	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	46	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
07/01														
	MW-1000PR	36	< 1.1	190		< 2.9	< 4.6	47	< 0.05		< 1.6	< 2.8		860
	MW-1002	7.7	< 0.23			1.4	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1002G	27	< 0.23			0.81	< 0.92		< 0.05		< 1.6	< 0.56		19
	MW-1004P	41	< 0.23	35		< 0.57	< 0.92	14	< 0.05		< 1.6	< 0.56		< 12
	MW-1004S	< 5	< 0.23	16		1.4	< 0.92	5.1	< 0.05		< 1.6	< 0.56		< 12
	MW-1005	82	< 0.23			1.9	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1005P	69	0.4	56		0.58	< 0.92	22	< 0.05		< 1.6	< 0.56		< 12
	MW-1005P (Dup)	68	< 0.23	56		< 0.57	< 0.92	22	< 0.05		< 1.6	< 0.56		< 12
	MW-1005S	45	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1010P	42	0.28	42		< 0.57	< 0.92	11	< 0.05		< 1.6	< 0.56		< 12
	MW-1013B	< 50	3.3	700		6.4	< 7.9	160	< 0.05		< 10	6.5		130

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/01														
	MW-1013C	< 50	< 1.7	630		< 3.4	< 7.9	180	< 0.05		< 10	< 3.1		570
	MW-1014A	< 50	< 1.7	370		5.3	< 7.9	130	< 0.05		< 10	< 3.1		< 120
	MW-1014B	< 50	6.2	600		8.9	< 7.9	160	< 0.05		< 10	< 3.1		1900
	MW-1014C	< 50	< 1.7	240		4.7	< 7.9	49	< 0.05		< 10	< 3.1		1200
	MW-1015A	17	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	47	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
08/01														
	MW-1015A	17	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	0.99		< 12
	MW-1015B	49	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
09/01														
	MW-1015A	15	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	43	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
10/01														
	MW-1000PR	32	< 1.1	160		< 2.9	< 4.6	40	< 0.05		< 1.6	< 2.8		440
	MW-1002													< 12
	MW-1002G													< 12
	MW-1004P	39	< 0.23	31		< 0.57	< 0.92	12	< 0.05		< 1.6	< 0.56		< 12
	MW-1004S	< 5	< 0.23	13		0.83	< 0.92	4.4	< 0.05		< 1.6	< 0.56		< 12
	MW-1004S (Dup)	< 5	< 0.23	13		0.68	< 0.92	4.3	< 0.05		2.2	< 0.56		< 12
	MW-1005													< 12
	MW-1005P													< 12
	MW-1005S													< 12
	MW-1010P	33	< 0.23	35		< 0.57	< 0.92	8.4	< 0.05		1.7	< 0.56		< 12

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
10/01														
	MW-1013B	< 50	< 1.7	600		4.8	< 7.9	130	< 0.05		< 16	6		130
	MW-1013C	< 50	< 1.7	550		< 3.4	< 7.9	160	< 0.05		< 16	6.8		510
	MW-1014A	< 50	< 1.7	330		< 3.4	< 7.9	110	< 0.05		< 16	< 3.1		< 120
	MW-1014B	< 50	4.3	530		< 3.4	< 7.9	140	< 0.05		< 16	7.2		1600
	MW-1014C	< 50	< 1.7	210		< 3.4	< 7.9	44	< 0.05		< 1.6	4.6		1100
	MW-1015A	14	< 0.23	19		< 0.57	< 0.92	7.4	< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	41	< 0.23	30		< 0.57	< 0.92	12	< 0.05		< 1.6	< 0.56		< 12
11/01														
	MW-1015A	14	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	43	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
12/01														
	MW-1015A	14	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	44	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
01/02														
	MW-1000PR													690
	MW-1002													< 12
	MW-1002G													< 12
	MW-1004P													< 12
	MW-1004P (Dup)													< 12
	MW-1004S													< 12
	MW-1005													< 12
	MW-1005P													< 12
	MW-1005S													< 12

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
01/02														
	MW-1010P													< 12
	MW-1013B													< 120
	MW-1013C													500
	MW-1014A													< 120
	MW-1014B													2800
	MW-1014C													980
	MW-1015A	14	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
	MW-1015B	43	< 0.23			< 0.57	< 0.92		< 0.05		< 1.6	< 0.56		< 12
02/02														
	MW-1015A	14	< 0.23			< 0.57	< 0.92		< 0.05		< 2.5	< 0.56		< 12
	MW-1015B	44	< 0.23			< 0.57	< 0.92		< 0.05		< 2.5	< 0.56		< 12
03/02														
	MW-1015A	14	< 0.23			< 0.57	< 0.92		< 0.05		< 2.5	< 0.56		< 12
	MW-1015B	46	< 0.23			< 0.57	< 0.92		< 0.05		< 2.5	< 0.56		< 12
04/02														
	MW-1000PR													410
	MW-1002													< 10
	MW-1002 (Dup)													< 10
	MW-1002G													< 10
	MW-1004P													< 10
	MW-1004S													< 10
	MW-1005													< 10
	MW-1005P													< 10

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
04/02														
	MW-1005S													< 10
	MW-1010P													< 10
	MW-1013B													< 120
	MW-1013C													360
	MW-1014A													< 120
	MW-1014B													1500
	MW-1014C													950
	MW-1015A													< 10
	MW-1015B													< 10
07/02														
	MW-1000PR	40	< 1.1	170		< 2.2	< 9.2	44	< 0.05		< 2.5	3.1		640
	MW-1002	7.8	< 0.23	17		0.79	< 0.92	5.6	< 0.05		< 2.5	< 0.47		< 10
	MW-1002G	27	< 0.23	27		< 0.44	< 0.92	10	< 0.05		< 2.5	< 0.47		< 10
	MW-1004P	40	< 0.23	33		< 0.44	< 0.92	13	< 0.05		< 2.5	< 0.47		< 10
	MW-1004S	< 5	< 0.23	16		0.59	< 0.92	5.4	< 0.05		< 2.5	< 0.47		< 10
	MW-1005	88	< 0.23	41		0.87	< 0.92	20	< 0.05		< 2.5	< 0.47		< 10
	MW-1005P	70	< 0.23	51		< 0.44	< 0.92	21	< 0.05		< 2.5	< 0.47		< 10
	MW-1005S	44	< 0.23	40		< 0.44	< 0.92	14	< 0.05		< 2.5	< 0.47		< 10
	MW-1010P	38	< 0.23	39		< 0.44	< 0.92	9.9	< 0.05		< 2.5	0.55		< 10
	MW-1013B	< 50	< 1.7	670		< 4.5	< 7.4	160	< 0.05		< 15	4.3		130
	MW-1013C	< 50	< 1.7	620		< 4.5	< 7.4	190	< 0.05		< 15	< 4.3		440
	MW-1014A	< 50	< 1.7	350		< 4.5	< 7.4	130	< 0.05		< 15	4.8		< 120
	MW-1014A (Dup)	< 50	< 1.7	370		< 4.5	< 7.4	130	< 0.05		< 15	4.3		< 120
	MW-1014B	< 50	4.7	570		< 4.5	< 7.4	150	< 0.05		< 15	4.6		1900

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/02														
	MW-1014C	< 50	< 1.7	220		< 4.5	< 7.4	48	< 0.05		< 15	< 4.3		1000
	MW-1015A	12	< 0.23	21		< 0.44	< 0.92	8.6	< 0.05		< 2.5	< 0.47		< 10
	MW-1015B	44	< 0.23	33		< 0.44	< 0.92	14	< 0.05		< 2.5	< 0.47		< 10
10/02														
	MW-1000PR													690
	MW-1002													< 10
	MW-1002G													< 10
	MW-1004P													< 10
	MW-1004S													< 10
	MW-1005													< 10
	MW-1005 (Dup)													< 10
	MW-1005P													< 10
	MW-1005S													< 10
	MW-1010P													< 10
	MW-1013B													130
	MW-1013C													480
	MW-1014A													< 120
	MW-1014B													1500
	MW-1014C													940
	MW-1015A													< 10
	MW-1015B													< 10
01/03														
	MW-1000PR	42	< 1.1	170	16	< 2.2	< 9.2	41	< 0.05		< 13	< 2.4		700
	MW-1002													< 10

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
01/03														
	MW-1002G													< 10
	MW-1004P													< 10
	MW-1004S													< 10
	MW-1005													< 10
	MW-1005P													< 10
	MW-1005S													< 10
	MW-1010P	36	< 0.23	39	< 5	< 0.44	< 0.92	9.8	< 0.05		< 2.5	< 0.47		< 10
	MW-1013B	< 50	2.4	640	< 50	< 4.5	< 7.4	150	< 0.05		< 30	5.8		130
	MW-1013C	< 50	< 1.7	600	53	< 4.5	< 7.4	180	< 0.05		< 30	5.7		440
	MW-1014A	< 50	< 1.7	350	< 20	< 4.5	< 7.4	120	< 0.05		< 30	< 4.3		< 120
	MW-1014B	< 50	6.9	580	46	< 4.5	< 74	140	< 0.05		< 30	< 4.3		2500
	MW-1014C	< 50	< 1.7	210	39	< 4.5	< 7.4	45	< 0.05		< 30	< 4.3		840
	MW-1014C (Dup)	< 50	< 1.7	200	42	< 4.5	< 7.4	45	< 0.05		< 30	< 4.3		860
	MW-1015A													< 10
	MW-1015B													< 10
04/03														
	MW-1000PR													680
	MW-1002													< 10
	MW-1002G													< 10
	MW-1004P													< 10
	MW-1004S													< 10
	MW-1005													< 10
	MW-1005P													< 10
	MW-1005S													< 10

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
04/03														
	MW-1010P													< 10
	MW-1013B													130
	MW-1013C													310
	MW-1014A													< 100
	MW-1014B													2500
	MW-1014C													810
	MW-1015A													< 10
	MW-1015B													< 10
	MW-1015B (Dup)													< 10
07/03														
	MW-1000PR	42	< 0.85	170		< 2.2	< 4.7	40	< 0.025		< 2	< 2		730
	MW-1002	7.6	< 0.17	17		0.96	< 0.94	5.5	< 0.025		< 2	< 0.4		< 5
	MW-1002G	27	< 0.17	27		0.6	< 0.94	10	< 0.025		2.1	< 0.4		< 5
	MW-1004P	43	< 0.17	35		< 0.43	< 0.94	14	< 0.025		< 2	< 0.4		< 5
	MW-1004S	4.3	< 0.17	18		0.88	< 0.94	5.9	< 0.025		< 2	< 0.4		< 5
	MW-1005	150	< 0.85	80		< 0.43	< 0.94	37	< 0.025		< 2	< 2		< 5
	MW-1005P	67	< 0.17	55		< 0.43	< 0.94	22	< 0.025		< 2	< 0.4		< 5
	MW-1005S	42	< 0.17	41		< 0.43	< 0.94	14	< 0.025		< 2	< 0.4		< 5
	MW-1010P	39	< 0.17	42		0.5	< 0.94	10	< 0.025		< 2	< 0.4		< 5
	MW-1013B	< 25	< 2.1	660		< 6.4	< 10	150	< 0.025		< 2.7	< 7.7		140
	MW-1013B (Dup)	< 25	< 2.1	660		< 6.4	< 10	150	< 0.025		< 2.7	< 7.7		130
	MW-1013C	< 25	< 2.1	610		< 6.4	< 10	180	< 0.025		< 27	< 7.7		320
	MW-1014A	27	< 2.1	340		< 6.4	< 10	120	< 0.025		< 2.7	< 7.7		< 50
	MW-1014B	< 25	4.2	530		< 6.4	< 10	140	< 0.025		< 2.7	< 7.7		1600

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/03														
	MW-1014C	26	< 2.1	210		< 6.4	< 10	45	< 0.025		< 13	< 7.7		820
	MW-1015A	9.8	< 0.17	22		< 0.43	< 0.94	8.6	< 0.025		< 2	< 0.4		< 5
	MW-1015B	45	< 0.17	34		< 0.43	< 4.7	14	< 0.025		< 2	< 0.4		< 5
10/03														
	MW-1000PR													700
	MW-1002													< 5
	MW-1002G													< 5
	MW-1004P													< 5
	MW-1004S													< 5
	MW-1005													< 5
	MW-1005P													< 5
	MW-1005S													< 5
	MW-1010P													< 5
	MW-1013B													140
	MW-1013B (Dup)													150
	MW-1013C													400
	MW-1014A													77
	MW-1014B													2600
	MW-1014C													770
	MW-1015A													< 5
	MW-1015B													< 5
04/04														
	MW-1000PR DNR Split	43	0.3	151	17.3	< 1	< 1	39.7	< 0.03		< 1	< 0.1		623
	MW-1010P DNR Split	33	0.06	40.9	3.2	< 1	< 1	10.4	< 0.03		< 1	< 0.1		< 16

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
04/04														
	MW-1013C DNR Split	15	0.1	576	52.4	5.4	< 1	180	< 0.03		< 1	0.3		454
	MW-1014A DNR Split	20	1.05	331	10.9	1.5	< 1	119	< 0.03		< 1	< 0.1		< 16
	MW-1014B DNR Split	15	4.39	538	39	4.3	< 1	139	< 0.03		< 1	< 0.1		1470
	MW-1014C DNR Split	26	< 0.05	185	38.2	< 1	< 1	47.3	< 0.03		< 1	< 0.1		638
07/04														
	MW-1000PR	41	< 0.8	150	18	< 2.3	< 5.2	37	< 0.025	3.9	< 2.1	< 3.4	9.3	830
	MW-1002	7.1	< 0.16	16	3.2	1.1	< 1	5	< 0.025	0.81	< 2.1	< 0.67	3.2	< 5
	MW-1002G	27	< 0.16	27	11	< 0.45	< 1	9.9	< 0.025	1.1	< 2.1	< 0.67	5.4	< 5
	MW-1004P	45	< 0.16	35	< 2.5	< 0.45	< 1	14	< 0.025	5.8	< 2.1	< 0.67	7.2	< 5
	MW-1004S	4.8	< 0.16	18	6.5	1.2	< 1	6.1	< 0.025	0.96	< 2.1	< 0.67	4.9	< 5
	MW-1005	130	< 0.16	63	210	< 0.45	< 1	30	< 0.025	0.78	< 2.1	< 0.67	17	< 5
	MW-1005P	69	< 0.16	54	4.2	< 0.45	< 1	21	< 0.025	8.7	< 2.1	< 0.67	7.4	< 5
	MW-1005S	44	< 0.16	40	2.6	< 0.45	< 1	14	< 0.025	3.1	< 2.1	< 0.67	7	< 5
	MW-1010P	46	< 0.16	44	4.3	< 0.45	< 1	11	< 0.025	2.6	< 2.1	< 0.67	5.3	< 5
	MW-1013B	< 25	< 1.7	640	47	< 5.1	20	150	< 0.025	6.8	< 8	< 6.7	31	150
	MW-1013C	< 25	< 1.7	600	57	< 5.1	< 8.7	180	< 0.025	26	< 16	< 6.7	42	460
	MW-1013C (Dup)	< 25	< 1.7	590	61	< 5.1	14	180	< 0.025	25	< 8	< 6.7	41	460
	MW-1014A	25	< 1.7	340	15	< 5.1	< 8.7	120	< 0.025	11	< 8	< 6.7	52	< 50
	MW-1014B	< 25	2.9	530	49	< 5.1	< 8.7	140	< 0.025	20	< 8	< 6.7	32	1200
	MW-1014C	27	< 1.7	190	40	< 5.1	11	43	< 0.025	6.2	< 8	< 6.7	12	630
	MW-1015A	9.2	< 0.16	21	5.8	< 0.45	< 1	8.5	< 0.025	0.94	< 2.1	< 0.67	3.4	< 5
	MW-1015B	44	< 0.16	33	51	< 0.45	< 1	14	< 0.13	5.9	< 2.1	< 0.67	39	< 5
10/04														
	MW-1000PR			140				35						

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
10/04														
	MW-1002			15				4.6						
	MW-1002G			24				9						
	MW-1004P			33				13						
	MW-1004S			17				5.6						
	MW-1005			60				29						
	MW-1005P			51				20						
	MW-1005S			38				13						
	MW-1010P			42				11						
	MW-1013B			640				140						
	MW-1013C			580				170						
	MW-1014A			320				110						
	MW-1014B			560				140						
	MW-1014C			180				41						
	MW-1015A			20				8						
	MW-1015B			32				13						
	MW-1015B (Dup)			32				13						
07/05														
	MW-1000PR	44	< 0.17	160		1.2	< 1.2	40	< 0.025		< 2	1.4		650
	MW-1002	6.2	< 0.17	14		1.2	< 1.2	4.6	< 0.025		< 2	< 0.47		< 5
	MW-1002G	26	< 0.17	27		< 0.55	< 1.2	10	< 0.025		< 2	< 0.47		< 5
	MW-1004P	42	< 0.17	36		< 0.55	< 1.2	15	< 0.025		< 2	< 0.47		< 5
	MW-1004S	4.9	< 0.17	20		< 0.55	< 1.2	6.9	< 0.025		< 2	< 0.47		< 5
	MW-1004S (Dup)	4.8	< 0.17	20		1.3	< 1.2	6.9	< 0.025		< 2	0.95		< 5
	MW-1005	77	0.44	40		1.5	< 1.2	20	< 0.025		< 2	1.2		< 5

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/05														
	MW-1005P	69	< 0.17	57		< 0.55	< 1.2	23	< 0.025		< 2	< 0.47		7.1
	MW-1005S	44	< 0.17	42		< 0.55	< 1.2	15	< 0.025		< 2	< 0.47		< 5
	MW-1010P	42	< 0.17	46		< 0.55	< 1.2	11	< 0.025		< 2	< 0.47		< 5
	MW-1013B	< 25	< 1.7	690		< 4.5	< 10	150	< 0.025		< 1.9	< 6.7		200
	MW-1013C	< 25	< 1.7	630		32	< 10	190	< 0.025		< 1.9	< 6.7		460
	MW-1014A	< 25	< 1.7	340		8.1	13	120	< 0.025		< 7.4	14		< 50
	MW-1014B	< 25	2.8	610		14	< 10	150	< 0.025		< 1.9	11		2200
	MW-1014C	27	< 1.7	190		< 4.5	< 10	43	< 0.025		< 1.9	< 6.7		550
	MW-1015A	8.9	< 0.17	22		< 0.55	< 1.2	9	< 0.025		< 2	< 0.47		< 5
	MW-1015B	43	< 0.17	36		< 0.55	< 1.2	15	< 0.025		< 2	< 0.47		< 5
04/06														
	MW-1000PR	40	< 0.17	150	18	< 0.88	2.9	37	< 0.025		< 1.8	< 1.1		560
	MW-1010P	48	< 0.17	46	4.1	< 0.88	< 1.8	12	< 0.025		< 1.8	< 1.1		< 5
	MW-1013	150	< 1.7	150	18	< 10	14	44	< 0.025		< 2.4	< 12		< 50
	MW-1013A	120	< 1.7	190	11	< 10	19	62	< 0.025		< 2.4	< 12		61
	MW-1013B	< 25	< 1.7	650	48	< 10	< 13	150	< 0.025		< 2.4	< 12		210
	MW-1013C	< 25	< 1.7	620	61	< 10	< 13	180	< 0.025		< 2.4	< 12		470
	MW-1014	40	< 1.7	91	30	< 10	< 13	28	< 0.025		< 2.4	< 12		79
	MW-1014A	< 25	< 1.7	340	17	< 10	< 13	120	< 0.025		< 2.4	< 12		55
	MW-1014B	< 25	< 1.7	540	45	14	< 13	130	< 0.025		< 2.4	< 12		1300
	MW-1014C	28	< 1.7	180	40	< 10	< 13	42	< 0.025		< 2.4	< 12		560
07/06														
	MW-1000PR	42	< 0.17	130	18	< 0.88	< 1.3	36	< 0.025	3.9	< 1.8	< 1.1	7.7	500
	MW-1002	6.3	< 0.17	13	3.5	< 0.88	< 1.3	4.7	< 0.025	0.59	< 1.8	< 1.1	3.1	< 5

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
07/06														
	MW-1002G	26	< 0.17	24	10	< 0.88	< 1.3	9.6	< 0.025	0.84	< 1.8	< 1.1	5.4	< 5
	MW-1004P	40	< 0.17	32	< 2.5	< 0.88	< 1.3	14	< 0.025	5.9	< 1.8	< 1.1	7.1	20
	MW-1004S	5.3	< 0.17	19	5.6	< 0.88	< 1.3	6.8	< 0.025	0.87	< 1.8	< 1.1	5.1	< 5
	MW-1005	110	< 0.17	48	200	< 0.88	< 1.3	24	< 0.025	0.71	< 1.8	< 1.1	21	< 5
	MW-1005P	67	< 0.17	48	4	< 0.88	< 1.3	21	< 0.025	9.2	< 1.8	< 1.1	7.2	< 5
	MW-1005S	44	< 0.17	37	< 2.5	< 0.88	< 1.3	14	< 0.025	3.1	< 1.8	< 1.1	7.2	< 5
	MW-1010P	46	< 0.17	40	4.2	< 0.88	< 1.3	12	< 0.025	2.6	< 1.8	< 1.1	5.3	< 5
	MW-1013	160	< 1.7	140	17	< 10	< 13	45	< 0.025	3.1	< 2.4	< 12	19	< 50
	MW-1013 (Dup)	150	< 1.7	140	17	< 10	< 13	43	< 0.025	3.1	3.4	< 12	18	< 50
	MW-1013A	99	< 1.7	120	6.7	< 10	< 13	42	< 0.025	7.1	< 2.4	< 12	35	< 50
	MW-1013B	< 25	< 1.7	630	46	< 10	< 13	150	< 0.025	6.3	< 4.8	< 12	31	210
	MW-1013C	< 25	< 1.7	580	53	< 10	< 13	180	< 0.025	24	2.7	< 12	43	440
	MW-1014	< 25	< 1.7	84	26	< 10	< 13	28	< 0.025	3.7	< 2.4	< 12	20	59
	MW-1014A	< 25	< 1.7	320	< 18	< 10	< 13	120	< 0.025	9.6	2.8	< 12	58	57
	MW-1014B	< 25	< 1.7	470	42	< 10	< 13	130	< 0.025	18	< 2.4	< 12	29	1100
	MW-1014C	< 25	< 1.7	160	38	< 10	< 13	41	< 0.025	5.4	< 2.4	< 12	12	470
	MW-1015A	8.5	< 0.17	19	5.7	< 0.88	< 1.3	8.3	< 0.025	0.83	< 1.8	< 1.1	3.5	< 5
	MW-1015B	43	< 0.17	32	77	< 0.88	< 1.3	14	< 0.025	6.5	< 1.8	< 1.1	46	< 5
06/07														
	MW-1005P	67	< 0.17	53	4.4	< 0.88	< 1.3	21	< 0.025	8.8	< 1.8	< 1.1	7.6	< 5
	MW-1005S	43	< 0.17	40	< 2.5	< 0.88	< 1.3	14	< 0.025	2.9	< 1.8	< 1.1	6.6	< 5
	MW-1013	140	< 1.7	150	18	< 10	23	45	< 0.025	2.9	< 2.4	< 12	17	< 50
	MW-1013A	84	< 1.7	110	6.1	< 10	< 13	37	< 0.025	7.2	< 2.4	< 12	32	< 50
	MW-1013B	< 25	< 1.7	630	47	< 10	< 13	140	< 0.025	6.4	< 2.4	< 12	28	170

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName		Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
06/07															
	MW-1013C		< 25	< 1.7	600	60	< 10	15	170	< 0.025	25	< 2.4	< 12	38	470
	MW-1014		31	< 1.7	70	24	< 10	< 13	22	< 0.025	3.8	< 2.4	< 12	16	< 50
	MW-1014	(Dup)	39	< 1.7	86	24	< 10	< 13	27	< 0.025	3.8	< 2.4	< 12	20	< 50
	MW-1014A		< 25	< 1.7	330	15	< 10	< 13	110	< 0.025	10	< 2.4	< 12	60	< 50
	MW-1014B		< 25	< 1.7	530	47	< 10	< 13	140	< 0.025	21	< 2.4	< 12	27	1400
	MW-1014C		31	4.7	170	41	< 10	< 13	39	< 0.025	5.4	< 2.4	< 12	10	470
07/07															
	MW-1000PR		40	< 0.17	140	17	< 0.88	< 1.3	36	< 0.025	3.7	< 1.8	< 1.1	7.2	490
	MW-1002		5.3	< 0.17	12	3.1	< 0.88	< 1.3	3.8	< 0.025	0.6	< 1.8	< 1.1	2.4	< 5
	MW-1002G		26	< 0.17	26	13	< 0.88	< 1.3	9.5	< 0.025	0.74	< 1.8	< 1.1	4.9	< 5
	MW-1004P		43	< 0.17	34	2.7	< 0.88	< 1.3	13	< 0.025	5.7	< 1.8	< 1.1	6.7	< 5
	MW-1004S		5.7	< 0.17	22	6.1	< 0.88	< 1.3	7.4	< 0.025	0.94	< 1.8	< 1.1	5.1	< 5
	MW-1005		81	< 0.17	39	120	< 0.88	< 1.3	19	< 0.025	0.54	< 1.8	< 1.1	12	< 5
	MW-1010P		45	< 0.17	44	4.4	< 0.88	1.5	11	< 0.025	2.6	< 1.8	< 1.1	4.7	< 5
	MW-1015A		8.5	< 0.17	21	6.2	< 0.88	1.7	8.2	< 0.025	0.66	< 1.8	< 1.1	3.2	< 5
	MW-1015B		49	< 0.17	34	65	1.4	< 1.3	14	< 0.025	6.4	< 1.8	< 1.1	53	< 5
06/08															
	MW-1000PR		40	< 0.17	140	19	1.5	< 1.3	36	< 0.025	3.3	3.8	1.4	7	450
	MW-1002		7.1	< 0.17	17	4.6	1.8	< 1.3	5.5	< 0.025	0.77	1.9	2.5	3.1	< 5
	MW-1002G		27	< 0.17	27	12	< 0.88	< 1.3	9.8	< 0.025	0.98	< 1.8	< 1.1	5.3	< 5
	MW-1002G	(Dup)	27	0.4	26	13	< 0.88	< 1.3	9.8	< 0.025	0.79	< 1.8	< 1.1	4.9	< 5
	MW-1004P		41	0.34	35	< 2.5	< 0.88	< 1.3	14	< 0.025	5.4	3	< 1.1	5.9	< 5
	MW-1004S		5.6	< 0.17	25	6.7	< 0.88	< 1.3	7.9	< 0.025	0.9	< 1.8	< 1.1	5.3	< 5
	MW-1005		82	< 0.17	39	110	< 0.88	< 1.3	20	< 0.025	0.58	< 1.8	< 1.1	15	< 5

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
06/08														
	MW-1005P	70	< 0.17	55	3.9	< 0.88	1.7	22	< 0.025	10	2	< 1.1	9	< 5
	MW-1005S	46	< 0.17	40	< 2.5	1	< 1.3	14	< 0.025	3.2	< 1.8	1.1	6.4	< 5
	MW-1010P	44	< 0.17	45	3.9	< 0.88	< 1.3	11	< 0.025	2.4	< 1.8	< 1.1	4.1	< 5
	MW-1013	130	< 1.7	150	17	< 10	< 13	44	< 0.025	2.6	2.8	< 12	13	< 50
	MW-1013A	81	< 1.7	160	7	< 10	< 13	53	< 0.025	6.4	< 2.4	14	19	< 50
	MW-1013B	< 25	< 1.7	630	< 50	< 10	< 13	140	< 0.025	5.6	< 2.4	< 12	19	170
	MW-1013C	27	1.8	610	60	< 10	< 13	170	< 0.025	22	< 2.4	< 12	28	450
	MW-1014	35	0.25	83	27	< 0.88	< 1.3	26	< 0.025	3.5	< 1.8	1.2	14	12
	MW-1014A	< 25	< 1.7	330	13	< 10	< 13	120	< 0.025	8	< 2.4	< 12	40	< 50
	MW-1014B	< 25	< 1.7	540	56	< 10	< 13	140	< 0.025	18	< 2.4	< 12	18	1700
	MW-1014B (Dup)	< 25	4.2	550	36	< 10	< 13	140	< 0.025	21	< 2.4	< 12	29	1700
	MW-1014C	28	< 1.7	160	35	< 10	< 13	38	< 0.025	4.8	< 2.4	< 12	7.8	390
	MW-1015A	8.7	0.29	22	5.9	< 0.88	< 1.3	8.5	< 0.025	0.82	< 1.8	< 1.1	3.4	< 5
	MW-1015B	45	< 0.17	36	77	< 0.88	< 1.3	15	< 0.025	6.9	1.9	< 0.018	51	< 5
06/09														
	MW-1000PR	36	< 0.17	130	26	0.89	< 1.3	32	< 0.025	3.5	< 1.8	< 1.1	10	380
	MW-1002	5.6	< 0.17	13	4.2	< 0.88	< 1.3	4.1	< 0.025	0.7	< 1.8	< 1.1	2.3	< 5
	MW-1002G	26	< 0.17	24	16	< 0.88	< 1.3	9.1	< 0.025	0.77	< 1.8	< 1.1	4.9	< 5
	MW-1002G (Dup)	26	< 0.17	24	17	< 0.88	1.6	9	< 0.025	0.71	< 1.8	< 1.1	4.7	< 5
	MW-1004P	40	< 0.17	32	< 2.5	< 0.88	< 1.3	13	< 0.025	5	2	< 1.1	6.3	< 5
	MW-1004S	4.8	< 0.17	20	6.6	< 0.88	1.8	6.5	< 0.025	0.49	3.5	< 1.1	4.4	< 5
	MW-1005	78	0.52	36	130	1	< 1.3	18	< 0.025	0.48	< 1.8	< 1.1	13	< 5
	MW-1005P	64	< 0.17	49	5.2	< 0.88	< 1.3	20	< 0.025	8.2	< 1.8	< 1.1	10	< 5
	MW-1005S	43	< 0.17	38	< 2.5	< 0.88	< 1.3	13	< 0.025	3	2.8	< 1.1	6.4	< 5

Created By: SGL Checked By: DAT

Historical Groundwater Results (Annual Parameters)

Date	SamplePointName	Ba (ug/l)	Cd (ug/l)	Ca (mg/l)	Cl (mg/l)	Cr (ug/l)	Pb (ug/l)	Mg (mg/l)	Hg (ug/l)	K (ug/l)	Se (ug/l)	Ag (ug/l)	Na (mg/l)	Zn (ug/l)
06/09														
	MW-1010P	42	< 0.17	42	5.5	< 0.88	< 1.3	11	< 0.025	2.6	< 1.8	< 1.1	4.5	< 5
	MW-1013	130	< 1.7	140	15	< 10	19	42		2.6	< 3.1	< 12	15	< 50
	MW-1013A	72	< 1.7	120	14	< 10	< 13	40		6.4	< 3.1	< 12	26	< 50
	MW-1013B	< 25	< 1.7	590	76	< 10	< 13	130	< 0.025	3.6	< 3.1	< 12	27	160
	MW-1013B (Dup)	< 25	< 1.7	580	77	< 10	< 13	130	< 0.025	2.7	< 3.1	< 12	27	160
	MW-1013C	< 25	< 1.7	560	91	< 10	< 13	260	< 0.025	20	< 24	< 12	36	450
	MW-1014	34	< 1.7	76	30	< 10	< 13	24		3	< 3.1	< 12	19	< 50
	MW-1014A	< 25	< 1.7	300	< 50	< 10	< 13	110	< 0.025	6.3	< 3.1	< 12	62	< 50
	MW-1014B	< 25	12	520	53	35	1.3	130	< 0.025	12	< 3.1	23	25	1100
	MW-1014C	26	< 1.7	150	53	< 10	< 13	35	< 0.025	3.6	< 3.1	< 12	9.5	360
	MW-1015A	7.9	< 0.17	20	7.7	< 10	2.1	8	< 0.025	0.73	< 1.8	< 1.1	3.1	< 5
	MW-1015B	43	< 0.17	33	87	< 0.88	1.3	14	< 0.025	6.1	< 1.8	< 1.1	48	< 5

Created By: SGL Checked By: DAT

Attachment 3

Statistical Results

Trend Graphs

Historical Data

(Surface Water)

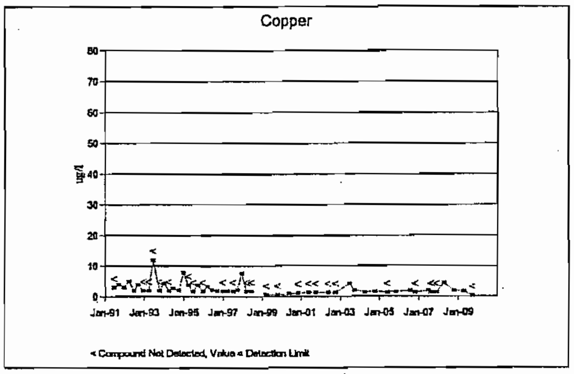
Trend Analysis Results - Surface Water
Year Ending 2009

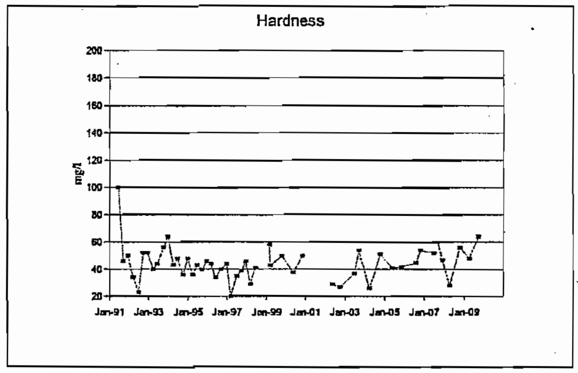
	Conductivity (Field) (umhos)	pH(Field) (su)	Copper	Hardness	Iron	Manganese	Sulfate	Zinc
SW-1								
Trend Results for Most Recent 5 Years								
Sample Size	12	12	12	11	12	12	12	12
Mann-Kendall S	22	14	3	23	-13	-3	24	-2
p-Level	0.152	0.380	0.893	0.086	0.420	0.893	0.116	0.946
Trend								
Trend Results for All Data Since Oct. 1997								
Sample Size	29	29	29	26	23	23	23	29
Mann-Kendall S	31	83	20	85	-7	53	83	129
p-Level	0.577	0.125	0.724	0.064	0.876	0.172	0.030	0.015
Trend								
SW-2								
Trend Results for Most Recent 5 Years								
Sample Size	12	12	12	11	12	12	12	12
Mann-Kendall S	22	20	16	20	-21	-14	24	-6
p-Level	0.152	0.196	0.310	0.142	0.174	0.380	0.116	0.738
Trend								
Trend Results for All Data Since Oct. 1997								
Sample Size	29	29	29	26	23	23	23	29
Mann-Kendall S	3	98	89	63	-27	20	98	123
p-Level	0.971	0.068	0.100	0.174	0.496	0.620	0.009	0.021
Trend							+	

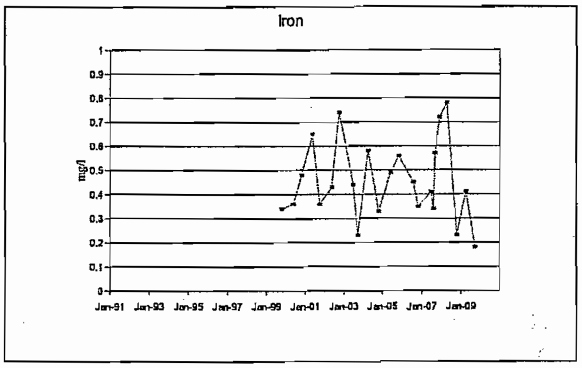
Notes: Overall increasing trend denoted by "+".
Overall decreasing trend denoted by "-"
Long term trend tests performed at a Type I (two-tailed) error rate of 0.01.
5-Year Trend tests performed at a Type I (two-tailed) error rate of 0.05.

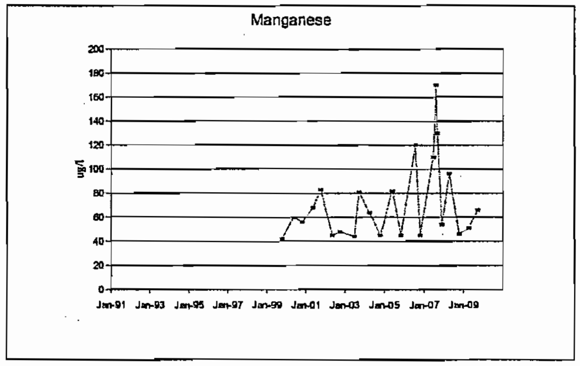
Flambeau Mining Company
Surface Water Quality Results

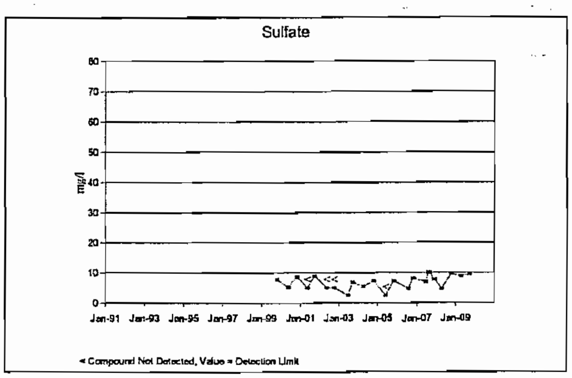
SW-1 (Upstream)

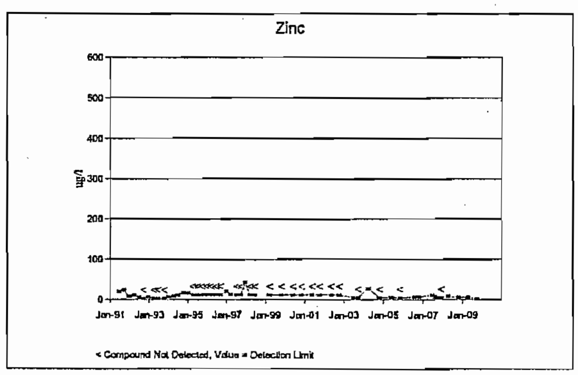


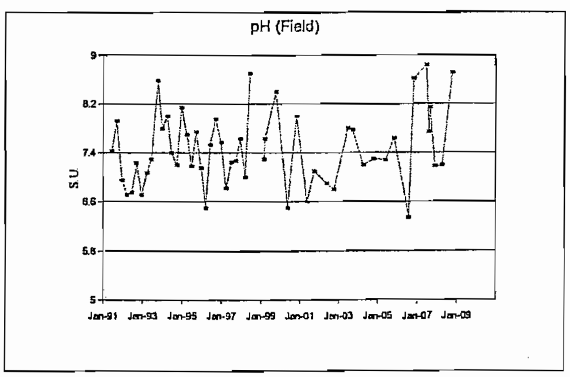


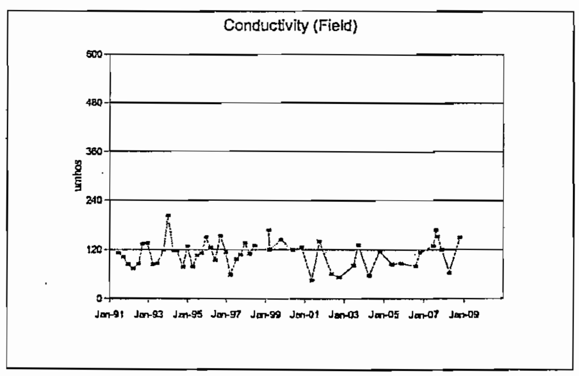








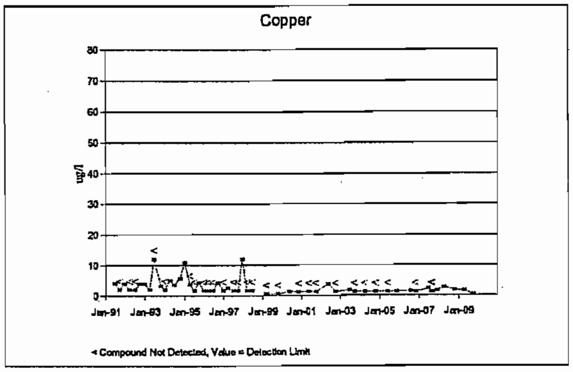


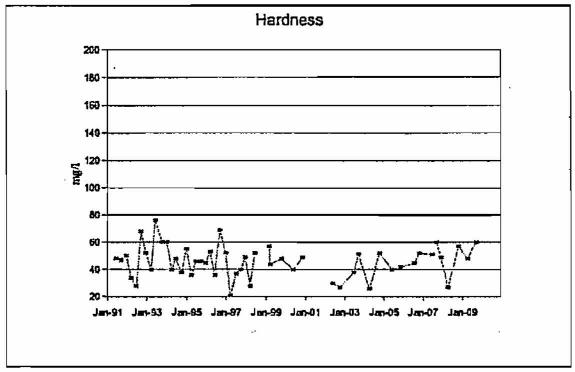


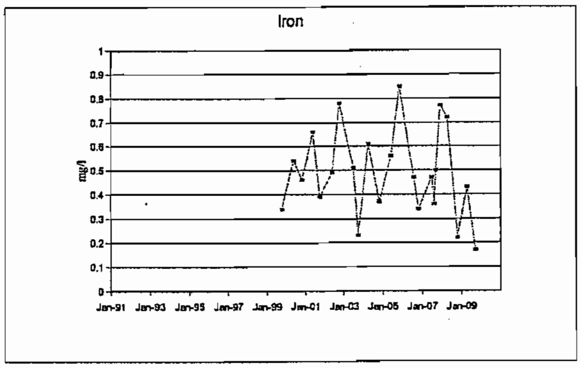
Created By: SGL Checked By: DAT

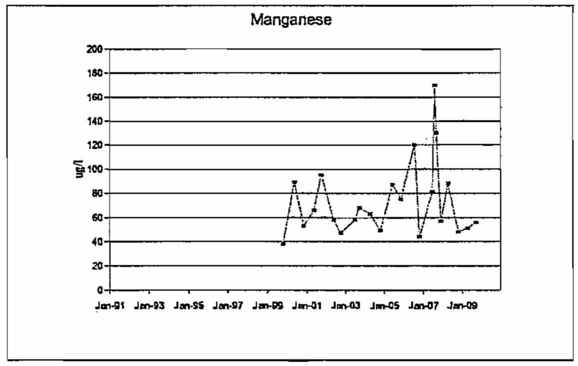
Flambeau Mining Company
Surface Water Quality Results

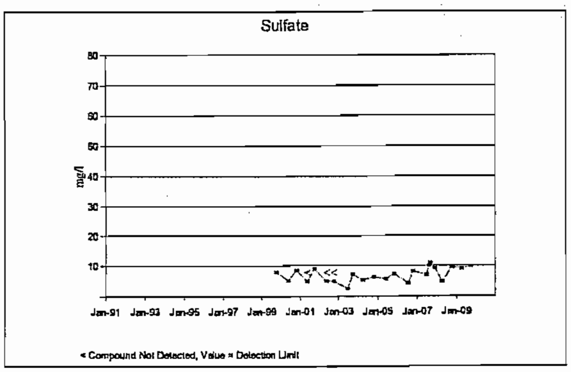
SW-2 (Downstream)

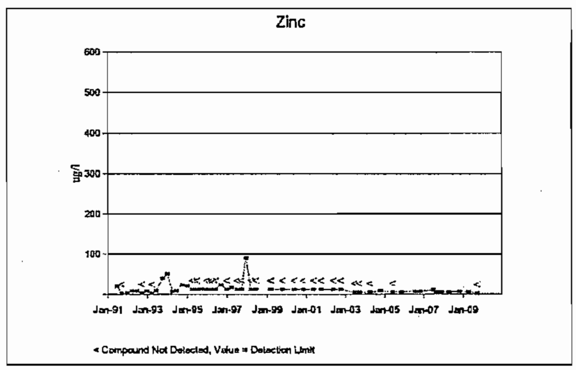


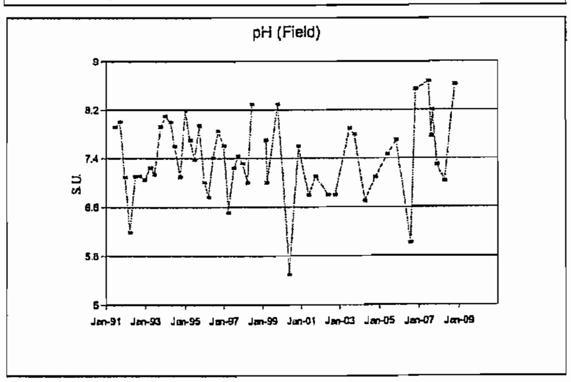


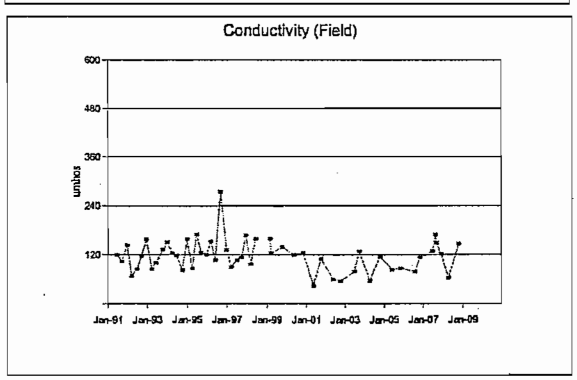












Created By: SGL Checked By: DAT

Historical Surface Water Results

Date	Sample Point Name	Field pH	Field Cond	Copper (ug/l)		Hardness (mg/l)	Iron (mg/l)	Manganese (ug/l)	Sulfate (mg/l)	Zinc (ug/l)	
07/91											
	SW-1	7.43	112	<	3	100					20
	SW-2	7.92	120		4.2	48					20
10/91											
	SW-1	7.92	102		4	46					24
	SW-2	8.01	104	<	2	47				<	3
01/92											
	SW-1	6.95	84		3	50					8
	SW-2	7.09	144		4	50					4
04/92											
	SW-1	6.71	74		5	34					11
	SW-2	6.19	69	<	2	34					9
07/92											
	SW-1	6.75	86		2	23					6
	SW-2	7.1	85	<	2	28					8
10/92											
	SW-1	7.23	134		4	52				<	3
	SW-2	7.11	117		4	68				<	3
01/93											
	SW-1	6.71	136	<	2	52					7
	SW-2	7.05	158		4	52					8
04/93											
	SW-1	7.07	84	<	2	40				<	3
	SW-2	7.25	85		2	40				<	3
07/93											
	SW-1	7.29	87	<	12	44				<	3
	SW-2	7.14	100	<	12	76					9
11/93											
	SW-1	8.59	118.9	<	2	56				<	3
	SW-2	7.93	132.6		3.2	60					40
01/94											
	SW-1	7.8	203		4.4	64					7
	SW-2	8.1	151	<	2	60					50
04/94											

Created By: SGL Checked By: DAT

Historical Surface Water Results

Date	Sample Point Name	Field pH	Field Cond	Copper (ug/l)	Hardness (mg/l)	Iron (mg/l)	Manganese (ug/l)	Sulfate (mg/l)	Zinc (ug/l)
04/94									
	SW-1	8	118	< 2	43				9
	SW-2	8	124	5.1	40				7
07/94									
	SW-1	7.4	117	2.7	48				11
	SW-2	7.6	119	3.6	48				9
10/94									
	SW-1	7.2	78	2	36				17
	SW-2	7.1	82	5.7	38				23
01/95									
	SW-1	8.14	128.5	7.8	48				16
	SW-2	8.19	158.3	11	55				21
04/95									
	SW-1	7.7	78.1	< 3.8	36				< 12
	SW-2	7.7	86.2	< 3.8	36				< 12
07/95									
	SW-1	7.18	105.5	< 1.7	43				< 12
	SW-2	7.38	170	< 1.7	46				< 12
10/95									
	SW-1	7.74	112.5	3.7	40				< 12
	SW-2	7.95	126.3	4.3	46				13
01/96									
	SW-1	7.15	150.5	< 1.7	46				< 12
	SW-2	7.01	120.2	< 1.7	45				< 12
04/96									
	SW-1	6.5	124	3.3	44				< 12
	SW-2	6.76	153.1	< 1.7	53				< 12
07/96									
	SW-1	7.53	94.5	2.1	34				< 12
	SW-2	7.41	106.8	< 1.7	36				< 12
10/96									
	SW-1	7.95	153.5	1.9	40				< 12
	SW-2	7.86	274	4.3	69				23
01/97									

Created By: SGL Checked By: DAT

Historical Surface Water Results

Date	Sample Point Name	Field pH	Field Cond	Copper (ug/l)	Hardness (mg/l)	Iron (mg/l)	Manganese (ug/l)	Sulfate (mg/l)	Zinc (ug/l)
01/97									
	SW-1	7.57	113.3	< 1.7	44				21
	SW-2	7.61	132	< 1.7	52				< 12
04/97									
	SW-1	6.82	58.9	1.8	20				13
	SW-2	6.51	89.6	2.6	21				17
07/97									
	SW-1	7.25	96.1	< 1.7	35				< 12
	SW-2	7.25	106.8	< 1.7	37				< 12
10/97									
	SW-1	7.27	107.6	2.2	39				< 12
	SW-2	7.44	113.8	< 1.7	40				< 12
01/98									
	SW-1	7.63	136.3	7.6	46				43
	SW-2	7.32	167.9	12	49				89
04/98									
	SW-1	7	110	< 1.7	29				< 12
	SW-2	7	97	< 1.7	28				< 12
07/98									
	SW-1	8.7	130	< 1.7	41				< 12
	SW-2	8.3	160	< 1.7	52				< 12
03/99									
	SW-1	7.3	166.7	0.74	58				< 12
	SW-2	7.7	159.6	< 0.6	57				< 12
04/99									
	SW-1	7.63	119.3	< 0.6	43				< 12
	SW-2	7	124.7	< 0.6	44				< 12
11/99									
	SW-1	8.4	144	< 0.6	50	0.34	42	7.7	< 12
	SW-2	8.3	139	< 0.6	48	0.34	38	7.9	< 12
06/00									
	SW-1	6.5	120	0.94	38	0.36	60	5.2	< 12
	SW-2	5.5	120	1.3	40	0.54	89	5.2	< 12
11/00									

Created By: SGL Checked By: DAT

Historical Surface Water Results

Date	Sample Point Name	Field pH	Field Cond	Copper (ug/l)	Hardness (mg/l)	Iron (mg/l)	Manganese (ug/l)	Sulfate (mg/l)	Zinc (ug/l)
11/00									
	SW-1	8	126	< 1.2	50	0.48	56	8.6	< 12
	SW-2	7.6	125	< 1.2	49	0.46	53	8.4	< 12
06/01									
	SW-1	6.6	45	< 1.3		0.65	68	< 5	< 12
	SW-2	6.8	44	< 1.3		0.66	66	< 5	< 12
10/01									
	SW-1	7.1	140	< 1.3		0.36	83	8.8	< 12
	SW-2	7.1	110	< 1.3		0.39	95	8.9	< 12
06/02									
	SW-1	6.9	61	< 1.3	29	0.43	45	< 5	< 12
	SW-2	6.8	60	3.7	30	0.49	58	< 5	< 12
10/02									
	SW-1	6.8	52	< 1.3	27	0.74	48	< 5	< 12
	SW-2	6.8	55	< 1.3	27	0.78	47	< 5	< 12
07/03									
	SW-1	7.8	81	4.2	37	0.44	44	2.6	5.1
	SW-2	7.9	78	1.8	38	0.51	58	2.6	< 5
10/03									
	SW-1	7.77	131	2	54	0.23	81	6.7	< 5
	SW-2	7.8	128	< 1.3	51	0.23	68	7.1	< 5
04/04									
	SW-1	7.2	57	1.5	26	0.58	64	5.4	28
	SW-2	6.7	57	< 1.3	26	0.61	63	5.4	< 5
11/04									
	SW-1	7.3	115	1.6	51	0.33	45	7.2	< 5
	SW-2	7.09	114	< 1.3	52	0.37	49	6.3	8.8
06/05									
	SW-1	7.28	84	< 1.3	41	0.49	82	< 2.5	6
	SW-2	7.47	83	< 1.3	40	0.56	87	5.7	< 5
11/05									
	SW-1	7.64	87	1.5	42	0.56	45	7.2	< 5
	SW-2	7.7	87	1.4	42	0.85	75	7.3	5.9
08/06									

Created By: SGL Checked By: DAT

Historical Surface Water Results

Date	Sample Point Name	Field pH	Field Cond	Copper (ug/l)	Hardness (mg/l)	Iron (mg/l)	Manganese (ug/l)	Sulfate (mg/l)	Zinc (ug/l)
08/06									
	SW-1	6.34	80	1.9	45	0.45	120	4.7	7.3
	SW-2	6.02	78	1.5	45	0.47	120	4.3	6.9
11/06									
	SW-1	8.62	113	< 1.3	54	0.35	45	8.1	7.1
	SW-2 (Dup)			< 1.3	52	0.34	44	8.1	7.8
	SW-2	8.55	113	< 1.3	52	0.34	44	8.1	7.8
07/07									
	SW-1	8.84	129	2	52	0.41	110	6.9	12
	SW-2	8.67	129	2.3	51	0.47	81	7	11
08/07									
	SW-1	7.74	169	< 1.3		0.34	170	10	7.5
	SW-2	7.77	169	< 1.3		0.36	170	10	6.4
09/07									
	SW-1	8.14	152.4	< 1.3	60	0.57	130	10	6
	SW-2	8.2	149	< 1.3	60	0.5	130	11	5.4
12/07									
	SW-1	7.18	120	< 1.3	47	0.72	54	7.7	< 5
	SW-1 (Dup)			< 1.3	51	0.76	56	8.8	< 5
	SW-2	7.3	122	1.7	49	0.77	57	9.1	6.5
04/08									
	SW-1	7.2	62.7	4.4	28	0.78	96	4.7	8.5
	SW-2	7.03	63.2	2.8	27	0.72	88	4.9	5.5
10/08									
	SW-1	8.72	149.9	1.8	56	0.23	46	9.5	6.1
	SW-1 (Dup)			2.2	58	0.24	48	9.8	5.5
	SW-2	8.63	146.6	1.8	57	0.22	48	9.4	6.9
04/09									
	SW-1	8.6	125	1.6	48	0.41	51	8.7	6.5
	SW-2	8.5	122	1.6	48	0.43	51	9	6
10/09									
	SW-1	8.5	151	< 0.29	64	0.18	66	9.4	2.2
	SW-2	8.8	149	0.32	60	0.17	56	9.8	< 2

Created By: SGL Checked By: DAT

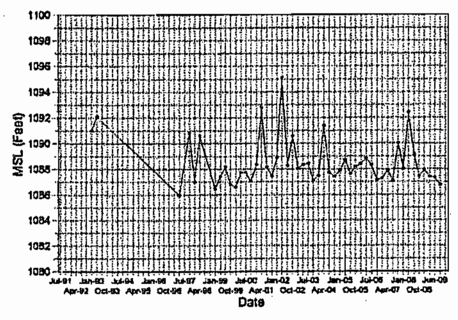
Attachment 4

Hydrographs

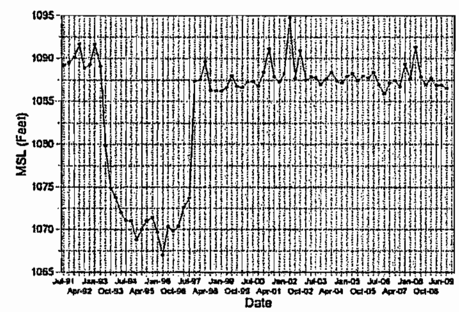
Flambeau Mining Company

Groundwater Elevation Results

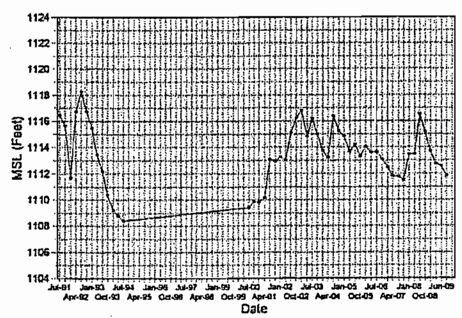
MW-1000R



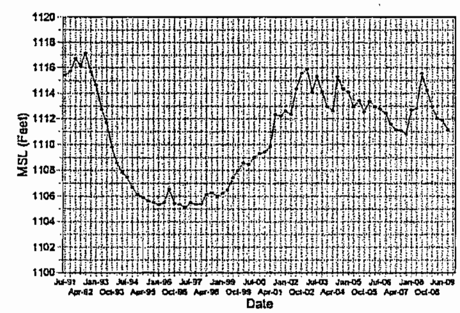
MW-1000PR



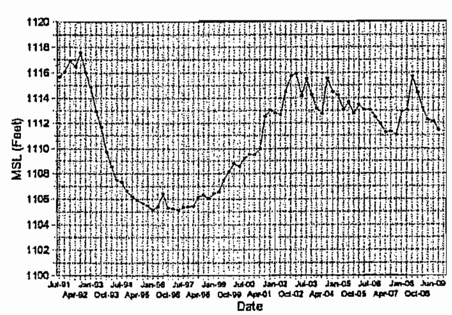
MW-1001



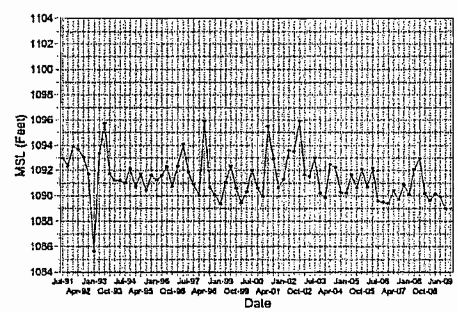
MW-1001G



MW-1001P



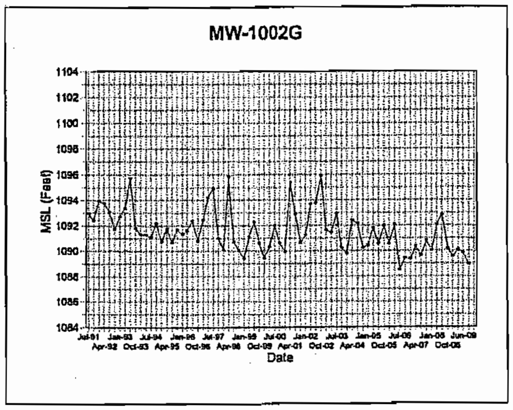
MW-1002

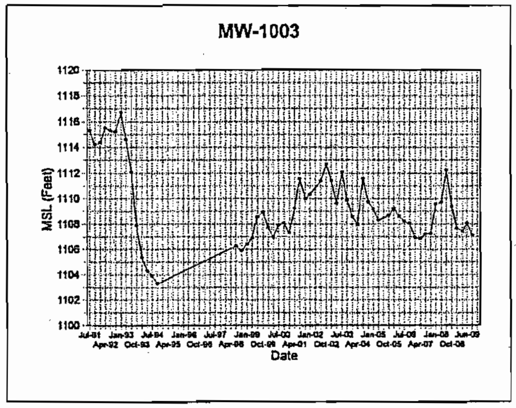


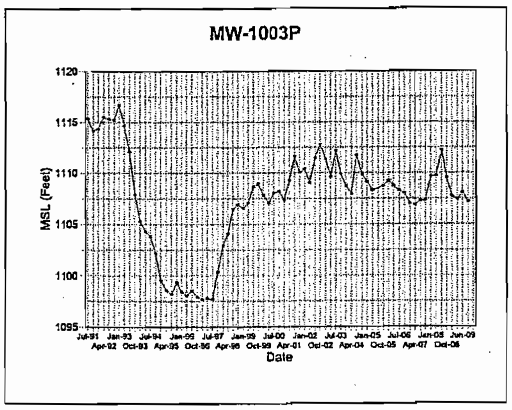
Created By: SGL Checked By: DAT

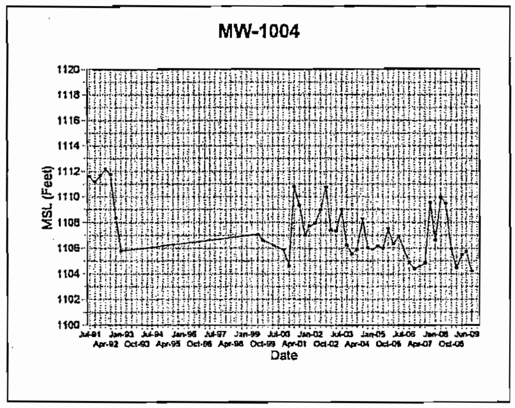
Flambeau Mining Company

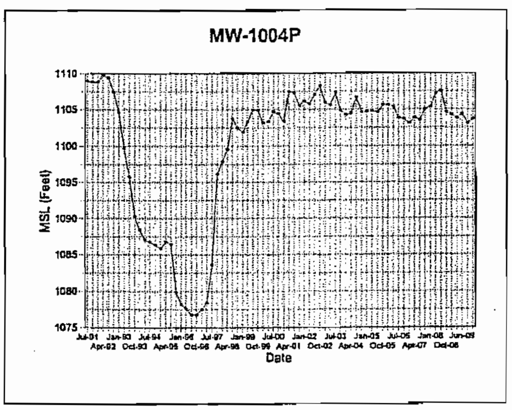
Groundwater Elevation Results

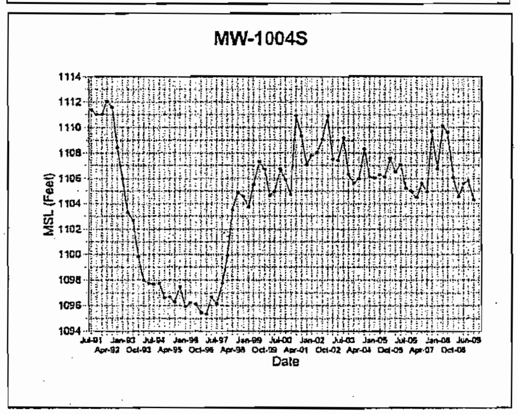










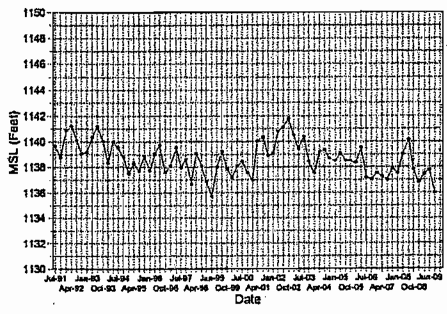


Created By: SGL Checked By: DAT

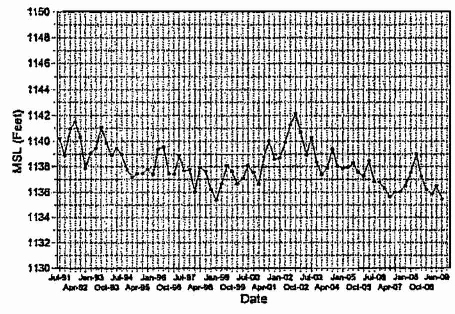
Flambeau Mining Company

Groundwater Elevation Results

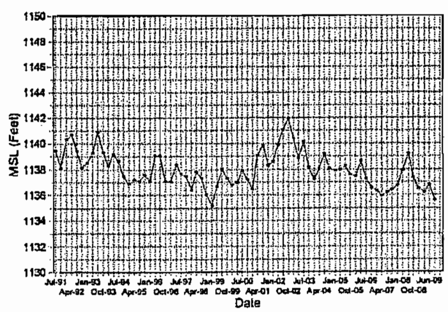
MW-1005



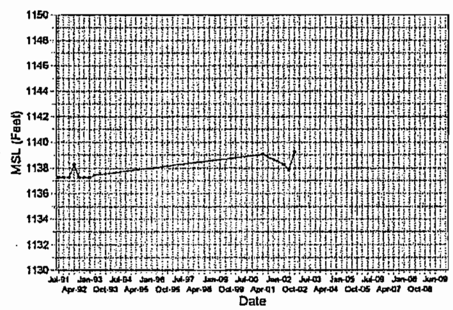
MW-1005P



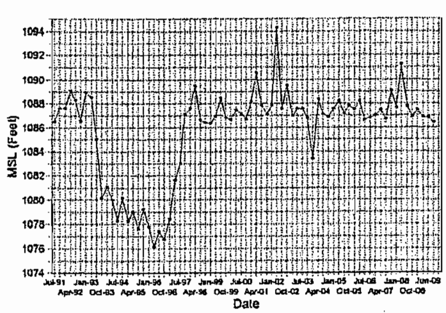
MW-1005S



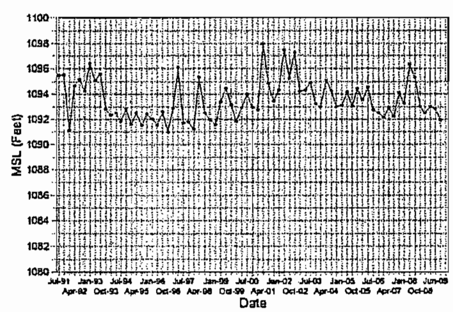
MW-1006



MW-1010P



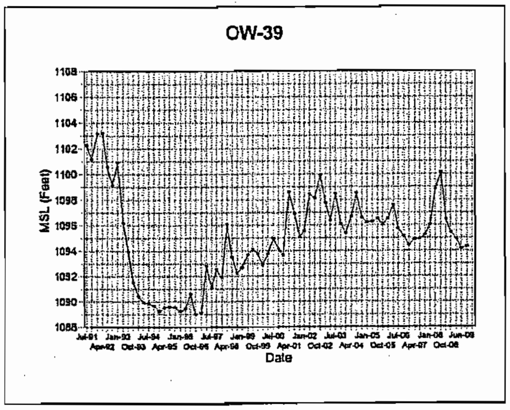
OW-10

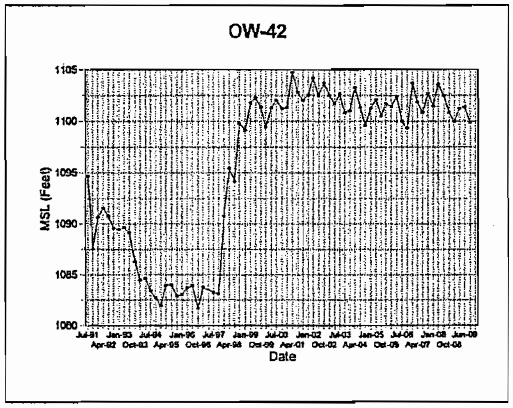


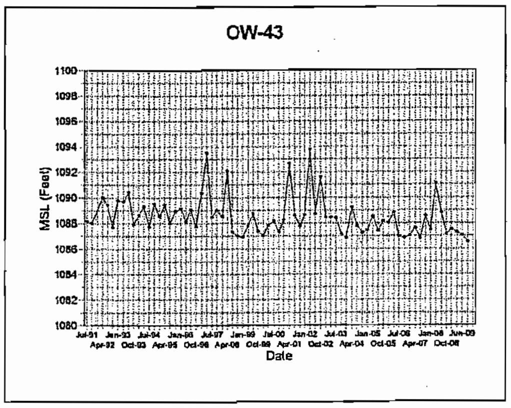
Created By: SGL Checked By: DAT

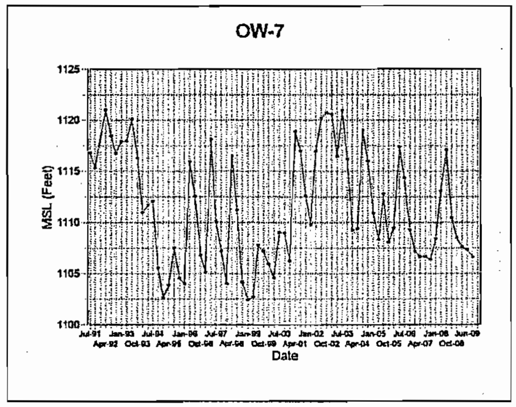
Flambeau Mining Company

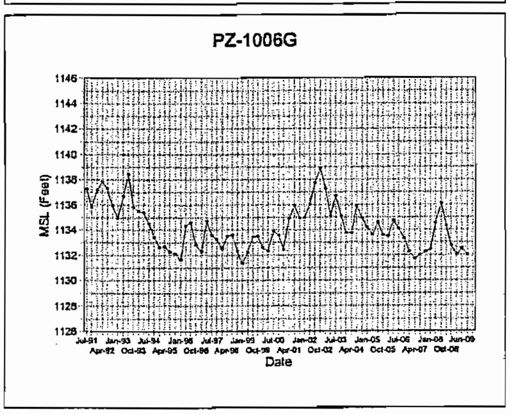
Groundwater Elevation Results

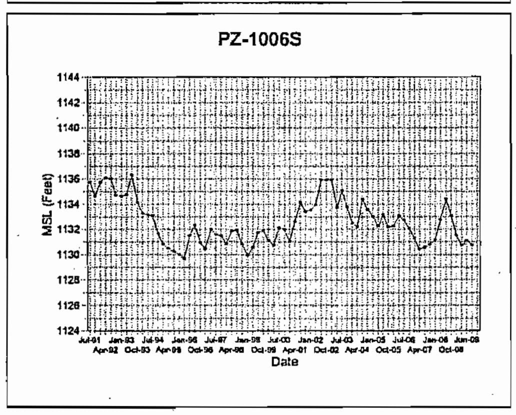








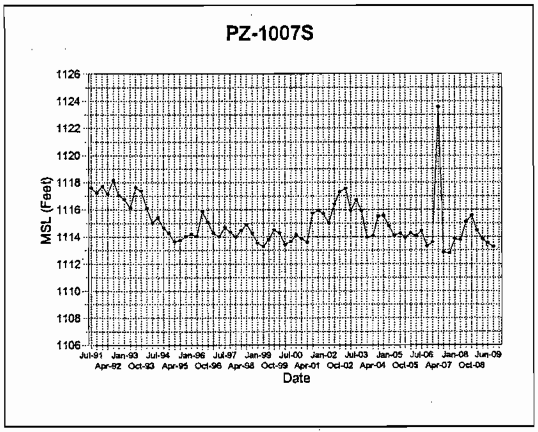


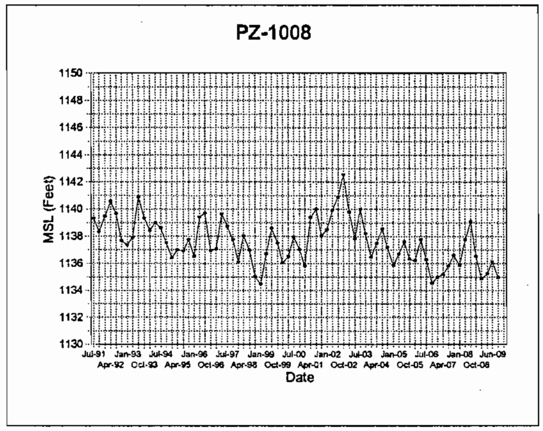


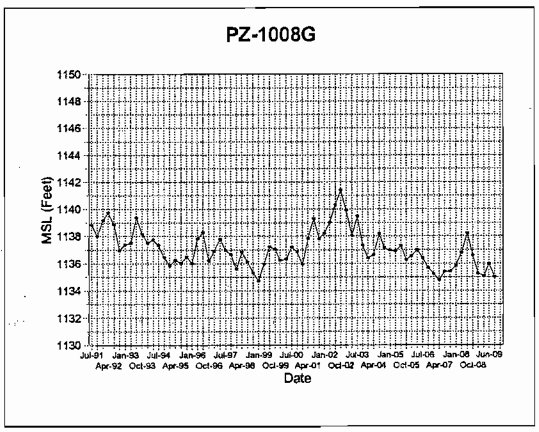
Created By: SGL Checked By: DAT

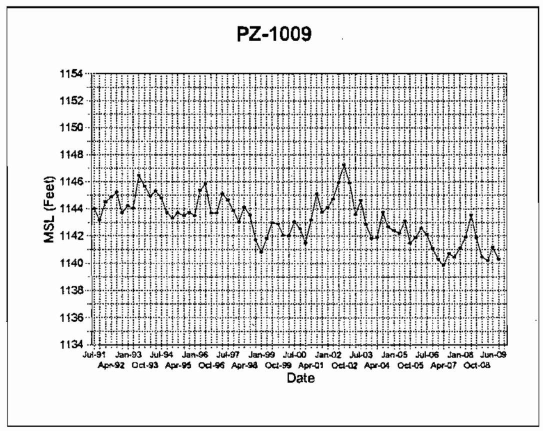
Flambeau Mining Company

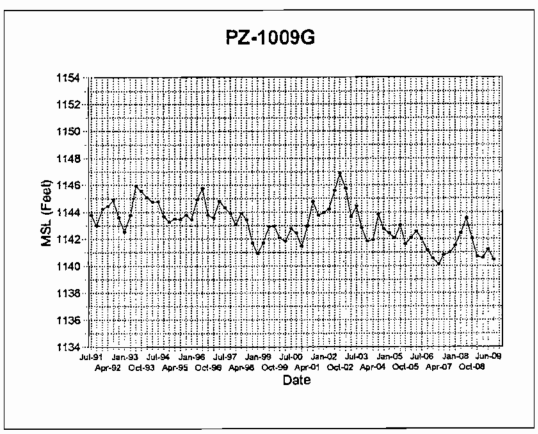
Groundwater Elevation Results

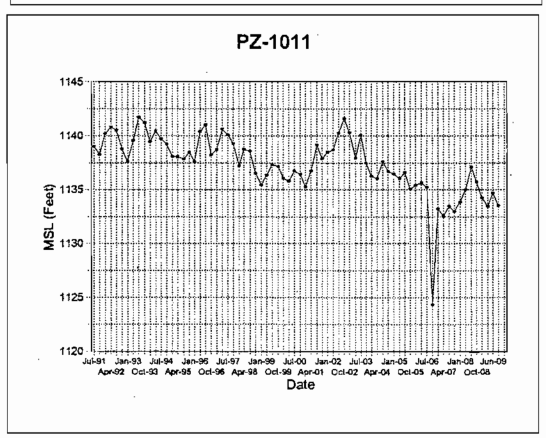








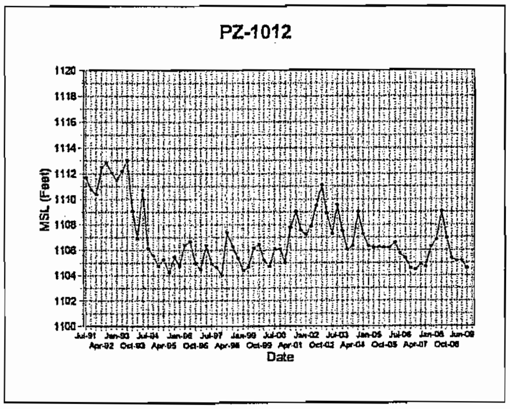


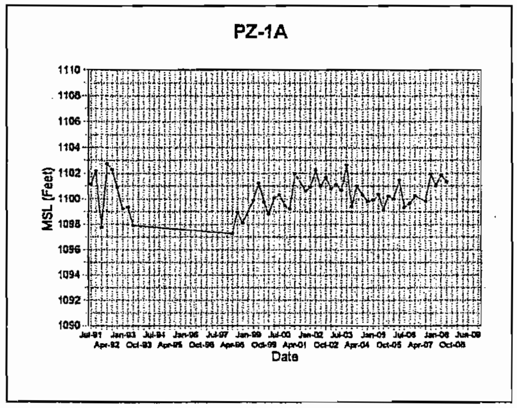


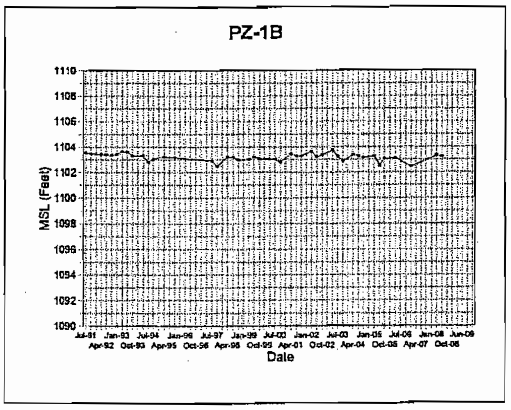
Created By: SGL Checked By: DAT

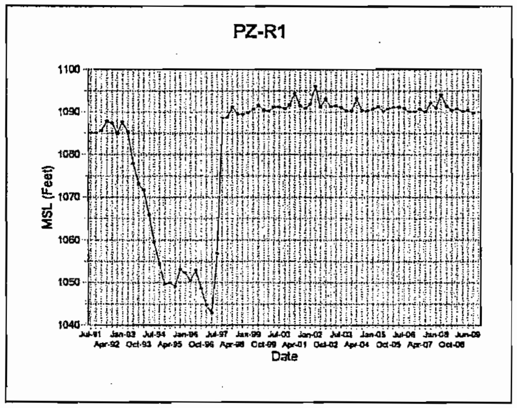
Flambeau Mining Company

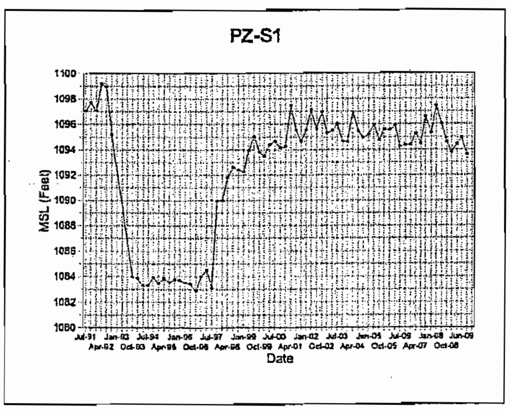
Groundwater Elevation Results

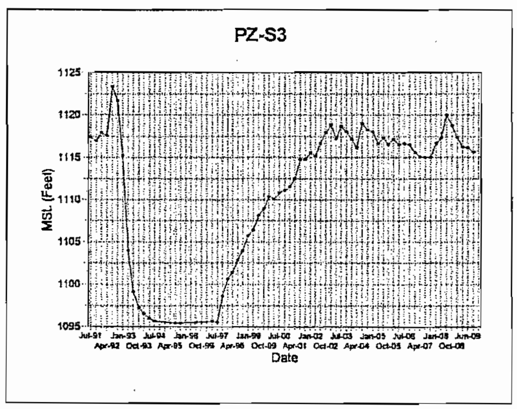








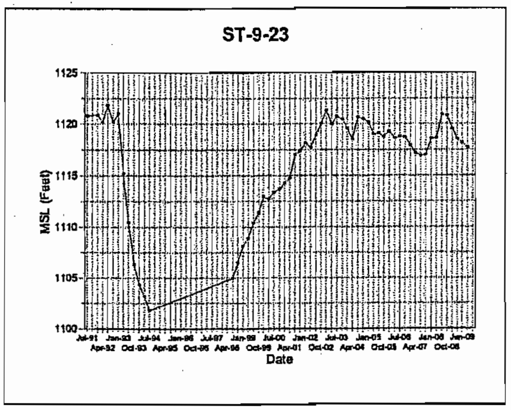


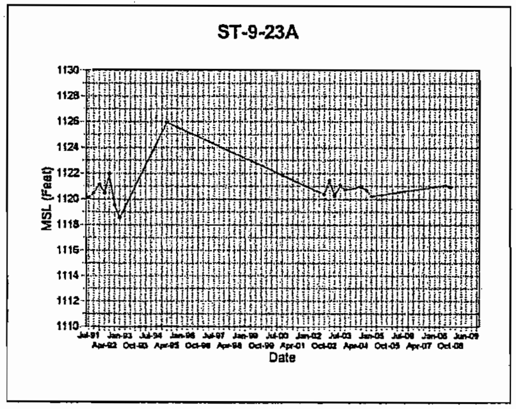


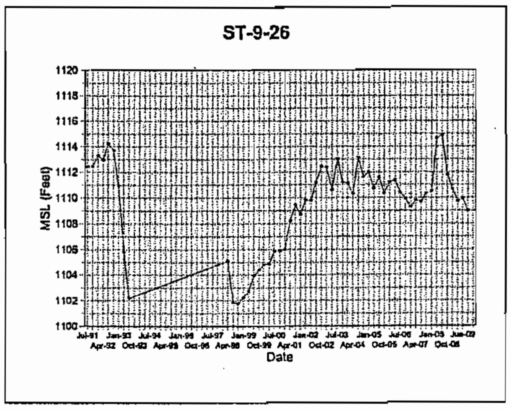
Created By: SGL Checked By: DAT

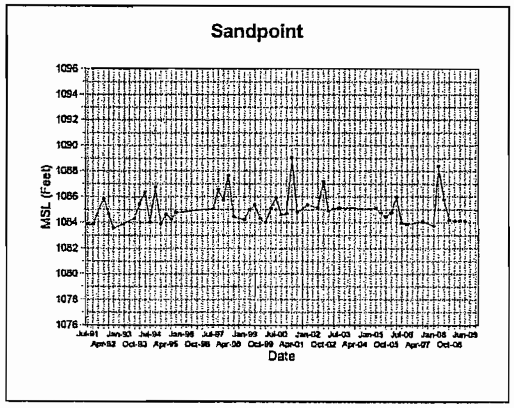
Flambeau Mining Company

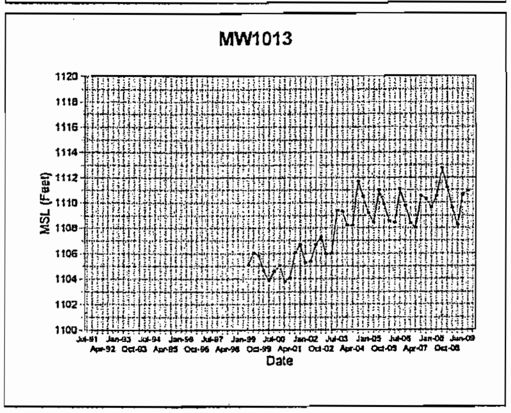
Groundwater Elevation Results

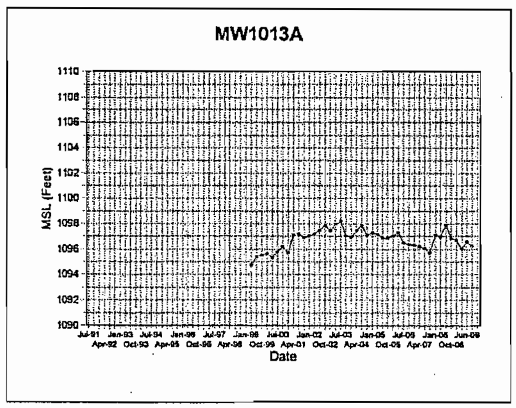








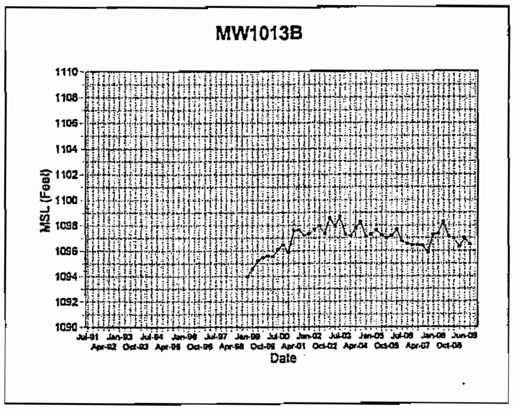


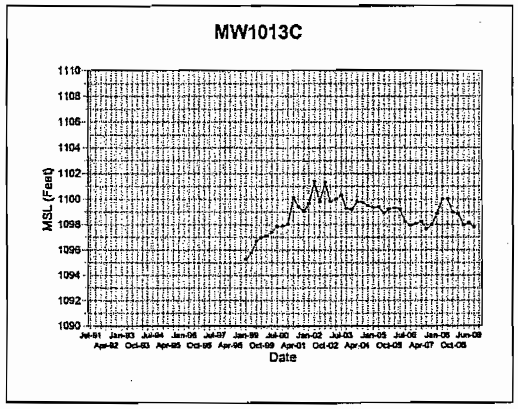


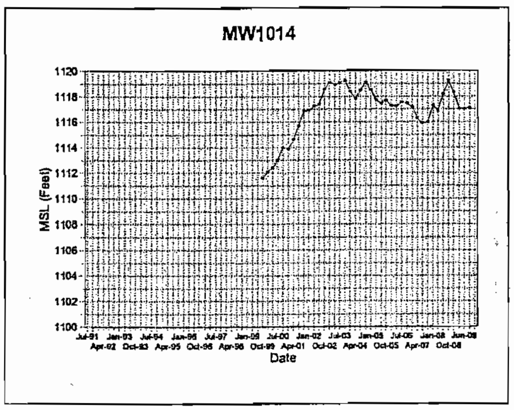
Created By: SGL Checked By: DAT

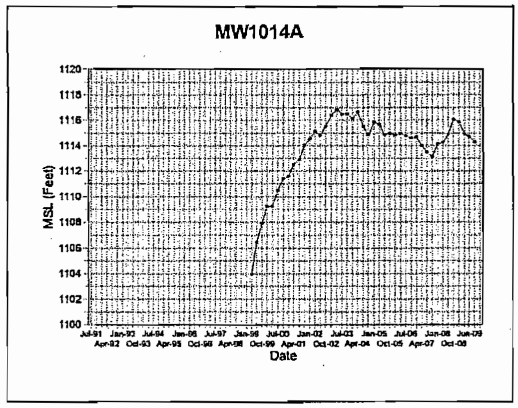
Flambeau Mining Company

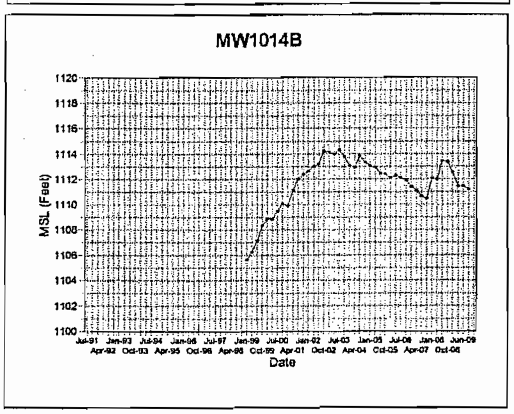
Groundwater Elevation Results

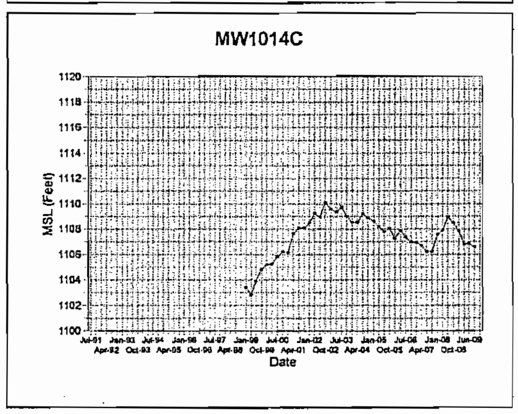








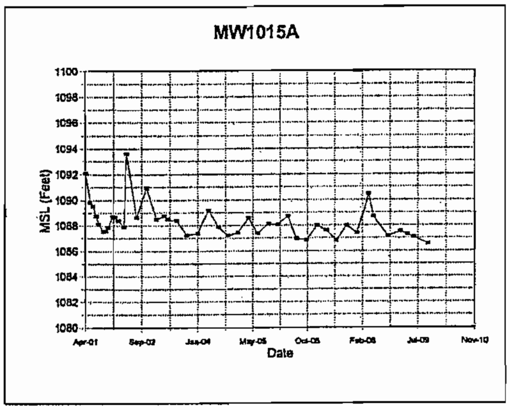


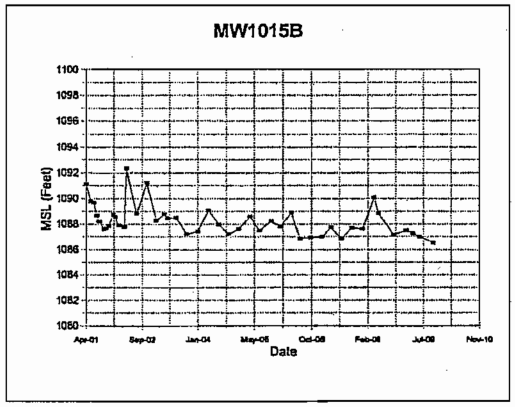


Created By: SGL Checked By: DAT

Flambeau Mining Company

Groundwater Elevation Results





Created By: SGL Checked By: DAT

Appendix C

2009 Stipulation Monitoring Submittals

Flambeau Mining Company
N4100 Hwy 27
Ladysmith, WI 54848
715-532-6690
715-532-6885 (Fax)

Flambeau Reclaimed
promises made, promises kept

February 2, 2010

Ms. Laura Furtman
Wisconsin Resources Protection Council
c/o Mr. Glenn Stoddard
Stoddard Law Office
130 S. Barstow St. Suite 2C
Eau Claire, WI 54701

Mr. Al Gedicks
c/o Mr. Glenn Stoddard
Stoddard Law Office
130 S. Barstow St. Suite 2C
Eau Claire, WI 54701

Attorney Dan Graff
WI Department of Natural Resources
101 S. Webster Street, LD/5
P.O. Box 7921
Madison, WI 53707

Lac Courte Oreilles Band of
Lake Superior Chippewa Indians
c/o Melissa Scanlan
Midwest Environmental Advocates
551 W. Main Street, Suite 200
Madison, WI 53703

Sierra Club
c/o Mr. Glenn Stoddard
Stoddard Law Office
130 S. Barstow St. Suite 2C
Eau Claire, WI 54701

Mr. Robert Ringstad
Rusk County Citizens Action Group
N6974 County Road A
Ladysmith, WI 54848

Mr. Tom Wilson
Northern Thunder
500 East Jefferson Street
Viroqua, WI 54665

WI Resources Protection Council
c/o Mr. Glenn Stoddard
Stoddard Law Office
130 S. Barstow St. Suite 2C
Eau Claire, WI 54701

Dear All:

Re: 2009 Stipulation Monitoring Results Summary – Flambeau Mining Company

Flambeau Mining Company (Flambeau) is providing a summary of monitoring conducted during 2009 in accordance with the May 31, 2007 Stipulation. The summary of the 2009 analytical results and field events are attached in a January 28, 2010 document prepared by Foth Infrastructure & Environment. All monitoring was conducted in accordance with the December 7, 2007 Certificate of Completion Stipulation Monitoring work plan.

If there are any questions, I can be contacted at 715-532-6690 Ext. 2 or jana-murphy@clearwire.net.

Sincerelv.

Environmental & Reclamation Manager

Attachment

Cc: Tom Aartila, WDNR – Park Falls
Dave Cline, Rio Tinto
John Coleman, GLIFWC
Phil Fauble, WDNR
Hank Handzel, DeWitt, Ross & Stevens
Jim Hutchison, Foth
Jon Kleist, WDNR – Ladysmith
Craig Roesler, WDNR - Hayward

Foth

Memorandum

January 28, 2010

TO: Jana E. Murphy, Flambeau Mining Company

CC: Steve Donohue, Foth Infrastructure & Environment, LLC
Hank Handzel, DeWitt, Ross & Stevens, LLP
Dave Cline, Kennecott Minerals Company
Master File 08F777-5001

FR: Sharon V.F. Kozicki, CEM, P.G., Foth Infrastructure & Environment, LLC
Jim Hutchison, Foth Infrastructure & Environment, LLC
Greg Parins, Foth Infrastructure & Environment, LLC

RE: 2009 Stipulation Monitoring Results – Flambeau Mining Company

Introduction

Foth Infrastructure & Environment, LLC (Foth) has prepared a summary of field events and analytical results of monitoring conducted during 2009 in accordance with item Number 6 of the May 31, 2007 Stipulation Agreement.

Biota and surface water sampling results are summarized by the following areas:

- Stream A (SW-A1),
- Stream B (SW-B1),
- Stream C (SW-C1, SW-C3, SW-C8),
- Flambeau River (SW-1, SW-2, SW-3),
- Walleye (F-1, F-2)
- Crayfish (M-1, M-2, M-3)

Methodology and results of 2009 stipulated monitoring events are summarized below.

Lab data has been provided to the parties to the stipulation in correspondence from Flambeau Mining Company (Flambeau) on July 3, 2009 and December 31, 2009.

Methods

Surface Water Monitoring

Surface water sampling was attempted at three points where focused runoff leaves the mine site as well as at locations SW-C3 (located east of Highway 27 north of the rail spur) and SW-C8 (part of the biofilter management sampling plan). The focused runoff surface water sample locations were where Stream A leaves the mine site (SW-A1), Stream B near the outlet of the 1.7 acre constructed wetland (SW-B1), and Stream C downstream of the crossing at Copper Park Lane (SW-C1). Surface water sampling locations are identified in attached Figure 1.

Surface water sampling was also conducted at three points within the Flambeau River – upstream from the mine site at the end of Blackberry Lane, approximately 100 yards downstream from the former Outfall 001, and at a point below the mouth of Stream C but above the mouth of Meadowbrook Creek. Figure 1 identifies sample locations.

The grab surface water samples were analyzed for sulfate, copper, iron, manganese, zinc, total hardness, and field pH and field conductivity. An estimate of flow data (qualitative or quantitative) was also recorded. Table 1 contains a field data summary and Table 2 contains a monitoring summary.

A surface water sample could not be obtained at SW-A1 during the spring or fall because there was not enough precipitation to cause flow at this location. Surface water samples could also not be obtained at SW-B1, SW-C3 or SW-C8 during the fall because there was not enough precipitation to cause flow at these locations.

Walleye Sampling

On September 16 and 17, 2009, a representative of Foth Infrastructure and Environment (Foth) with assistance from EA Associates (EA), Deerfield, IL, electroshocked two impoundments on the Flambeau River located above and below the former Flambeau Project Area, shown on Figure 1. These impoundments included the flowage above the Ladysmith Dam (upstream sample location) and above the Thornapple Dam (downstream location). The purpose of this activity was to conduct metals analysis (copper, iron, manganese, zinc) of fish (walleye) livers at the specified sites in accordance with the May 31, 2007 Stipulation. In addition to liver analysis, captured fish were aged, sexed, lengths recorded, and stomach contents evaluated. Relative abundance of all fish encountered was also recorded for each flowage.

Acceptable sampling methods for fish collection include hook and line, electrofishing, and fyke netting. Consistent with previous years during active mining, electrofishing was used for the collection of walleye. Walleye in the following size ranges were targeted for collection:

10 to 12 inches - one fish
12 to 15 inches - two fish
15 to 18 inches - three fish
18 to 22 inches - two fish
> 22 inches - one fish

Electrofishing was conducted on the Ladysmith Flowage on September 16, 2009 and on the Thornapple Flowage on September 17, 2009. Approximately 30% of the workable shoreline of the Thornapple Flowage was sampled (3.0 hours of energized time). Weather conditions during the collection period included a clear sky with a temperature in the upper 40's (°F). Water conditions included a temperature of 22.4°C, dissolved oxygen of 6.6 mg/L, and specific conductance of 162 (µS).

Approximately 60-70% of the workable shoreline of the Ladysmith Flowage was sampled (5.75 hours of energized time). Weather conditions during the collection period included a clear sky with a temperature in the mid 40's (°F). Water conditions included a temperature of 22.8 °C, dissolved oxygen of 8.7 mg/L, and specific conductance of 146 µS.

During each of the collection efforts, observed fish species were recorded. As in previous years, fish in the largest walleye size class were not obtained from the Ladysmith Flowage. Therefore, in the Ladysmith Flowage, fish collected in the next lower size class were substituted for the largest size. In 2009 all fish of the intended size were obtained from the Thornapple Flowage.

Walleye which met the criteria for length were set aside in tubs of ice water for further processing. Walleye were measured for length, filleted, and certain organs were extracted for analysis. Scales of each walleye were extracted for aging as were dorsal spines on the largest walleye.

The livers from each of the nine walleye from a single flowage were composited into a single sample for analysis. Livers were analyzed for copper, manganese, iron, and zinc in accordance with the May 31, 2007 Stipulation. Individual walleye stomachs were extracted and preserved in formalin, the contents of which were analyzed on an individual basis. Walleye livers once processed were placed on ice for transport to Northern Lake Service (Crandon, Wisconsin) for analysis. Walleye stomachs were retained by Foth for analysis.

Crayfish Sampling

On September 16 and 17, 2009 Foth Infrastructure and Environment (Foth) completed crayfish collection activities at three sites on the Flambeau River downstream of Ladysmith, Wisconsin. This activity was conducted at the request of Flambeau Mining Company (Flambeau) in accordance with the May 31, 2007 Stipulation. Crayfish were collected in a manner similar to collection activities which were conducted during the active phase of the Flambeau Mining Operation. As in previous collection efforts, the purpose of the crayfish collection was to conduct metals analysis of crayfish at selected sites upstream and downstream of the now reclaimed Flambeau Mine Site. Between 25 and 30 crayfish were collected at each of the following sites, which are also shown on Figure 1.

- The Flambeau River at the Blackberry Lane access (upstream site)
- The Flambeau River at Meadowbrook Creek (downstream site) immediately above Meadowbrook Creek and adjacent to the confluence with Stream C
- The Flambeau River at the site of the former Port Arthur Dam (downstream site)

All samples were collected using an 8 by 18 inch rectangular net with 800 to 900 micron mesh size. Crayfish were collected by using a kick seine method.

Specimens were composited for each site in a Ziploc bag and placed on ice. Specimens were transported to Northern Lake Service, Crandon, Wisconsin for metals analysis (copper, iron, manganese, and zinc) as in accordance with the May 31, 2007 Stipulation.

In order to fulfill the number of crayfish required for analysis, sampling at Blackberry Lane included collection of crayfish from both sides of the River.

Crayfish collection times are summarized in Table 7.

Results

The following sections discuss the results by area of sampling complete in 2009.

Stream A
Surface water samples could not be obtained from SW-A1, shown on Figure 1, due to insufficient water.

Stream B
Surface water sample SW-B1 is shown on Figure 1. Total copper present in surface water at SW-B1 was 5.9 μg/l in April 2009. No sample was collected during the Fall sampling due to insufficient water.

Stream C
Stream C sample locations SW-C1, SW-C3, and SW-C8 were sampled as part of the stipulated monitoring and are shown on Figure 1. Surface water was collected from SW-C1, SW-C3, and SW-C8. Total copper in surface water ranged from 11 to 26 μg/l on April 25, 2009. Samples could not be collected at SW-C3 or SW-C8 during the fall sampling due to insufficient water. The copper concentration at SW-C1 was 24 μg/l on October 3, 2009.

Flambeau River
Flambeau River surface water locations SW-1, SW-2, and SW-3 are shown on Figure 1. Total copper concentrations in surface water ranged from an estimated 1.6 μg/l to an estimated 2.4 μg/l in April 2009 and from nondectable to an estimated 1.6 μg/l in October 2009, shown in Table 2.

Walleye
Total species of fish observed and their relative abundance are provided in Table 3. The physical data of the walleye collected for analysis is provided in Table 4. An analysis of the stomach contents of the walleye is provided in Table 5. Analytical results of fish livers are provided in Table 6. A copy of the lab report relative to this report is provided in Appendix A.

Data provided in Tables 3 through 6 is consistent with the data which was obtained in previous years.

Crayfish
The sample date and time and number of crayfish collected are shown in Table 7. Water levels in the Flambeau River during which the crayfish were collected were considered low. Water level in the river on the day of collection appeared to be approximately one foot below bank stage at Blackberry Lane and Meadowbrook Creek to about bank stage at Port Arthur Dam. Water stage will normally fluctuate one to two feet during the day when water is discharged for power generation at the Ladysmith Dam. Water temperature during crayfish collection was 20.5°C at Blackberry lane, 20.6°C at Meadowbrook Creek and 20.6°C at Port Arthur Dam.

The results of the analysis of the crayfish appear in Table 8. Raw laboratory results are provided in Appendix A. The results represent a composite from all crayfish collected per site. Whole bodies were used for analysis.

Conclusion

Based on the results of the 2009 stipulated sampling, water quality leaving the site has not had a significant adverse impact to offsite areas or reclaimed areas of the mine.

Tables

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 1
2009 Surface Water Field Data
Flambeau River, Ladysmith, Wisconsin

	Location	Lat.	Long.	Sample Date	pH S.U.	Cond. µs/cm	Temp °C	Flow	Notes
Spring 2009									
	SW-C8	91° 6.7	45° 26.3	04/25/09	6.0	1032	12.2	Low	
	SW-A1	91° 7.2	45° 26.6	04/25/09	--	--	--	None	
	SW-B1	91° 7.3	45° 26.4	04/25/09	6.6	74	NA	Low	
	SW-C1	91° 6.8	45° 26.2	04/25/09	6.4	297	NA	Moderate	
	SW-1	91° 7.7	45° 26.8	04/25/09	8.6	124	NA	Moderate	
	SW-2	91° 7.2	45° 26.2	04/25/09	8.5	122	NA	Moderate	
	SW-3	91° 7.1	45° 26.0	04/25/09	8.3	122	NA	Moderate	
	SW-C3	91° 6.6	45° 26.3	04/25/09	6.0	53	6.7	Not Noted	
Fall 2009									
	SW-C8	91° 6.7	45° 26.3	10/3/09	--	--	--	None	
	SW-A1	91° 7.2	45° 26.6	10/3/09	--	--	--	None	
	SW-B1	91° 7.3	45° 26.4	10/3/09	--	--	--	None	
	SW-C1	91° 6.8	45° 26.2	10/3/09	6.5	109	9.8	Low	
	SW-1	91° 7.7	45° 26.8	10/3/09	8.5	151	14.2	Low	
	SW-2	91° 7.2	45° 26.2	10/3/09	8.8	149	14.2	Low	
	SW-3	91° 7.1	45° 26.0	10/3/09	8.7	149	13.7	Low	
	SW-C3	91° 6.6	45° 26.3	10/3/09	--	--	--	None	

Notes:

[1] = All locations were surveyed during the spring 2007 event except SW-A1 and SW-C3 which were surveyed during the spring 2008 event.

[2] = Location SW-C8 also sampled as part of the Biofilter Management Sampling Plan.

Lat. = Latitude
Long. = Longitude
Cond. = Conductivity
µs/cm = microsiemens per centimeter
S.U. = Standard Unit
°C = Degrees Celsius

Prepared by: SVF
Checked by: JBH1

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 2

Surface Water Sampling Analytical Results

Spring 2009

Parameter	Units	Sample ID	SW-1	SW-2	SW-3	SW-A1	SW-B1	SW-C1	SW-C3	SW-C8
		Collection Date	4/25/2009	4/25/2009	4/25/2009	No Flow	4/25/2009	4/25/2009	4/25/2009	4/25/2009
		Area	Flambeau River	Flambeau River	Flambeau River	Stream A	Stream B	Stream C	Stream C	Stream C
Conductivity, lab	umho@25C		123	123	123	No Flow	75	290	51	1000
Copper, tot.	ug/L		1.6 J	1.6 J	2.4 J	No Flow	5.9	22	11	26
Hardness, tot.	mg/L		48	48	49	No Flow	23	30	17	41
Iron, tot.	mg/L		0.41	0.43	0.44	No Flow	0.97	0.35	0.4	0.84
Manganese, tot.	mg/L		51	51	55	No Flow	260	25	420	260
pH, Lab	s.u.		7.93	7.82	7.49	No Flow	6.78	6.68	6.22	6.19
Sulfate, as SO4 (unfiltered)	mg/L		8.7	9	8.5	No Flow	2.8 J	7.6	11	6.2
Zinc, tot.	ug/L		6.5 J	6.0 J	7.4 J	No Flow	7.1 J	67	12	51

Fall 2009

Parameter	Units	Sample ID	SW-1	SW-2	SW-3	SW-A1	SW-B1	SW-C1	SW-C3	SW-C8
		Collection Date	10/3/2009	10/3/2009	10/3/2009	No Flow	No Flow	10/3/2009	No Flow	No Flow
		Area	Flambeau River	Flambeau River	Flambeau River	Stream A	Stream B	Stream C	Stream C	Stream C
Conductivity, lab	umho@25C		157	155	149	No Flow	No Flow	113	No Flow	No Flow
Copper, tot.	ug/L		<10	0.32 J	1.6 J	No Flow	No Flow	24	No Flow	No Flow
Hardness, tot.	mg/L		64	60	61	No Flow	No Flow	18	No Flow	No Flow
Iron, tot.	mg/L		0.18	0.17	1.0	No Flow	No Flow	1.2	No Flow	No Flow
Manganese, tot.	mg/L		66	56	200	No Flow	No Flow	47	No Flow	No Flow
pH, Lab	s.u.		7.13	7.67	6.54	No Flow	No Flow	6.94	No Flow	No Flow
Sulfate, as SO4 (unfiltered)	mg/L		9.4	9.8	9.7	No Flow	No Flow	7.9	No Flow	No Flow
Zinc, tot.	ug/L		2.2 J	<2.0	8.1 J	No Flow	No Flow	62	No Flow	No Flow

Notes:

During spring 2009 no surface water flow was observed at SW-A1 therefore no sample could be collected.
During fall 2009 no surface water flows were observed at SW-C3, SW-C8, SW-A1, or SW-B1 therefore no samples could be collected.
J - Analyte detected between the limit of detection and limit of quantitation
mg/L - milligrams/Liter
NA - not applicable
SO4 - Sulfate
S.U. - Standard Unit
tot. - total
ug/L - micrograms/Liter
umho@25C - micromho at 25 degrees Celcius
< - Analyte not detected above the limit of detection

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\T-SW Results.xls\Table 2 SW

Prepared by: SVF
Checked by: JBH1

Table 3

Fish Species Observed

Flambeau River, Ladysmith, Wisconsin

September 2009

Species	Relative Abundance	
	Thornapple Flowage	Ladysmith Flowage
Northern pike	C	P
Muskellunge	C	A
Golden shiner	P	P
Silver redhorse	A	C
Golden redhorse	C	--
White sucker	P	A
Trout-perch	--	C
Black bullhead	C	--
Yellow bullhead	P	P
Burbot	P	P
Bluegill	A	A
Rock bass	C	A
Pumpkinseed sunfish	P	--
Smallmouth bass	A	A
Black crappie	P	P
Yellow perch	C	A
Walleye	A	C
Logperch	C	A

Prepared by: GJP
Checked by: SVF

A = abundant
C = common
P = present
-- = not observed in that particular flowage

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 4

Physical Data of Walleye

Flambeau River, Ladysmith, Wisconsin

September 2009

ID No.	Length (mm)	Weight (g)	Sex*	Age
		Thornapple Flowage		
WE-TA-01	298	220	U*	3
WE-TA-02	370	415	M	3
WE-TA-03	372	445	M	3
WE-TA-04	417	715	F	4
WE-TA-05	412	640	M	4
WE-TA-06	396	580	M	4
WE-TA-07	501	1050	F	6
WE-TA-08	558	1850	F	8
WE-TA-09	620	2270	F	9
		Ladysmith Flowage		
WE-LS-01	292	210	U*	3
WE-LS-02	317	260	M	3
WE-LS-03	362	440	F	3
WE-LS-04	383	490	M	3
WE-LS-05	396	510	F	3
WE-LS-06	415	640	F	4
WE-LS-07	423	635	F	5
WE-LS-08	488	1060	M	6
WE-LS-09	508	1110	F	6

*U=unsexed, M=male, F=female

Prepared by: GJP
Checked by: SVF

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 5

Stomach Analysis of Walleye

Flambeau River, Ladysmith, Wisconsin

September 2009

Sample ID	Percent Full	Type of Content	General Comment
Thornapple Flowage			
WE-TA-01	0	None	None
WE-TA-02	0	None	None
WE-TA-03	90	1 Minnow, 8.2 cm	Mostly digested
WE-TA-04	0	None	None
WE-TA-05	0	None	None
WE-TA-06	0	None	None
WE-TA-07	0	None	None
WE-TA-08	90	1 Minnow (bullhead), 10.1 cm	Mostly digested
WE-TA-09	90	1 Minnow, 8.9 cm	Mostly digested
Ladysmith Flowage			
WE-LS-01	20	1 stonefly, 1.1 cm	Slightly digested
WE-LS-02	10	2 partial macroinvertabrates	Mostly digested
WE-LS-03	40	1 Crayfish, 1.8 cm	Slightly digested
WE-LS-04	90	2 Minnows (bullhead), 5.5 cm, 3.8 cm, vegetative matter	Mostly digested
WE-LS-05	0	1 minnow, 2.2 cm	Mostly digested
WE-LS-06	0	None	None
WE-LS-07	80	2 Minnows (bullhead), 3.5 cm, 2.8 cm	Mostly digested
WE-LS-08	20	1 Dragon fly nymph, 1.9 cm	Slightly digested
WE-LS-09	0	None	None

Prepared by: GJP
Checked by: SVF

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 6

Metals Analysis of Walleye Liver

Flambeau River, Ladysmith, Wisconsin

2009 (mg/kg)

Sample ID	Collection Date	Collection Time	Cu	Fe	Mn	Zn
Thornapple Flowage						
WE-TA-1-9 (F-2)	9/17/09	23:00	21	89	1.3	19
Ladysmith Flowage						
WE-LS-1-9 (F-1)	9/16/09	23:30	19	81	2.5	20

NA = Not Analyzed
Data for Thornapple fish liver sample has a lab ID# 537108
Data for Ladysmith fish liver sample has a lab ID# 537107

Prepared by: GJP
Checked by: SVF

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 7
Crayfish Sampling Inventory
September 16, 2009

Site Location	Date/Time of Collection	Number of Crayfish
Blackberry Lane	9/16/09 13:30	30
Port Arthur Dam	9/16/09 14:50	30
Meadowbrook Creek	9/17/09 15:00	30

Prepared by: GJP
Checked by: SVF

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Table 8
Metals analysis of Crayfish
Flambeau River, Ladysmith, Wisconsin
Results in mg/kg
2009

Sample ID	Copper	Iron	Manganese	Zinc
Blackberry Lane				
FMC CR-BBL(M-1)	18	47	260	19
Meadowbrook Creek				
FMC CR-MBC(M-2)	25	55	180	16
Port Arthur Dam				
FMC CR-PAD(M-3)	26	54	220	16

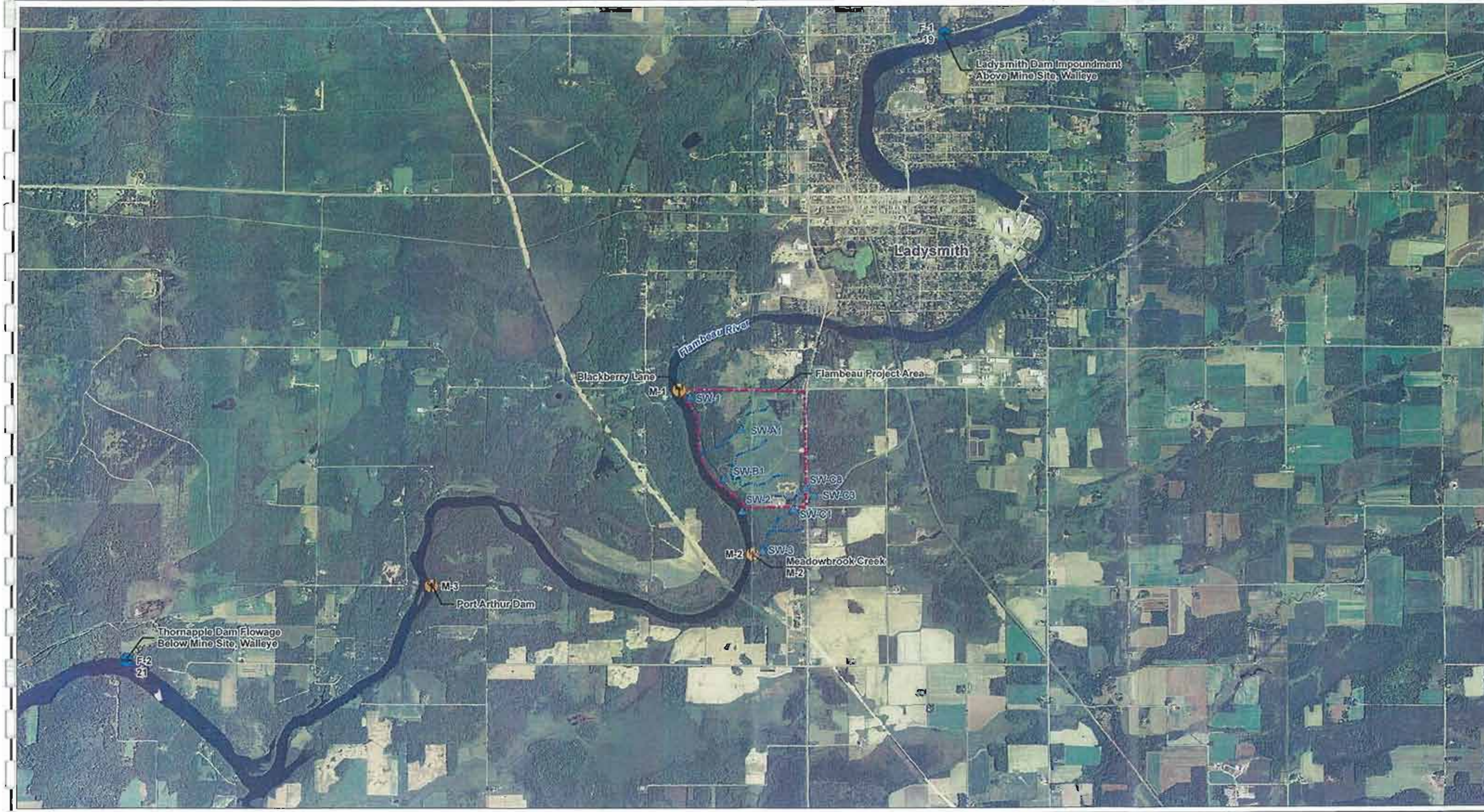
Data for Blackberry Lane is represented by Sample ID# 537104, Meadowbrook Creek by Sample ID#537105, and Port Arthur Dam by ID#537106

Prepared by: GJP
Checked by: SVF

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

Figures

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc



NOTES
1. Aerial photography base map downloaded from USDA Geospatial Data Gateway. (2005 1 Meter NAIP Imagery)
2. Horizontal datum based on NAD 1983. Horizontal coordinates based on Wisconsin State Plane North (Feet).

LEGEND
- Surface Water Sample
- Fish Sample Area
- Crayfish Sample Area
- Flambeau Project Area

Foth Infrastructure & Environment, LLC

REVISED	DATE	BY	DESCRIPTION

CHECKED BY:	SVF	DATE: JAN. '10
APPROVED BY:	JSH	DATE: JAN. '10
APPROVED BY:		DATE:

FLAMBEAU MINING COMPANY

FIGURE 1
STIPULATED MONITORING LOCATIONS

Scale: 1,500 3,000 Feet	Date: JANUARY, 2010
Prepared by: DAT	Project No: 08F777

January 26, 2010

C-18

Attachment 1

X:\GB\IE\2008\08F777\5000 client cor\2009 Stip Memos\M-2009 Stip Monitoring Results.doc

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 09/24/09 Code: S

NLS Project: 136670
NLS Customer: 11750
Fax: 715 532 6885 Phone: 715 532 6690

Client: Flambeau Mining Company
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

Project: 2009 Biota

FMC-CR-BBL (M-1) NLS ID: 537104
COC: 104753:1 Matrix: TI
Collected: 09/16/09 13:30 Received: 09/18/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Copper, tot. recoverable as Cu by ICP	18	mg/Kg WWB	1	0.035	0.13	09/23/09	SW846 6010	721026460
Iron, tot. recoverable as Fe by ICP	47	mg/Kg WWB	1	0.23	0.70	09/23/09	SW846 6010	721026460
Manganese, tot. recoverable as Mn by ICP	260	mg/Kg WWB	10	0.15	0.52	09/23/09	SW846 6010	721026460
Zinc, tot. recoverable as Zn by ICP	19	mg/Kg WWB	1	0.028	0.11	09/23/09	SW846 6010	721026460
Metals digestion - tot. recov (solid) ICP	yes					09/23/09	SW846 3050M	721026460
Misc. Sample Prep	yes					09/22/09	NA	721026460

FMC-CR-MBC (M-2) NLS ID: 537105
COC: 104753:2 Matrix: TI
Collected: 09/17/09 15:00 Received: 09/18/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Copper, tot. recoverable as Cu by ICP	25	mg/Kg WWB	1	0.035	0.13	09/23/09	SW846 6010	721026460
Iron, tot. recoverable as Fe by ICP	55	mg/Kg WWB	1	0.23	0.70	09/23/09	SW846 6010	721026460
Manganese, tot. recoverable as Mn by ICP	180	mg/Kg WWB	10	0.15	0.52	09/23/09	SW846 6010	721026460
Zinc, tot. recoverable as Zn by ICP	16	mg/Kg WWB	1	0.028	0.11	09/23/09	SW846 6010	721026460
Metals digestion - tot. recov (solid) ICP	yes					09/23/09	SW846 3050M	721026460
Misc. Sample Prep	yes					09/22/09	NA	721026460

FMC-CR-PAD (M-3) NLS ID: 537106
COC: 104753:3 Matrix: TI
Collected: 09/16/09 14:50 Received: 09/18/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Copper, tot. recoverable as Cu by ICP	26	mg/Kg WWB	1	0.032	0.12	09/23/09	SW846 6010	721026460
Iron, tot. recoverable as Fe by ICP	54	mg/Kg WWB	1	0.21	0.65	09/23/09	SW846 6010	721026460
Manganese, tot. recoverable as Mn by ICP	220	mg/Kg WWB	10	0.14	0.48	09/23/09	SW846 6010	721026460
Zinc, tot. recoverable as Zn by ICP	16	mg/Kg WWB	1	0.026	0.10	09/23/09	SW846 6010	721026460
Metals digestion - tot. recov (solid) ICP	yes					09/23/09	SW846 3050M	721026460
Misc. Sample Prep	yes					09/22/09	NA	721026460

WE-LS-(1-9)(F-1) NLS ID: 537107
COC: 104753:4 Matrix: TI
Collected: 09/16/09 23:30 Received: 09/18/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Copper, tot. recoverable as Cu by ICP	19	mg/Kg WWB	1	0.038	0.14	09/23/09	SW846 6010	721026460
Iron, tot. recoverable as Fe by ICP	81	mg/Kg WWB	1	0.25	0.75	09/23/09	SW846 6010	721026460
Manganese, tot. recoverable as Mn by ICP	2.5	mg/Kg WWB	1	0.016	0.056	09/23/09	SW846 6010	721026460
Zinc, tot. recoverable as Zn by ICP	20	mg/Kg WWB	1	0.030	0.12	09/23/09	SW846 6010	721026460
Metals digestion - tot. recov (solid) ICP	yes					09/23/09	SW846 3050M	721026460
Misc. Sample Prep	yes					09/22/09	NA	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 09/24/09 Code: S

NLS Project: 136670
NLS Customer: 11750
Fax: 715 532 6885 Phone: 715 532 6690

Client: Flambeau Mining Company
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

Project: 2009 Biota

WE-TA-(1-9)(F-2) NLS ID: 537108
COC: 104753:5 Matrix: TI
Collected: 09/17/09 23:00 Received: 09/18/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Copper, tot. recoverable as Cu by ICP	21	mg/Kg WWB	1	0.036	0.13	09/23/09	SW846 6010	721026460
Iron, tot. recoverable as Fe by ICP	89	mg/Kg WWB	1	0.24	0.71	09/23/09	SW846 6010	721026460
Manganese, tot. recoverable as Mn by ICP	1.3	mg/Kg WWB	1	0.015	0.053	09/23/09	SW846 6010	721026460
Zinc, tot. recoverable as Zn by ICP	19	mg/Kg WWB	1	0.028	0.11	09/23/09	SW846 6010	721026460
Metals digestion - tot. recov (solid) ICP	yes					09/23/09	SW846 3050M	721026460
Misc. Sample Prep	yes					09/22/09	NA	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by: [signature]

Authorized by:
R. T. Krueger
President

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460
WI DATCP 105-000330

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services
400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 104753

CLIENT: Flambeau Mining Co.
ADDRESS: N4100 Hwy 27
CITY: Ladysmith STATE: WI ZIP: 54727
PROJECT DESCRIPTION / NO.: 2009 Biota
QUOTATION NO.:
DNR FID #: 855 034 730
DNR LICENSE #: 03180
CONTACT: Jana E Murphy
PHONE: 715-532-6690
PURCHASE ORDER NO.:
FAX: 715-532-6885

MATRIX:
SW = surface water
WW = waste water
GW = groundwater
DW = drinking water
TIS = tissue
AIR = air
SOIL = soil
SED = sediment
PROD = product
SL = sludge
OTHER

ANALYZE PER ORDER OF ANALYSIS

USE BOXES BELOW: Indicate Y or N if GW Sample is field filtered. Indicate G or C if WW Sample is Grab or Composite.

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	Copper	Iron	Manganese	Zinc	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	537104	FMC-CR-BBL(m-1)	9/16/09	1330	TIS	X	X	X	X	* 30 crayfish
2.	105	FMC-CR-MBC(m-2)	9/17/09	1500	↓	↓	↓	↓	↓	per sample composite
3.	106	FMC-CR-PAD(m-3)	9/16/09	1450	↓	↓	↓	↓	↓	as one sample per
4.	107	WE-LS-(1-9)(F-1)	9/16/09	2330	↓	↓	↓	↓	↓	site
5.	108	WE-TA-(1-9)(F-2)	9/17/09	23:00	↓	↓	↓	↓	↓	
6.										* 9 Livers per sample
7.										composite as one
8.										sample per site
9.										
10.										

COLLECTED BY (signature): Greg Parks
CUSTODY SEAL NO. (IF ANY)
DATE/TIME: 9/17/09
RELINQUISHED BY (signature):
RECEIVED BY (signature):
DATE/TIME: 9/17/09 1:35
DISPATCHED BY (signature):
METHOD OF TRANSPORT
DATE/TIME

REPORT TO: Flambeau Mining Co.
INVOICE TO: Flambeau Mining Co.

RECEIVED AT NLS BY (signature): Debbie Wilson
DATE/TIME: 9.18.09 11:35
CONDITION: on ice
TEMP.
COOLER #
REMARKS & OTHER INFORMATION
WDNR FACILITY NUMBER
E-MAIL ADDRESS: jana-murphy@kennecott.net

PRESERVATIVE:
NP = no preservative
S = sulfuric acid
N = nitric acid
Z = zinc acetate
M = methanol
OH = sodium hydroxide
HA = hydrochloric & ascorbic acid
H = hydrochloric acid

IMPORTANT

1. TO MEET REGULATORY REQUIREMENTS, THIS FORM **MUST** BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, **NOT** PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.
4. PARTIES COLLECTING SAMPLE, LISTED AS **REPORT TO** AND LISTED AS **INVOICE TO** AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

DUPLICATE COPY

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 05/07/09 Code: S

NLS Project: 131014
NLS Customer: 11750
Fax: 715 532 6885 Phone: 715 532 6690

Client: Flambeau Mining Company
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

Project: Surface Water-Spring 2009

SW-B1 NLS ID: 519169
COC: 113706:2 Matrix: SW
Collected: 04/25/09 14:55 Received: 04/28/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	75	umho@25C	1			04/28/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	5.9	ug/L	1	1.3	4.0	05/06/09	EPA 200.7	721026460
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	23	mg/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
Iron, tot. recoverable as Fe by ICP-Trace	0.97	mg/L	1	0.033	0.10	05/06/09	EPA 200.7	721026460
Manganese, tot. recoverable as Mn by ICP-Trace	260	ug/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
pH, Lab	6.78	s.u.	1			04/28/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	[2.8]	mg/L	10	2.5	5.0	05/04/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	[7.1]	ug/L	1	5.0*	10*	05/06/09	EPA 200.7	721026460
Metals digestion - tot. recov.ICP	yes					04/29/09	EPA 200.7M	721026460

SW-3 NLS ID: 519170
COC: 113706:3 Matrix: SW
Collected: 04/25/09 15:22 Received: 04/28/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	123	umho@25C	1			04/28/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	[2.4]	ug/L	1	1.3	4.0	05/06/09	EPA 200.7	721026460
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	49	mg/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
Iron, tot. recoverable as Fe by ICP-Trace	0.44	mg/L	1	0.033	0.10	05/06/09	EPA 200.7	721026460
Manganese, tot. recoverable as Mn by ICP-Trace	55	ug/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
pH, Lab	7.49	s.u.	1			04/28/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	8.5	mg/L	10	2.5	5.0	05/04/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	[7.4]	ug/L	1	5.0*	10*	05/06/09	EPA 200.7	721026460
Metals digestion - tot. recov.ICP	yes					04/29/09	EPA 200.7M	721026460

SW-2 NLS ID: 519171
COC: 113706:4 Matrix: SW
Collected: 04/25/09 15:37 Received: 04/28/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	123	umho@25C	1			04/28/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	[1.6]	ug/L	1	1.3	4.0	05/06/09	EPA 200.7	721026460
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	48	mg/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
Iron, tot. recoverable as Fe by ICP-Trace	0.43	mg/L	1	0.033	0.10	05/06/09	EPA 200.7	721026460
Manganese, tot. recoverable as Mn by ICP-Trace	51	ug/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
pH, Lab	7.82	s.u.	1			04/28/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	9.0	mg/L	10	2.5	5.0	05/04/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	[6.0]	ug/L	1	5.0*	10*	05/06/09	EPA 200.7	721026460
Metals digestion - tot. recov.ICP	yes					04/29/09	EPA 200.7M	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 05/07/09 Code: S

Client: Flambeau Mining Company
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

NLS Project: 131014
NLS Customer: 11750
Fax: 715 532 6885 **Phone:** 715 532 6690

Project: Surface Water-Spring 2009

SW-1 NLS ID: 519172
COC: 113706:5 Matrix: SW
Collected: 04/25/09 15:54 Received: 04/28/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	123	umho@25C	1			04/28/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	[1.6]	ug/L	1	1.3	4.0	05/06/09	EPA 200.7	721026460
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	48	mg/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
Iron, tot. recoverable as Fe by ICP-Trace	0.41	mg/L	1	0.033	0.10	05/06/09	EPA 200.7	721026460
Manganese, tot. recoverable as Mn by ICP-Trace	51	ug/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
pH, Lab	7.93	s.u.	1			04/28/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	8.7	mg/L	10	2.5	5.0	05/04/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	[6.5]	ug/L	1	5.0*	10*	05/06/09	EPA 200.7	721026460
Metals digestion - tot. recov.ICP	yes					04/29/09	EPA 200.7M	721026460

SW-C1 NLS ID: 519173
COC: 113706:6 Matrix: SW
Collected: 04/25/09 16:07 Received: 04/28/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	290	umho@25C	1			04/28/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	22	ug/L	1	1.3	4.0	05/06/09	EPA 200.7	721026460
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	30	mg/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
Iron, tot. recoverable as Fe by ICP-Trace	0.35	mg/L	1	0.033	0.10	05/06/09	EPA 200.7	721026460
Manganese, tot. recoverable as Mn by ICP-Trace	25	ug/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
pH, Lab	6.68	s.u	1			04/28/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	7.6	mg/L	10	2.5	5.0	05/04/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	67	ug/L	1	5.0*	10*	05/06/09	EPA 200.7	721026460
Metals digestion - tot. recov.ICP	yes					04/29/09	EPA 200.7M	721026460

SW-C3 NLS ID: 519174
COC: 113706:6 Matrix: SW
Collected: 04/25/09 16:39 Received: 04/28/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	51	umho@25C	1			04/28/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	11	ug/L	1	1.3	4.0	05/06/09	EPA 200.7	721026460
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	17	mg/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
Iron, tot. recoverable as Fe by ICP-Trace	0.40	mg/L	1	0.033	0 10	05/06/09	EPA 200.7	721026460
Manganese, tot. recoverable as Mn by ICP-Trace	420	ug/L	1	1.0*	2.0*	05/06/09	EPA 200.7	721026460
pH, Lab	6.22	s.u.	1			04/28/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	11	mg/L	10	2.5	5.0	05/04/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	12	ug/L	1	5.0*	10*	05/06/09	EPA 200.7	721026460
Metals digestion - tot. recov.ICP	yes					04/29/09	EPA 200.7M	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection   LOQ = Limit of Quantitation   ND = Not Detected (< LOD)   1000 ug/L = 1 mg/L
DWB = Dry Weight Basis   NA = Not Applicable   %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460
WI DATCP 105-000330

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services
400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 113706

CLIENT	Flambeau Mining Co.
ADDRESS	N4100 Hwy 27
CITY / STATE / ZIP	Ladysmith / WI / 54848
PROJECT DESCRIPTION / NO.	Surface Water - Spring 2009
QUOTATION NO.	
DNR FID #	855 034 730
DNR LICENSE #	03180
CONTACT	Jana E. Murphy
PHONE	715-532-6690
PURCHASE ORDER NO.	
FAX	715-532-6885

MATRIX:
SW = surface water
WW = waste water
GW = groundwater
DW = drinking water
TIS = tissue
AIR = air
SOIL = soil
SED = sediment
PROD = product
SL = sludge
OTHER

USE BOXES BELOW: Indicate Y or N if GW Sample is field filtered.
Indicate G or C if WW Sample is Grab or Composite.

ANALYZE PER ORDER OF ANALYSIS

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	Cu	Fe	Mn	Zn	Hardness	Sulfate	pH	Cond				COLLECTION REMARKS (i.e. DNR Well ID #)
1.																	
2.	511169	SW-B1	4-25-09	2:55 PM	SW	✓	✓	✓	✓	✓	✓	✓	✓				
3.	170	SW-3	(	3:22 PM	SW	✓	✓	✓	✓	✓	✓	✓	✓				
4.	171	SW-2	(	3:37 PM	SW	✓	✓	✓	✓	✓	✓	✓	✓				
5.	172	SW-1	(	3:54 PM	SW	✓	✓	✓	✓	✓	✓	✓	✓				
6.	173	SW-C1	(	4:07 PM	SW	✓	✓	✓	✓	✓	✓	✓	✓				
7.	174	SW-C3	(	4:39 PM	SW	✓	✓	✓	✓	✓	✓	✓	✓				
8.																	
9.																	
10.																	

ONE SAMPLE PER LINE

COLLECTED BY (signature): Jana E. Murphy, Steve Anderson	CUSTODY SEAL NO. (IF ANY)	DATE/TIME: 4-27-09
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature): Jana E. Murphy	METHOD OF TRANSPORT: UPS Ground	DATE/TIME: 4-27-09 4:00PM
RECEIVED AT NLS BY (signature): [illegible]	DATE/TIME: 4-28-09 1130	CONDITION: [illegible]
COOLER # 118 105	REMARKS & OTHER INFORMATION	TEMP.
	WDNR FACILITY NUMBER: WID 988438300	E-MAIL ADDRESS: jana-murphy@clearwire.net

REPORT TO: Flambeau Mining

INVOICE TO: same

PRESERVATIVE:
NP = no preservative; S = sulfuric acid; N = nitric acid; Z = zinc acetate; M = methanol; OH = sodium hydroxide; HA = hydrochloric & ascorbic acid; H = hydrochloric acid

IMPORTANT:
1. TO MEET REGULATORY REQUIREMENTS, THIS FORM **MUST** BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, **NOT** PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.
4. PARTIES COLLECTING SAMPLE, LISTED AS **REPORT TO** AND LISTED AS **INVOICE TO** AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

DUPLICATE COPY

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue • Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 11/24/09 Code: S

NLS Project: 137260
NLS Customer: 11750
Fax: 715 532 6885 Phone: 715 532 6690

Client: Flambeau Mining Company
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

Project: Surface Water - Fall 2009

SW-3 NLS ID: 539168
COC: 118531:1 Matrix: SW
Collected: 10/03/09 17:45 Received: 10/05/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	149	umho@25C	1			10/05/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	[1.6]	ug/L	1	0.29	10	11/03/09	SW846 6010	999407970
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	61	mg/L	1	0.15*	2.0*	11/03/09	SW846 6010	999407970
Iron, tot. recoverable as Fe by ICP-Trace	1.0	mg/L	1	0.0040	0.10	11/03/09	SW846 6010	999407970
Manganese, tot. recoverable as Mn by ICP-Trace	200	ug/L	1	0.090*	5.0*	11/03/09	SW846 6010	999407970
pH, Lab	6.54	s.u.	1			10/05/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	9.7	mg/L	10	2.5	5.0	10/09/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	[8.1]	ug/L	1	2.0*	40*	11/03/09	SW846 6010	999407970
Metals digestion - tot. recov.ICP	yes					10/06/09	EPA 200.7M	721026460

SW-2 NLS ID: 539169
COC: 118531:2 Matrix: SW
Collected: 10/03/09 18:15 Received: 10/05/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	155	umho@25C	1			10/05/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	[0.32]	ug/L	1	0.29	10	11/03/09	SW846 6010	999407970
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	60	mg/L	1	0.15*	2.0*	11/03/09	SW846 6010	999407970
Iron, tot. recoverable as Fe by ICP-Trace	0.17	mg/L	1	0.0040	0.10	11/03/09	SW846 6010	999407970
Manganese, tot. recoverable as Mn by ICP-Trace	56	ug/L	1	0.090*	5.0*	11/03/09	SW846 6010	999407970
pH, Lab	7.67	s.u.	1			10/05/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	9.8	mg/L	10	2.5	5.0	10/09/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	ND	ug/L	1	2.0*	40*	11/03/09	SW846 6010	999407970
Metals digestion - tot. recov.ICP	yes					10/06/09	EPA 200.7M	721026460

SW-C1 NLS ID: 539170
COC: 118531:3 Matrix: SW
Collected: 10/03/09 18:30 Received: 10/05/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	113	umho@25C	1			10/05/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	24	ug/L	1	0.29	10	11/03/09	SW846 6010	999407970
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	18	mg/L	1	0.15*	2.0*	11/03/09	SW846 6010	999407970
Iron, tot. recoverable as Fe by ICP-Trace	1.2	mg/L	1	0.0040	0.10	11/03/09	SW846 6010	999407970
Manganese, tot. recoverable as Mn by ICP-Trace	47	ug/L	1	0.090*	5.0*	11/03/09	SW846 6010	999407970
pH, Lab	6.94	s.u.	1			10/05/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	7.9	mg/L	10	2.5	5.0	10/09/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	62	ug/L	1	2.0*	40*	11/03/09	SW846 6010	999407970
Metals digestion - tot. recov.ICP	yes					10/06/09	EPA 200.7M	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 11/24/09 Code: S

NLS Project: 137260
NLS Customer: 11750
Fax: 715 532 6885 Phone: 715 532 6690

Client: Flambeau Mining Company
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

Project: Surface Water - Fall 2009

SW-1 NLS ID: 539171
COC: 118531:4 Matrix: SW
Collected: 10/03/09 19:15 Received: 10/05/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Conductivity, lab	157	umho@25C	1			10/05/09	EPA 120.1	721026460
Copper, tot. recoverable as Cu by ICP-Trace	ND	ug/L	1	10	0.29	11/03/09	SW846 6010	999407970
Hardness, tot. recoverable as CaCO3 (calc/unfilt/trace)	64	mg/L	1	0.15*	2.0*	11/03/09	SW846 6010	999407970
Iron, tot. recoverable as Fe by ICP-Trace	0.18	mg/L	1	0.0040	0.10	11/03/09	SW846 6010	999407970
Manganese, tot. recoverable as Mn by ICP-Trace	66	ug/L	1	0.090*	5.0*	11/03/09	SW846 6010	999407970
pH, Lab	7.13	s.u.	1			10/05/09	EPA 150.1	721026460
Sulfate, as SO4 (unfiltered)	9.4	mg/L	10	2.5	5.0	10/09/09	EPA 300.0	721026460
Zinc, tot. recoverable as Zn by ICP-Trace	[2.2]	ug/L	1	2.0*	40*	11/03/09	SW846 6010	999407970
Metals digestion - tot. recov.ICP	yes					10/06/09	EPA 200.7M	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

ANALYTICAL REPORT

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 12/10/09 Code: S **Page 1 of 1**

NLS Project: 139499
NLS Customer: 11750
Fax: 715 532 6885 Phone: 715 532 6690

Client: **Flambeau Mining Company**
Attn: Jana Murphy
N4100 Highway 27
Ladysmith, WI 54848

Project: **Relog of Project #137260, Sample #539168**

Prev. #539168, SW-3 NLS ID: 546079
COC: 118531(C):1 Matrix: SW
Collected: 10/03/09 17:45 Received: 10/05/09

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Manganese, tot. recoverable as Mn by ICP-Trace	190	ug/L	1	1.0*	2.0*	12/09/09	EPA 200.7	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by: [signature]

Authorized by:
R. T. Krueger
President

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460
WI DATCP 105-000330

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services
400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 118531

CLIENT	Flambeau Mining Co.
ADDRESS	N4100 Hwy 27
CITY	Ladysmith
STATE	WI
ZIP	54848
PROJECT DESCRIPTION / NO.	Surface Water - Fall 2009
QUOTATION NO.	
DNR FID #	855034730
DNR LICENSE #	03180
CONTACT	Jana E Murphy
PHONE	715-532-6690
PURCHASE ORDER NO.	
FAX	715-532-6885

MATRIX:
SW = surface water
WW = waste water
GW = groundwater
DW = drinking water
TIS = tissue
AIR = air
SOIL = soil
SED = sediment
PROD = product
SL = sludge
OTHER

ANALYZE PER ORDER OF ANALYSIS

USE BOXES BELOW: Indicate Y or N if GW Sample is field filtered.
Indicate G or C if WW Sample is Grab or Composite.

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYSIS												COLLECTION REMARKS (i.e. DNR Well ID #)
1.	539168	SW-3	10-3-09	5:45pm	SW	X												Unfiltered
2.	169	SW-2	″	6:15pm	″	″												″
3.	170	SW-C1	″	6:30pm	″	″												″
4.	539171	SW-1	″	7:15pm	″	″												″
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

ONE SAMPLE PER LINE

COLLECTED BY (signature): [signature]
CUSTODY SEAL NO. (IF ANY): [signature]
DATE/TIME:

RELINQUISHED BY (signature):
RECEIVED BY (signature):
DATE/TIME:

DISPATCHED BY (signature): [signature]
METHOD OF TRANSPORT: Gold Cross Courier
DATE/TIME: 10-5-09 7:00 AM

RECEIVED AT NLS BY (signature): [signature]
DATE/TIME: 10/5/09 1100
CONDITION: OK Ice
TEMP.:

COOLER # 34.79

REMARKS & OTHER INFORMATION

WDNR FACILITY NUMBER: WID 988 638 300
E-MAIL ADDRESS: jana-murphy@clearwire.net

REPORT TO: Flambeau Mining Co.

INVOICE TO: Same

PRESERVATIVE:
NP = no preservative
S = sulfuric acid
N = nitric acid
Z = zinc acetate
M = methanol
OH = sodium hydroxide
HA = hydrochloric & ascorbic acid
H = hydrochloric acid

IMPORTANT:
1. TO MEET REGULATORY REQUIREMENTS, THIS FORM **MUST** BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, **NOT** PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.
4. PARTIES COLLECTING SAMPLE, LISTED AS **REPORT TO** AND LISTED AS **INVOICE TO** AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

DUPLICATE COPY

Foth
2737 South Ridge Road
Suite 600
P.O. Box 12326
Green Bay, WI 54307-2326
(920) 497-2500
Fax: (920) 497-8516