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July 31, 2023

ELECTRONIC DELIVERY

Mr. Patrick Lennberg
Environmental Protection Specialist
Colorado Department of Natural Resources
Division of Reclamation, Mining and Safety
Office of Mined Land Reclamation
1313 Sherman Street, Room 215
Denver, Colorado 80203

Re: <u>Preliminary Adequacy Review, TR-136, Cresson Project, M1980-244</u>

Dear Mr. Lennberg:

On May 30, 2023, Newmont Corporation's Cripple Creek and Victor Gold Mining Company (CC&V) received the Division of Reclamation, Mining and Safety (DRMS) preliminary adequacy review of Technical Revision (TR) 136 to Permit M-1980-244, regarding the Numeric Protection Level Recommendations. Below are DRMS comments in bold and CC&V's responses in *italics*.

1. **In the ITRC Guidance Section 3.3 it is recommended that before conducting formal statistical evaluations, review the data. This review should include (1) reviewing data quality, (2) assessing the extent and usefulness of any historical data, and (3) exploring the data for general patterns and characteristics. Was an up-front exploratory data analysis performed to better understand the data set, its usability, and its representativeness? If so, please provide the results of the analysis.**

   Yes, exploratory data analysis was performed to better understand the data set, its usability, and representativeness; the procedures and results of which are presented in the NPL Recommendation Report. ***Section 3 Methodology*** *references* ***Appendix A****, which provides the Detailed Methodology for individual steps of the analysis. Step 1 describes data pre-processing and formatting, and Step 2 describes the exploratory data analysis. These results are documented in* ***Table 1****,* ***Table 2****, and* ***Appendix B*** *and include information related to constituent exceedances, exceedance frequencies, periods of record for historical data, size of the dataset for each well, and time-series relationships. During this process, the quality of the data, the useability of the data, and the general patterns and characteristics were reviewed, and it was determined that monthly sampling data would create a time-dependent bias within the dataset, which would invalidate many statistical tests. Monthly data was therefore averaged into quarterly data and incorporated into the larger dataset.*

   The Division reviewed the permit file and was unable to determine if historical data was collected following any Standard Operating Procedures or a Sampling and Analysis Plan with defined QA/QC procedures. In the original submittal for AM10, Hydrologic Evaluation Cresson Project Mine Life Extension 2 (February 2012), the Applicant stated that groundwater samples would be collected from the approved locations and list of analytes in accordance with CC&V's internal policies. Is there any

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documentation of what these policies were and are there any field forms that demonstrates those policies were followed? If so, please provide the Division with any available documentation.

The AM10 submittal goes on further to add "Quality assurance and quality control procedures were included in the sampling and analytical procedures as part of the certified Environmental Management System at CC&V. All analytical testing was performed by qualified third-party analytical laboratories that participate in external quality assurance and quality control programs". It is inferred from this statement and the statement made in Section 3.5, all samples were analyzed at a USEPA certified laboratory using standard analytical procedures, that the laboratories used followed the Contract Laboratory Program (CLP) or CLP-like program consistent with the National Functional Guidelines (NFGs). The NFGs provide guidelines in evaluating (a) whether the analytical data meet the technical and Quality Control (QC) criteria established in the project-specific Quality Assurance Project Plan (QAPP) or similar, and (b) the uncertainty and extent of bias of any data that do not meet these criteria. Laboratories that follow CLP criteria generate laboratory data packages that contain a narrative of general information which may include notable problems with matrices; insufficient volume for analysis or reanalysis, preservation information that is verified by the laboratory. Are there any data packages prior to Newmont becoming the Permittee available for review that demonstrate, among other items, what methods and procedures were used to analyze the samples? The historical analytical data must meet the technical and QC criteria established in the project- specific QAPP in order to be statistically useful in the NPL analysis.

CC&V internal Environmental Sampling Protocol Guides are included in Attachment 1. Field forms dating back to the late 1990s are handwritten and recorded in bound record books. Several examples have been included in Attachment 2. All samples were analyzed by a USEPA certified laboratory using standard analytical procedures. Sample data packages (analytical reports) are included in Attachment 3, which demonstrate the methods and procedures used to analyze the samples.

2. **In Section 3.5 Data Quality Assurance/Quality Control (QA/QC) the last sentence of the first paragraph it states "More recent samples (i.e. those collected starting in 2016, during CC&V's tenure *[Newmont]*) were collected in accordance with CC&V's Water Monitoring Quality Assurance Project Plan (QAPP)". During the Division's review of the 4th quarter 2020 quarterly report the Operator stated that the QAPP was not followed for all of 2020. Please state whether or not the QAPP was followed in 2016 through 2019. If it was followed, please provide a suitable demonstration that it was followed correctly. In addition, provide an explanation how not following the approved QAPP impacts the suitability of the data for use in statistical analysis.**

As the Division is aware, CC&V developed and submitted the QAPP in 2019. Prior to the development of the approved QAPP in 2019, CC&V internal sampling protocols were followed for sample collection and CLP certified labs were utilized for analysis. Review of the site-wide dataset does not indicate any site-wide discontinuity or shifts in the data indicating the sampling results are statistically different than those before CC&V's QAPP was adopted.

CC&V determined that 2020 deviations from the QAPP were related to the lack of submittal of duplicate and blank samples (see Fourth Quarter 2020 GW/SW Report and Water Monitoring Program Review Response dated June 3, 2021). These deviations were not related to any other sampling protocols. ITRC guidance indicates that each measurement from a population of groundwater measurements should be assumed to be statistically independent of every other measurement. Following routine sampling procedures, such as those described in the QAPP or similar internal sampling protocols, creates a higher likelihood that each *groundwater sample is independent and representative of aquifer conditions. Not following the sampling protocols described in the approved QAPP or similar internal sampling protocols may or may not bias a sample high or low if the groundwater is not representative of aquifer conditions. However, as stated above, review of the site-wide dataset does not indicate any site-wide discontinuity or shifts in the data that would indicate the sampling results are statistically different than those before CC&V's QAPP was adopted (2019). Furthermore, not submitting duplicate samples or blanks (as occurred in 2020) will not bias sample results higher or lower but will result in more limited quality assurance/quality control.*

3. **On page 2, the last sentence of the first paragraph (continued from page 1), it is stated "Natural causes, sampling anomalies, or related operations that did not cause a discharge of pollutants to groundwater were not considered to be new or increased sources of groundwater contamination". Pursuant to Rule 3.1.6 disturbances to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quantity or quality of water in surface and groundwater systems both during and after the mining operation and during reclamation shall be minimized. The NPLs proposed within this revision are intended to comply with WQCC's Regulation No. 41 – The Basic Standards of Ground Water (Reg. 41). However, the Operator must also be in compliance with Rule 3.1.6. A review of groundwater quality data indicates the lining of the valley leach facilities in Maize Gulch and Arequa Gulch may be negatively affecting both the quantity and quality of groundwater. As discussed in section 4.5 Maize Gulch, lining of Maize Gulch has caused concentrations of various constituents to increase by removing the available amount of water to enter the groundwater system. Lining has also resulted in decreased water levels within monitoring wells and a decreasing trend in dissolved oxygen (DO). While lining the gulch has not been a source of contamination it has negatively affected the hydrologic balance. The Division does not agree it was appropriate to use the increasing concentration trend data for the various constituents because there was no new or increased source.**

As described in Section 4.5, Maize Gulch is sensitive to changes in local precipitation as demonstrated by higher concentrations of aluminum, beryllium, cadmium, cobalt, fluoride, manganese, nickel, pH, sulfate, uranium, and zinc associated with large precipitation events. The interim NPLs recommended for Maize Gulch were determined using these naturally occurring, higher concentration outliers that were retained for the analysis, including those for iron, manganese, and cobalt.

Further review of the hydrological data at the mine indicates that average annual precipitation has been decreasing over time. For the period of record SGMW-6B, which was used to determine the interim NPLs for Maize Gulch, decreasing precipitation is positively correlated with decreasing water levels (Figure 1). While there may be a localized reduction in infiltration due to the VLF liner, regional precipitation patterns and climatic changes will impact the regional hydrologic balance. Water level data and precipitation were also reviewed for Wilson Creek, which is unimpacted by construction of the VLFs (Figure 2). Over the same period (2014 – 2021), water levels in WCMW-6 are decreasing with decreasing precipitation. WCMW-6 also exhibits increasing trends for iron and manganese, which may be due to geochemical changes caused by decreasing water levels. The overall magnitude of the decrease in water levels in WCMW-6 is less than that in SGMW-6B; however, WCMW-6 is deeper than SGMW-6B (234 feet vs. 60 feet), and WCMW-6 is screened in a less permeable geologic formation (Precambrian bedrock vs. Tertiary volcanic deposits). Decreasing water levels are observed in both wells. This suggests that the decrease in precipitation is the driver for decreasing water levels in multiple basins at the mine site.

The new point of compliance for Maize Gulch is located further downgradient within the basin (Figure 3). Changes in water level in the point of compliance well related to precipitation and/or reduced recharge from the VLF may attenuate downgradient as the size of the drainage basin is larger and more precipitation may

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infiltrate into groundwater as it flows downgradient. The drainage basin for SGMW-8 is approximately 71% larger at the new point of compliance. Further sampling and analysis will assist in further review of groundwater quality and quantity.

Finally, as described above, the interim numeric protection levels (NPLs) for iron, manganese, and cobalt in Maize Gulch are the same with or without the trend of increasing concentrations as the primary drivers for these NPLs are high outlier values associated with precipitation events.

Therefore, although construction of a VLF in the Maize Gulch drainage reduced the local recharge of groundwater, constituent concentrations are associated with natural changes in precipitation. Moreover, CC&V has minimized disturbances to the hydrological balance from its operations as required by the Mined Land Reclamation Act and Hard Rock Rule. C.R.S. § 34-32-116 and Hard Rock Rule 3.1.6 state that disturbances to the prevailing hydrologic balance of the affected land and of the surrounding area, and to the quantity or quality of water in surface and groundwater systems shall be minimized. Rule 3.1.6 lays out that the measures to minimize disturbances to the hydrologic balance will include compliance with applicable Colorado water laws governing injury to existing water rights, and compliance with applicable water quality laws and regulations, including water quality standards adopted by the Water Quality Control Commission.

CC&V minimizes disturbances to the hydrologic balance and negative effects on the quantity of water by complying with the decreed augmentation plan for the Cresson Project. The augmentation plan for the Cresson Project was decreed by the Water Court for Water Division 2 in case numbers 02CW122 and 10CW31 on March 29, 2017. The augmentation plan addresses the reduction in infiltration or runoff that results from the Cresson Project facilities, including the interception of precipitation by the Valley Leach Facilities and all other areas underlain with an impermeable liner. The water court determined that replacement of these depletions at the time, location, and amounts set forth in the decree will prevent injury. Therefore, consistent with Rule 3.1.6, CC&V's compliance with the terms and conditions of the decree in case numbers 02CW122 and 10CW31 minimizes disturbances to the hydrologic balance and negative effects on the quantity of water.

CC&V minimizes disturbances to the hydrologic balance and negative effects on the quality of water through compliance with water quality standards and other regulations adopted by the Colorado Water Quality Control Commission ("WQCC"). WQCC's interim narrative standard for groundwater (Reg. 41, Section 41.5.C.6) requires a determination of existing quality as of 1994 because the narrative standard is the less restrictive of existing ambient quality as of January 31, 1994 or Tables 1 through 4 of the Basic Standards for Groundwater. The WQCC states that data generated subsequent to January 31, 1994 "shall be presumed to be representative of existing quality as of January 31, 1994, if the available information indicates that there have been no new or increased sources of groundwater contamination initiated in the area in question subsequent to that date." CC&V has demonstrated that there have been no new or increased sources of groundwater contamination since 1994, and therefore the data subsequent to January 31, 1994 must be presumed to be representative of existing quality.

DRMS previously considered the potential groundwater impacts due to construction of the VLF and other activities associated with the mine with approval of Amendment 10. CC&V identified the reduction in groundwater flow from the installation of the liner system, and extensively studied and modeled the potential effects of the reduced flow. CC&V's analysis was presented in Appendix I to Amendment 10, and is summarized below:

Amendment 10 Appendix I: Adrian Brown Cresson Project Hydrogeochemical Evaluation (February 25,

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2012) – Section 2.6.3:

> 2.6.3 Groundwater Flow Potential Impact
> Potential groundwater impacts due to MLE2 activities are as follows:
> 1. (VLF 2) Groundwater Interception: The principal potential impact to groundwater flow resulting from MLE2 activities will result from the installation of the liner system for the (VLF 2). The lined facility will be approximately 348 acres, and would prevent approximately .9 inches per year of infiltration. This represents a computed reduction in flow of the regional groundwater system at the Carlton Tunnel of approximately 171 acre-feet per year (106 gpm). Accordingly, the potential impact of MLE2 on groundwater flow is that the Carlton Tunnel portal flow may reduce from its current rate of approximately 1,500 ± 1,000 gpm to approximately 1,400 ± 1,000 gpm when the (VLF 2) liner system is completely laid. This conclusion does not account for any potential changes in precipitation rate, which would not be a result of MLE2 activities.

Amendment 10 Appendix I: Adrian Brown Cresson Project Hydrogeochemical Evaluation (February 25, 2012) – Section 3.4:

> 3.4 Conclusion
> Potential impacts to water quality as a result of the implementation of the proposed MLE2 mining and processing activities are as follows:
> 1. No potentially deleterious change in the average regional ground water quality has occurred due to recent surface mining (1993-2011).
> 2. No potentially deleterious change in the average regional groundwater quality will ever occur due to all surface mining operations to end of MLE2.

In the approval of Amendment 10, the Division considered this information and found that CC&V's operations would minimize disturbances to the hydrological balance and negative effects on the quantity and quality of groundwater. Data confirms there has been no deleterious change in the regional groundwater quality due to the surface mining operations conducted under MLE2. Although there have been mining activities and the construction of the VLF, the statistical analysis of the groundwater quality results do not demonstrate any new parameters that would indicate a new or increased source of groundwater contamination.

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4. **The Division acknowledges the Cresson Mine is situated within a historic mining district, which has contributed to exceedances of water quality standards. However, these areas impacted by historic mining have been incorporated into the affected area of the Cresson Mine. As such, the Operator has assumed responsibility for meeting water quality standards. The Interim Narrative Standards of Regulation No. 41 are intended to ensure that conditions are not allowed to deteriorate further by establishing a system of classifications for determining the appropriate standards necessary to maintain beneficial uses of groundwater. It is the role of the Water Quality Control Commission (WQCC) to consider whether or not site specific standards should be applied based on historic impairment of water quality. The Operator may petition the WQCC to promulgate site specific standards that take into account the historic impact on water quality. Until such time as the WQCC adopts site specific standards, the Operator will be responsible for ensuring water quality meets either the Interim Narrative Standards or Numeric Protection Limits, as established by the Division.**

CC&V agrees that the Cresson Mine is within a historical mining district but disagrees that either the historical mining district or the Cresson Mine has caused or contributed to any exceedances of water quality standards promulgated by the WQCC. As explained in the NPL Recommendation Report, the Interim Narrative Standards of Regulation No. 41 state that "ground-water quality shall be maintained for each parameter at whichever of the following levels is less restrictive: (A) existing ambient quality as of January 31, 1994, or (B) that quality which meets the most stringent criteria set forth in Tables 1 through 4 of 'The Basic Standards for Groundwater." The Interim Narrative Standard itself takes into account the historical impact on water quality from mining activities or other activities conducted throughout the state prior to 1994. Because all of the mining occurred prior to 1994, it is impossible for the historical mining to cause or contribute to an exceedance of the Interim Narrative Standard. The NPLs presented were calculated following the methodology described in the ITRC guidance for Groundwater Statistics and Monitoring Compliance and the USEPA guidance for Statistical Analysis of Groundwater Monitoring Data. Therefore, the calculated values are valid estimates of the existing ambient quality as of January 31, 1994. Furthermore, based on the available data and the analysis provided by CC&V in support of TR-136, there have been no exceedances of the Interim Narrative Standard caused by the Cresson Mine.

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We trust that the additional information described above and provided in the attachments addresses the comments provided by DRMS regarding the preliminary adequacy review of Technical Revision (TR) 136 to Permit M-1980-244 for the recommended NPLs. Should you require further information, please do not hesitate to contact Antonio Matarrese at (719) 851-4185, Antonio.Matarrese @Newmont.com, or myself at (719) 237-3442 or Katie.Blake@Newmont.com.

Sincerely,

DocuSigned by:
Katie Blake
5A3D013B629844B...

Katie Blake
Sustainability & External Relations Manager
Cripple Creek & Victor Gold Mining Co

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M. Cunningham – DRMS
T. Cazier - DRMS
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Attachments: 4

File: *"C:\Users\19012214\Newmont USA Limited\CC&V – S&ER Environmental - Permits\Technical Revisions\TR 136 - NPL Proposal 2023\Preliminary Adequacy\For Submission\2023July31_ARresposne_TR136.docx"*

ENVIRONMENTAL SAMPLING PROTOCOL GUIDE

CRIPPLE & VICTOR GOLD MINING COMPANY

Prepared By:

Environmental Affairs Department
Pikes Peak Mining Company

Cripple Creek & Victor Gold Mining Company

Date Prepared: 6-16-99
For Internal use

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Introduction

In brief, sampling and having the samples analyzed costs Pikes Peak Mining approx. $ 388,000. Dollars per year. This comes out of the Environmental Affairs Dept. budget. Since the amount of money spent is exorbitant, it is of utmost importance to collect samples in a consistent and unbiased manner to characterize the actual quality of the water. This guide summarizes the current CC&V procedures that is established for water quality sampling, shipment, as well as the equipment used to collect, and analyze for field parameters.

Pikes Peak Mining Co.
Surface H_20 Sampling

Before heading out into the field to collect samples know what parameters you are expected to analyze for. Load up your equipment, the following is a list of the equipment that is being used at this time.

- ✓ Orion 260 combination pH, and O.R.P meter
- ✓ Orion 830 D.O. meter
- ✓ Oakton conductance meter
- ✓ Geo Pump
- ✓ D.I. H_20
- ✓ Baski Flume
- ✓ Line Level
- ✓ 100 ft. Tape measure
- ✓ March McBirney 2000 portable Flow meter & Wadding Staff
- ✓ Wader Boots
- ✓ Shovel
- ✓ Kimwipes
- ✓ Field Log Book
- ✓ Field Data Sheets
- ✓ Cooler with ice
- ✓ Sample Bottles
- ✓ 0.45 Micron Filters
- ✓ Sample Bucket
- ✓ Water Proof Ink Pen
- ✓ Transparent Tape

Stream Flow Measurements

Site inspection guidelines are as follows:

1. The channel should have as much straight run as possible. Where the length of straight run is limited, the length up stream from the profile should be twice the downstream length.
2. The channel should be free of flow disturbances.
3. The flow should be free of swirls, eddies, vortices, backward flow, or dead zones.
4. Avoid areas immediately downstream from sharp bends or obstructions.
5. If the Baski flume is used it should be placed into the stream after the sample is collected to avoid a high TSS sample.

If the stream is flowing in excess of 100 G.P.M you may have to use the Marsh McBirney for flow determinations. If the stream is less than 100 G.P.M you can use the Baski flume.

Installation of The Baski Flume

After sampling the stream, and only after sampling, select the site for the flume putting the it in the stream, and then shovel dirt into the sides to form a head wall. Seat the flume so that no water is running under it. Since the Baski is not equipped with a circular level use the line level and level the flume both lengthwise and side ways. The staff should be up stream. Watch the water rise to make certain that the head wall is high enough to dam all of the water. Read the staff after the damned water has stabilized. To determine the flow on the Baski we are using, (staff reading x staff reading x 225) this will give you gallons per minute.

Marsh McBirney Flow Meter

Technical guidance can be found in the Instruction Manual for the model 2000 portable flow meter.

The method that is being used is the .4 method. This method is probably the least accurate because it uses only one data point and assumes that a typical profile exists. This is also called the 60% method. This is the fastest, and easiest method with results proven to be a good representation of the flow.

The First step is to pull the tape measure across the stream and stake it. Divide the width of the channel into a number of equal segments, The more segments you measure the better the results. If the difference in mean velocity between two adjacent segments is greater than 10%, the segments should be smaller.

After being familiar with the operation of the meter you can wade into the stream. Working from the down stream side of the tape begin on the bank side of the stream, putting the Top-Setting Wading rod into the stream. Set the depth on the sliding Rod lock to the depth of the water which is read at the bottom of the rod. The meter will store velocity measurements, but you will have to record the depth measurement.

Proceed to the next segment and make the depth measurement adjustment. When finished record depth from the side of the bank you started from e.g. the North, or East side.

Record the segment units used .5 ft., 1 ft., etc. then record the depth for that segment, and then recall from the memory the velocity in ft/sec.

Flow is calculated with the continuity equation (Q= â x A)

where as Q is flow, â is mean velocity and A is cross-sectional area. The flow of the channel is the sum of all the segment areas measured. Remember to account for the bank measurements.

Sampling Procedure
Surface

Set up and calibrate test equipment, record buffers, and slope on field sheet in log book, and pH record sheet that accompanies each meter. Set the Geo Pump up and plug into the power point, or cigarette socket for 12 volt battery power. Flush pump with D.I. H_20. Fill out the labels for the sample bottles and the log in water proof ink. Tape the labels on the sample bottles with packing tape. This is critical if using non-contained ice, blue ice is not as critical, but will help to preserve legibility of labels while in the field.

For large streams (Four Mile) Use a decontaminated liter bottle wade into the stream down stream side of the tape and submerge the sample bottle mid depth of the stream. When full dump sample into decontaminated sample bucket. Repeat at the next segment until the entire stream has been sampled. The sample is then taken to the Geo Pump. Pump the sample through until the hose has been purged of the D.I. The only sample collected with the Geo Pump will be the Dissolved metal. Start with the Dissolved Metals bottle to avoid filling the wrong bottle, insert a 0.45 micron filter into the discharge hose and flush filter with ~3 filter volumes (~200 ml for the high capacity, and ~60 ml for the low capacity filters) before collecting Diss. Metals sample. Then fill the other metal bottle(s). Next collect the CN- sample, then in order of priority the other samples to be collected. When all of the samples has been collected, store in the cooler on ice. Then take another field measurement to check repeatability, record the results. When ever possible take field Parameter measurements in-situ getting the probes into the water at the beginning of the sampling event allowing time for the probes to cool down or warm up to actual water temperature. Collect sample up stream of probes. Decontaminate as necessary, and store instruments.

Monitoring Well Equipment

- ✓ Orion 260 Combination pH, O.R.P. meter
- ✓ Orion 830 D.O. meter
- ✓ Oakton Conductivity/Temperature/ meter
- ✓ Geo Pump
- ✓ D.I. H_20
- ✓ Kimwipes
- ✓ Field Log Book
- ✓ Field Data Sheets
- ✓ Cooler with Ice
- ✓ Sample Bottles
- ✓ 0.45 Micron Filters
- ✓ Sample Bucket
- ✓ M-Scope 150 Ft., and 500 Ft.
- ✓ EZ Reel Pump & Converter
- ✓ Generator.
- ✓ Appropriate Keys for Locks on the Well Head
- ✓ Bottom Bailer (used as back up sampling device when EZ-reel is out of service)
- ✓ Water Proof Ink Pen
- ✓ Transparent Tape

Dedicated Well Equipment

- ✓ Including the list above:
- ✓ 220 std. cu. ft. Cylinder of Nitrogen Gas
- ✓ Logic Unit Controller
- ✓ Regulator and Related Hoses

Monitoring Well Sampling
EZ-Reel Pump

When you first arrive at the sample site make visual observation of the Well Head area noticing:

- ✓ If the lock is on the protective well casing
- ✓ Well Collar condition
- ✓ Site conditions

1. Set up field equipment, and calibrate per manufactures recommendations, noting in the field log buffers used, and slopes.
2. Measure the static $H_2$0 level in the well and record measurement. Water levels should be measured with a precision of $^+$ 0.01 foot. Water level measurement equipment should be decontaminated prior to use at each well to ensure sample integrity and to prevent cross-contamination of ground water.
   Calculate the volume to be purged using (.7854 x D^2 x 7.48 gal/ft^3 x 3 Volumes) in the well. To find the volume in the well take the total depth minus the static level. Total depth of the well is recorded in the log book, but should be verified at time of sampling.
3. If the pump is known to be decontaminated, insert pump into the well descending slowly until pump is in the desired screened area of the well. Be certain that no equipment is contaminated that is going into the well, avoid letting the pump come in contact with the well bottom.
4. Hook the discharge hose up to the EZ reel, tighten the hose connection to avoid a venturi effect when pumping, which may increase D.O. measurement of the sample. Then hook up the power lead to the reel. After checking the fluid levels in the generator start the Gen Set and allow it to warm up. When the engine is up to operating temperature plug the converter into the 20 Amp. GFI, and start the pump at the converter. When water is flowing from the discharge end of the hose, reduce Q by adjusting Hz on the converter to the desired purge rate. The rate at which a well is sampled should not exceed the rate at which it is purged. Monitor the water taking field measurements every gallon, or liter depending on flow rate, noting turbidity, odors, or any other characteristic of the water.

Ideally, the rate of sample collection should be approximately the same as the actual ground-water flow rate. Because this is typically not possible, low sampling rates, approximately 0.2L to 0.3 L/min. are suggested. Low sampling rates will ensure that particulate, immobile in the subsurface under ambient conditions, are not entrained in the sample and volatile compounds are not stripped from the sample (Puls and Powell, 1992; et al., 1991; Puls and Barcelona, et al 1990). If a well is purged to dryness or is purged such that full recovery exceeds two hours, the well should be sampled as soon as a sufficient volume of ground water as entered the well to enable the collection of the ground water sample. Record purge rate on the fieldsheet.

5. Insert D.O., pH meter, and Conductance probes in the over flow bottle to the calibrated sample bucket to monitor field parameters while purging recording measurements every gallon or liter depending on what pump is used.

6. While the Well is being purged, fill out the labels on the sample bottles, and the field data sheets.

7. When desired volume is purged (3 well volumes, or until field parameters are stable within 10% of the last previous two gallons purged) you are ready to collect the sample. The sampling objective must be clearly defined ahead of time knowing what analyses is requested. Collect samples in the preferred collection order. The preferred collection for some of the more common ground-water analytes is as follows (Barcelona et al., 1985b):

    1. Volatile organics (VOAs or VOCs) and total organic halogens (TOX);
    2. Dissolved gases and total organic carbon (TOC);
    3. Semivolatile organics (SMVs or SVOCs)
    4. Metals and cyanide
    5. Major water quality cations and anions;
    6. Radionuclides.

   For our sampling purposes we collect samples in this order depending on volume available, or other wise specified:

    1. Metals
    2. Cyanide
    3. Non-Preserved
    4. Nutrients

8. If pre-preserved bottles are used, visually inspect them to make certain that they contain an adequate amount of preservative. Uncap one sample bottle at a time placing the cap upside down on a clean surface. Cap sample immediately upon filling before uncapping next sample bottle. Immediately place samples in cooler on ice to aid in storing at recommended temp. of 4^0 C. General Parameters bottle should be rinsed out with the sample that is to be collected. Dissolved metals sample must be filtered with a 0.45 micron filter prior to acidifying. The filter can be placed directly onto the pump discharge hose. Flush filter with ~3 filter volumes before collecting the sample. Potential dissolved metals if collected should be acidified and filtered with a 0.45 micron filter 8 to 96 hours later.

9. After the pump is on surface you must hook it back up to the converter for decontamination procedures outlined in Decon. Procedures.

DEDICATED

MONITORING WELL SAMPLING

When Sampling WCMW-1-404, Cob-1A-200, GVMW-4A-480,and CRMW-4A-400 you will use the Well Wizard dedicated pump that is already in the well. When you are at the well within 10 feet of the well head. Unload the bottle of nitrogen gas and secure the bottle to the truck in an upright position. Remove the protective cap and crack the valve away from your face and/or persons. This clears any foreign materials or dust from being forced into the regulator. Hook up the high pressure regulator and turn the tank valve on, noting the pressure on the gage. A full bottle will have ~2000 psi. Turn the regulator handle in (right) to increase the pressure and out (left) to reduce the pressure. Set the working pressure at **200 psi**. Hook up the black high pressure hose (pump supply) to the quick connect at the well head. Then hook up the larger black high pressure hose from the regulator to (pump pressure inlet) on the Logic Controller. To obtain the maximum work from the gas used, follow the instructions on the controller for setting discharge and refill cycles. Once set, this should be the setting for this well at this static water level. You should have one hose left, a red one that is used for blow down to prevent freezing. It attaches to the other quick connect on the well head. When purging the well, the valve on the Red hose should be closed. When blowing the water out for freeze protection secure the discharge hose and hook up to (pump supply) and open the valve on the red hose. WCMW-1-404 is the only dedicated well that has this older style blow down protection valve. The newer design uses a total of two quick connects at the well head, one for pump pressure, and the second for blow down which utilizes an internal check valve. Follow same sampling procedures from this point as you would for well sampling using the EZ Reel.

**Decontaminating Procedures for
Sample-Contacting Equipment**

The recommended cleaning procedures for sampling equipment used when inorganic constituents are of interest is as follows (Barcelona et al., 1990: Keeley and Boating, 1987: USEPA, 1986)

- ✓ Wash the equipment with a nonphosphate detergent.
- ✓ Rinse the equipment with tap water.
- ✓ Rinse the equipment with dilute (0.1N) hydrochloric or nitric acid.
- ✓ Rinse with reagent grade D.I.
- ✓ Allow to air dry.

**ASTM STANDARD PRACTICE D5088
DECONTAMINATION PROCEDURES FOR
NONSAMPLE-CONTACTING EQUIPMENT**

Clean with Portable Power Washer or Steam cleaner or
Hand Wash with brush using Detergent Solution.
Rinse with D.I. water

Ground Water Sampling Equipment

Clean prior to use, The EZ Reel can be cleaned by inserting the pump into the 4” PVC cylinder fabricated for this purpose, and adding the cleaning agent (liquid Knox). After water is discharging, you can put the hose in the cylinder and recirculate the solution about three volumes, approx. 8 gallons. Purge the cleaning solution then start Tap water flowing into the cylinder, balance the incoming water to the flow being pumped for a min. of 3 volumes. Next add D.I. water to the column and put the discharge hose in and recurculate the D.I. water for a minimum of three volumes. Purge the recurculated D.I. water with fresh D.I. until 3 gallons of fresh D.I. has been used. To insure that the pump and hose is decontaminated a equipment blank sample now can be collected, and the results can be compared to the pre determined D.I. water quality. When sampling multiple wells at the same site at a minimum, rinse the pump and hose with D.I. water before moving to sample the next well. When you are finished, and storing the pump it should be decontaminated and allowed to be air dried, then wrapped with inert material, (aluminum foil or plastic). We use clean plastic sample bags. Sample buckets should be avoided to collect samples in eliminating the common container and a source of cross contamination. If necessary to collect a sample in any other container virgin or decontaminated liter bottles should be used but this practice should be avoided. Rinse the non preserved bottles with the sample water that is being analyzed prior to sample collection.   M-Scopes should be cleaned before using by unrolling the probe into detergent solution, brushing the entire length as you wind up. Unwind it into a bucket or sink and rinse with tap water. Then rinse with D.I. and reel up. This is important since the Process Department uses it on occasion in a high CN- environment.

Chain-of-Custody and Records Management

A chain-of-custody is a procedure designed to allow the operator to reconstruct how and to whom the sample is transferred. This procedure is intended to prevent misidentification of the samples, to prevent tampering with the samples during shipping and storage, and allow for the easy tracking of possession.
Each Sampler should fill out their own COC listing the sample ID,date,time,and type of sample, and the bottles that are in the sample. Fill out the COC by including your signature, and time that you relinquished it.
A copy of the analytical request and the Chain is filed in the field office promptly after sample shipment.
The field log book should be filled out at the end of the shift daily to insure that sequential order is maintained. If not possible field sheets should be inserted into the log on the numbered page that they belong, and taken care of as soon as possible. The field sheet is then routed daily to the environmental assistant.

Sample Labels

To prevent sample misidentification, affix the label to each sample container.

Sample labels should be durable enough to remain legible even when wet. Black water proof ink should be used when filling out labels, and clear packing tape should be put over the filled out label in a manner to cover the writing and to keep labels from becoming unaffixed in extreme circumstances.

Sample labels should contain at the minimum, the following information:

- ✓ Sample Identification
- ✓ Date and time of collection
- ✓ Sample ID.
- ✓ Preservative if used.
- ✓ Filtered.

Pertinent information should be recorded exactly the same on the bottles, field data sheets, and in the log book.

Sample Shipment Considerations

- ✓ Parameter-Specific Holding Times
- ✓ Considering Time and Method of Travel
- ✓ Compliance with Applicable Shipping Regulations (e.g. HMTA, RCRA, D.O.T) That Regulate Sampling Labeling and Packaging
- ✓ Cost

With these considerations in mind, load the cooler with the samples along with enough ice to adequately cool the samples. With the problems of sample arriving at the lab within temperature range cool the cooler down in the fridge prior to loading with samples. Fill the coolers void with packing peanuts. Finish the packing off with an insulating pad on top if available or a plastic vapor barrier. Seal after making copies of the chain of custody, and analytical request form putting the paper work in a plastic bag in the top of the cooler. Affix shipping labels with clear packing tape, and go around the top of the label tape insuring it will not come off in transport. Now at this time with the 2" wide packing tape seal the lid aiding in holding the cold in the cooler. With strapping tape go around the cooler overlapping the ends on both ends of the cooler. The cooler now is ready for shipment.

Attachments

Chain-of-Custody

Field Analyses
Discharge Measurement Notes
pH record sheet
Monitoring Location map

Conversion Charts

3” Parshall Flume
9” Parshall Flume

References

EPA nov. 1992
RCRA Ground-Water Monitoring:
Draft Technical Guidance

ASTM 1995
Ground-Water Monitoring and
Sampling Technology:

F.A. Kilpatrick and V.R. Schineider
Techniques of Water-Resources
Investigations of the United States
geological Survey, book 3, chapter
A14, pgs 26-28

Marsh McBirney, Inc.
Flo-Mate
Model 2000 Portable Water Flowmeter
Instruction Manual

Orion Research Inc.
Laboratory Products Group
Model 830 Dissolved Oxygen Meter
Instruction Manual

Orion Research Inc.
Laboratory Products Group
Model 260 pH meter

Revision No	Revision Date	By Whom	Review Date	Description
1	6/16/1999	ERD		Initial release

ENVIRONMENTAL SAMPLING PROTOCOL GUIDE

CRIPPLE & VICTOR GOLD MINING COMPANY

AngloGold Ashanti (Colorado) Corp.

Prepared By:

Environmental Resource Department

Cripple Creek & Victor Gold Mining Company

TABLE OF CONTENTS

Introduction

In brief, sampling and having the samples analyzed costs Cripple Creek & Victor Gold mining company "CC&V" approximately $150,000 dollars per year. This money comes out of the Environmental Resource Department "ERD" budget. Since the amount of money spent is exorbitant, it is of utmost importance to collect samples in a consistent and unbiased manner to characterize the actual quality of the water. This guide summarizes the current CC&V procedures that are established for water quality sampling, shipment, as well as the equipment used to collect, and analyze for field parameters.

Environmental Data Management system

The new Environmental Data management system "EDMS" allows us to carry the PC tablet into the field replacing the clip board and field sheet. Prior to the sampling event you must down load the specific sites that you will be sampling. This allows you to instantly check field parameters to see if they are in the range of historical data collected for this site. This system also insures consistence of sample Identification information within the data base, Chain of Custody, and analytical request forms making possible for electronic up load of laboratory data eliminating human data entry errors.

CC&V

Surface H_20 Sampling

Before heading out into the field to collect samples decide what parameters you are expected to analyze for which will dictate which bottles, and filters are needed. Load up your equipment needed for the sites you are sampling. The following list of equipment that is being used at this time.

- ✓ Orion 260 combination pH, and O.R.P meter
- ✓ WTW 330 D.O. meter
- ✓ WTW 330 conductance meter
- ✓ Geo Peristaltic Pump
- ✓ D.I. H_20
- ✓ Baski 1 inch Flume
- ✓ Line Level
- ✓ 100 ft. Tape measure
- ✓ March McBirney 2000 portable Flow meter & Wadding Staff
- ✓ Wader Boots
- ✓ Shovel
- ✓ PC tablet
- ✓ Cooler with ice
- ✓ Sample Bottles
- ✓ 0.45 Micron Filters
- ✓ Sample Bucket
- ✓ Water Proof Ink Pen

Stream Flow Measurements

Site inspection guidelines are as follows:

1. The channel should have as much straight run as possible. Where the length of straight run is limited, the length up stream from the profile should be twice the downstream length.
2. The channel should be free of flow disturbances.
3. The flow should be free of swirls, eddies, vortices, backward flow, or dead zones.
4. Avoid areas immediately downstream from sharp bends or obstructions.
5. If the Baski flume is used it should be placed into the stream after the sample is collected to avoid a high TSS value in the sample.

If the stream is flowing in excess of 100 G.P.M you may have to use the Marsh McBirney for flow determinations. If the stream is less than 100 G.P.M you can use the Baski flume.

Installation of The Baski Flume

After sampling the stream, and only after sampling, select the site for the flume putting it in the stream, and then shovel dirt into the sides to form a head wall. Seat the flume so that no water is running beneath it. Since the Baski is not equipped with a circular level use the line level, and level the flume both lengthwise and side ways. The staff should be up stream. Watch the water rise to make certain that the head walls are high enough to dam all of the water. Read the staff after the damned water has stabilized. To determine the flow on the Baski we are using, (staff reading x staff reading x 225) this will give you gallons per minute.

Marsh McBirney Flow Meter

Technical guidance can be found in the Instruction Manual for the model 2000 portable flow meter.
The method that is being used is the .4 method, or the 60% method This method is probably the least accurate because it uses only one data point and assumes that a typical profile exists. This is the fastest and easiest method with results proven to be a good representation of the flow.
The First step is to pull the tape measure across the stream and stake it. Divide the width of the channel into a number of equal segments, the more segments you measure the better the results. If the difference in mean velocity between two adjacent segments is greater than 10%, the segments should be smaller.

After being familiar with the operation of the meter you can wade into the stream. Work from the down stream side of the tape beginning on the bank side of the stream, putting the Top-Setting Wading rod into the stream. Set the depth on the wading staff's sliding rod lock to the depth of the water which is read at the bottom of the rod. The meter will store velocity measurements, but you will have to record the depth measurement.
Proceed to the next segment and make the depth measurement adjustment. When finished record depth from the side of the bank you started from e.g. the North, or East side.
Record the segment units used .5 ft., 1 ft., etc. then record the depth for that segment, and then recall from the memory the velocity in ft/sec. .....
Flow is calculated with the continuity equation (Q= â x A)
where as Q is flow, â is mean velocity and A is cross-sectional area. The flow of the channel is the sum of all the segment areas measured. Remember to account for the bank measurements. This information is entered into the PC tablet under flow via current meter. Back in the field office print this report to accompany the sites field sheet.

Sampling Procedure
Surface Water

Power up and calibrate test meters, record buffers, slope, and after calibration vales on the pH record sheet that accompanies each meter. Set the peristaltic pump up and plug into the power point, or cigarette socket for 12 volt battery power if collecting a dissolved metals sample. Flush pump with D.I. H_20. Fill out the labels for the sample bottles in water proof ink, and then log into the PC tablet for this site noting the default time which may be different then actual sample time. Enter correct time of the sampling event. Tape the labels on the sample bottles with packing tape. This is critical if using non-contained ice, blue ice is not as critical, but will help to preserve legibility of labels while in the field.
For large streams (Fourmile) grab samples use a decontaminated one liter bottle, wade into the stream and submerge a one liter bottle mid depth of the stream. When full, fill the sample bottles. Repeat procedure then a aliquot of the sample is then taken to the peristaltic pump. Pump the sample through until the hose has been purged of the D.I. water and half of the liter has been pumped. The only sample collected with the peristaltic pump will be the Dissolved metal. Leave the Dissolved Metals bottle at the pump to avoid filling the wrong bottle, insert a 0.45 micron filter into the discharge hose and flush filter with ~3 filter volumes (~200 ml for the high capacity, and ~60 ml for the low capacity filters) before collecting for the dissolved metals sample. When all of the samples have been collected, store in the cooler on ice. When ever possible take field Parameter measurements in-situ getting the probes into the water at the beginning of the sampling event allowing time for the probes to cool down or warm up to actual water temperature. Collect sample up stream of probes. Decontaminate as necessary, and store instruments.

Monitoring Well Equipment

- ✓ Orion 260 combination pH meter
- ✓ WTW 330 D.O. meter WTW 330 conductance meter
- ✓ Peristaltic Pump
- ✓ D.I. H_20
- ✓ PC Tablet
- ✓ Cooler with Ice
- ✓ Sample Bottles
- ✓ 0.45 Micron Filters
- ✓ Sample Bucket
- ✓ M-Scope 150 Ft., and 500 Ft.
- ✓ EZ Reel Pump & Converter
- ✓ Generator.
- ✓ Appropriate Keys for Locks on the Well Head
- ✓ Bottom Bailer (used as back up sampling device when EZ-reel is out of service)
- ✓ Water Proof Ink Pen

Dedicated Well Equipment

- ✓ Including the list above:
- ✓ 220 std. cu. ft. Cylinder of Nitrogen Gas
- ✓ Logic Unit Controller
- ✓ Regulator and Related Hoses

Monitoring Well Sampling
EZ-Reel Pump

When you first arrive at the sample site make visual observation of the Well Head area noticing:

- ✓ If the lock is on the protective well casing
- ✓ Well Collar condition
- ✓ Site conditions

1. Set up field meters, and calibrate per manufactures recommendations if needed, noting in the PC tablet comment section.
2. Measure the static H_20 level in the well and record measurement listed as (depth to water). Water levels should be measured with a precision of $\pm$ 0.01 foot. Water level measurement equipment should be decontaminated prior to use at each well to ensure sample integrity and to prevent cross-contamination of ground water.
   Calculate the volume to be purged using (.7854 x D^2 x 7.48 gal/ft^3 x 3 Volumes) in the well if the total depth and ground elevation is not entered into the data base. To find the volume in the well take the total depth minus the static level. Total depth of the well is recorded in the sample identification, but should be verified at time of sampling.

3. If the pump is known to be decontaminated, insert pump into the well descending slowly until pump is in the desired screened area of the well. Be <u>certain</u> that no equipment is contaminated that is going into the well, avoid letting the pump come in contact with the well bottom.

4. Hook the discharge hose up to the EZ reel, tighten the hose connection to avoid a venturi effect when pumping, which may increase D.O. measurement of the sample. Then hook up the power lead to the reel. After checking the fluid levels in the generator start the Gen Set and allow it to warm up. At which time the engine is up to operating temperature plug the converter into the 20 amp. GFI, and start the pump at the converter. When water is flowing from the discharge end of the hose, reduce Q by adjusting Hz on the converter to the desired purge rate. The rate at which a well is sampled should not exceed the rate at which it is purged. Monitor the water taking field measurements every gallon, or liter depending on flow rate, noting turbidity, odors, or any other characteristic of the water. Ideally, the rate of sample collection should be approximately the same as the actual ground-water flow rate. Because this is typically not possible, low sampling rates, approximately 0.2L to 0.3 L/min. are suggested. Low sampling rates will ensure that particulate, immobile in the subsurface under ambient conditions, are not entrained in the sample and volatile compounds are not stripped from the sample (Puls and Powell, 1992; et al., 1991; Puls and Barcelona, et al 1990). If a well is purged to dryness or is purged such that full recovery exceeds two hours, the well should be sampled as soon as a sufficient volume of ground water as entered the well to enable the collection of the ground water sample. Record purge rate in the Purge by pumping work sheet associated with this site. This work sheet will calculate total gallons purged and enter field parameter values into the field sheet, if the box at the bottom of the sheet is checked.

5. Insert D.O., pH meter, and Conductance probes in the over flow bottle to the calibrated sample bucket to monitor field parameters while purging, recording measurements every gallon or liter depending on what pump is utilized, and quantity of water purged.

6. While the Well is being purged, fill out the labels on the sample bottles.

7. When desired volume is purged (3 well volumes, or until field parameters are stable within 10% of the last previous two gallons purged) you are ready to collect the sample. The sampling objective must be clearly defined ahead of time knowing what analyses is requested. Collect samples in the preferred collection order. The preferred collection for some of the more common ground-water analytes is as follows (Barcelona et al., 1985b):

    1. Volatile organics (VOAs or VOCs) and total organic halogens (TOX)
    2. Dissolved gases and total organic carbon (TOC);
    3. Semivolatile organics (SMVs or SVOCs)
    4. Metals and cyanide
    5. Major water quality cations and anions;
    6. Radionuclides.

    For our sampling purposes we collect samples in this order depending on volume available, or other wise specified:

    1. Metals
    2. Cyanide
    3. Non-Preserved
    4. Nutrients

`

8. We use pre-preserved bottles; visually inspect them to make certain that they contain an adequate amount of preservative. Uncap one sample bottle at a time placing the cap upside down on a clean surface. Cap sample immediately upon filling before uncapping next sample bottle. Immediately place samples in cooler on ice to aid in storing at recommended temperature of 4^0 C.
General Parameter bottle should be rinsed out with the sample fluid that is to be collected. Dissolved metals sample must be filtered with a 0.45 micron filter prior to acidifying. The filter can be placed directly onto the pump discharge hose. Flush filter with ~3 filter volumes before collecting the sample. Potential dissolved metals if collected should be acidified and then filtered with a 0.45 micron. Filter PD sample 8 to 96 hours later.

9. After the pump is on surface you must hook it back up to the converter for decontamination procedures outlined in Decon Procedures.

Dedicated Bladder Pump

MONITORING WELL SAMPLING

When Sampling Cob-1A-200, and GVMW-4A-480 you will use the Well Wizard dedicated pump that is already in the well. When you arrive at the well, and are within 10 feet of the well head. Unload the bottle of nitrogen gas and secure the bottle to the truck in an upright position. Remove the protective cap and crack the valve away from your face and/or persons. This clears any foreign materials or dust from being forced into the regulator. Hook up the high pressure regulator and turn the tank valve on, noting the pressure on the gage. A full bottle will have ~2000 psi. Turn the regulator handle in (right) to increase the pressure and out (left) to reduce the pressure. Set the working pressure at **200 psi.** Hook up the black high pressure hose (pump supply) to the quick connect at the well head. Then hook up the larger black high pressure hose from the regulator to (pump pressure inlet) on the Logic Controller. To obtain the maximum work from the gas used, follow the instructions on the controller for setting discharge and refill cycles. Once set, this should be the setting for this well at this static water level. To prevent freezing, after sampling shut the tank valve off, and attach the pressure hose to the other quick connect on the well head. Turn the tank gas on allowing the Logic controller to cycle until all the water has been purged from the sample hose. When blowing the water out for freeze protection, secure the discharge hose from whipping.

Dedicated Electric Pumps

The compliance well at the External Storage Pond (ESPMW) has a 240 volt dedicated pump. Grounding on all electrical driven pumps must be certified by CC&V's electrical department once per year. It is of utmost importance that the sampler inspects all electrical leads and connection prior to use. The Onan 4000 watt generator has adequate power to run this pump. After the generator has warmed up, plug the twist lock power lead into the generators 30 amp receptacle, and switch the voltage control to 240 volts. There is a short time delay before water is pumped up, and out the discharge hose. If the well is purged dry the flow controller will shut the pump off automatically.

There are three wells in Grassy Valley that are also dedicated electric pumps that require a larger generator then CC&V has on site. Be familiar with the safety features with the generator if it is rented, and have the electrical department approve all grounding requirements prior to use.

Decontaminating Procedures for
Sample-Contacting Equipment

The recommended cleaning procedures for sampling equipment used when inorganic constituents are of interest is as follows (Barcelona et al., 1990: Keeley and Boating, 1987: USEPA, 1986)

- ✓ Wash the equipment with a nonphosphate detergent.
- ✓ Rinse the equipment with tap water.
- ✓ Rinse the equipment with dilute (0.1N) hydrochloric or nitric acid.
- ✓ Rinse with reagent grade D.I.
- ✓ Allow to air dry.

ASTM STANDARD PRACTICE D5088
DECONTAMINATION PROCEDURES FOR
NONSAMPLE-CONTACTING EQUIPMENT

Clean with Portable Power Washer or Steam cleaner or
Hand Wash with brush using Detergent Solution.
Rinse with D.I. water

Ground Water Sampling Equipment

Clean prior to use, The EZ Reel can be cleaned by inserting the pump into the 4" PVC cylinder fabricated for this purpose, and adding the cleaning agent (liquid Knox). After water is discharging, you can put the hose in the cylinder and recirculate the solution about three volumes, approx. 8 gallons. Purge the cleaning solution, then start Tap water flowing into the cylinder, balance the incoming water to the flow being pumped for a min. of 3 volumes. Next add D.I. water to the column and put the discharge hose in and recurculate the D.I. water for a minimum of three volumes. Purge the recurculated D.I. water with fresh D.I. until 3 gallons of fresh D.I. has been used. To insure that the pump and hose is decontaminated an equipment blank sample now can be collected, and the results can be compared to the pre determined D.I. water quality. When sampling multiple wells at the same site at a minimum, rinse the pump and hose with D.I. water before moving to sample the next well. When you are finished, and storing the pump it should be decontaminated and allowed to be air dried, then wrapped with inert material, (aluminum foil or plastic). We use clean plastic sample bags. Sample buckets should be avoided to collect samples in eliminating the common container and a source of cross contamination. If necessary to collect a sample in any other container virgin or decontaminated liter bottles should be used but this practice should be avoided. Rinse the non preserved bottles with the sample water that is being analyzed prior to sample collection. The M-Scopes should be cleaned before using by unrolling the probe into detergent solution, brushing the entire length as you wind up. Unwind it into a bucket or sink and rinse with tap water. Then rinse with D.I. and reel up. This is important since the Process Department uses it on occasion in a high CN- environment.

Chain-of-Custody and Records Management

A chain-of-custody ("COC") is a procedure designed to allow the operator to reconstruct how and to whom the sample is transferred. This procedure is intended to prevent misidentification of the samples, to prevent

tampering with the samples during shipping and storage, and allow for the easy tracking of possession. Each Sampler should generate their COC. EDMS data base will generate the COC, and analytical request listing the sample ID, date, time, and type of sample, and the bottles that are in the sample. After the Chain of custody is printed finish up by filling in the sample relinquished by, date, and time. A copy of the analytical request and the Chain is filed in the field office promptly after sample shipment.
Print the field sheets from the EDMS data base, and route to the office assistant for filing into the record archive.

Sample Labels

To prevent sample misidentification, the labels are affixed to the sample bottles.
Sample labels are durable enough to remain legible even when wet. Black water proof ink should be used when filling out labels, and clear packing tape should be put over the filled out label in a manner to cover the writing and to keep labels from coming of in extreme circumstances such as using uncontained ice.

Sample labels should contain at the minimum, the following information:

- ✓ Sample Identification
- ✓ Date and time of collection
- ✓ Sample ID.
- ✓ Preservative if used.
- ✓ Filtered.
- ✓ Pertinent information should be recorded exactly the same on the bottles as it is in dbase

Sample Shipment Considerations

- ✓ Parameter-Specific Holding Times
- ✓ Considering Time and Method of Travel
- ✓ Compliance with Applicable Shipping Regulations (e.g. HMTA, RCRA, D.O.T) That Regulate Sampling Labeling and Packaging
- ✓ Cost

With these considerations in mind, load the cooler with the samples along with enough ice to adequately cool the samples. With the problems of sample arriving at the lab within temperature range the five day coolers should be used. If temperature problems persist, cool the cooler down in the fridge or with ice prior to loading with samples. Fill the coolers with compete sample sets visually inspecting them, and matching the COC. Pack the contained ice around the Non Preserved bottles scattered through out the coolers load. Finish the packing off with an insulating pad on top if available or a plastic vapor barrier. Seal the cooler after making copies of the chain of custody, and analytical request form putting the paper work in a plastic bag in the top of the cooler. Now at this time with the 2" wide packing tape seal the lid aiding in holding the cold in the cooler. With strapping tape go around the cooler overlapping the ends on both ends of the cooler. The cooler now is ready for shipment.

Attachments

Chain-of-Custody
Discharge Measurement Notes
pH record sheet
Monitoring Location map (*need to generate new one*)

Conversion Charts

2" Parshall Flume
3" Parshall Flume
9" Parshall Flume
30^0 V notch weir

References

EPA Nov. 1992
RCRA Ground-Water Monitoring:
Draft Technical Guidance

ASTM 1995
Ground-Water Monitoring and
Sampling Technology:

F.A. Kilpatrick and V.R. Schineider
Techniques of Water-Resources
Investigations of the United States
geological Survey, book 3, chapter
A14, pgs 26-28

Marsh McBirney, Inc.
Flo-Mate
Model 2000 Portable Water Flowmeter
Instruction Manual

Orion Research Inc.
Laboratory Products Group
Model 830 Dissolved Oxygen Meter
Instruction Manual

Orion Research Inc.

Laboratory Products Group
Model 260 pH meter
Instruction Manual

Sample Site: Grassy Valley
Sample ID: GVMW 8A-250
Sample Date: 6-5-01

Time: 1445

Static H2O: 94.97'

pH	7.04
Temp	8.5°c
OG	NV
Cond	303 us/cm
D.O.	3.6 mg/L

gallons purged	pH	Temp	Cond	D.O.
10	10.93	8.1	367	6.8
15	9.02	8.1	286	5.7
20	8.13	8.2	286	5.6
30	7.59	8.4	288	5.4
40	7.29	8.4	291	4.5
50	7.24	8.4	293	4.3
60	7.16	8.4	295	4.1
70	7.12	8.4	297	4.0
80	7.10	8.4	298	3.9
90	7.08	8.4	300	3.8
100	7.06	8.4	301	3.8
110	7.05	8.5	302	3.5
120	7.05	8.5	303	3.5
130	7.05	8.5	303	3.5
140	7.03	8.5	303	3.6
150	7.04	8.5	303	3.6
160	7.04	8.5	303	3.6
170 Sample	7.04	8.5	303	3.6
180	7.04	8.5	303	3.6

Sampled by LRM

Sample site: Vindicator Valley
Sample ID: Vin 2B-140
Sample Date: 6/17/2004 time: 14:11

Static H_2O: 110.33 ft

pH: 7.14
temp: 6.9
OG: NV
Cond: 1082
D.O.: 4.0 mg/L

gallons purged		pH	temp	Cond	D.O.	
1	slightly T	6.5	7.8	1038	3.4	
5	"	6.88	6.4	1055	3.7	
10	clear	7.01	7.3	1062	4.6	
15	"	7.07	6.6	1064	4.3	
20	slightly T	7.12	6.4	1063	3.8	
25	"	7.13	6.4	1071	4.5	started sucki[ng]
30	"	7.14	6.9	1082	4.0	air; slowed down purge

Well Development - No Sample

Inspected by: L. Myers & T. Reed

Sample Site: Bateman Cr.
Sample ID: WCMW-6-19
Sample Date: 2-11-98 Time: 1505

Static H2O: 7.50'
Pump rate: ~1l/min

pH	6.98	6.97
Temp.	5.5°C = 42°F	5.4
Oil & Grease	NV	
Cond.	319 uS/cm	319
D.O.	4.5 mg/l	4.5

Gallons Purged	pH	Temp	Cond	D.O
1 S Turbid	7.17	6.5°C	327	5.3
2	7.13	6.2	320	4.3
3	7.07	5.8	316	4.2
4	7.04	5.7	318	4.3
5 "	7.00	5.6	319	4.6
6	6.99	5.6	318	4.7
7	6.99	5.6	319	4.5
8 "	6.98	5.5	319	4.5
9 Sampled	6.98	5.5	319	4.5
10 after Sample	6.97	5.4	319	4.5

Sampled by LRM

Sample Site: Bateman Cr.
Sample ID: WCMW-6-53
Sample Date: 2-11-98 Time: 1415

Well is frozen @ 4.0'
NO Sample

Inspected by LRM

MIDCONTINENT
TESTING LABORATORIES, INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: SGMW-6B-60
Sampled: 11/24/14 at 02:05 PM
by Bleys Andromeda-Focht
Sample Matrix: Water

Lab ID#: 20141201308
Received: 11/26/14 at 10:45 AM
by Bobbie Laurenz
Account: W1123 - Cripple Creek / Victor Gold

RON PARRATT
CRIPPLE CREEK/VICTOR GOLD
PO BOX 191
VICTOR, CO 80860

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst	Date
Physical Properties								
Electrical Conductivity	2020	µmhos/cm	1	0.237	5.00	SM 2510B	JAM	12/01/14
Hardness	1090	mg/L	1			SM 2340 B	GAM	12/02/14
pH	6.97	S.U.	1			SM 4500-H+ B	JAM	12/02/14
Total Dissolved Solids	1680	mg/L	100ml	17.6	50.0	SM 2540 C	TMN	12/01/14
Total Suspended Solids	12.0	mg/L	100ml	3.49	10.0	SM 2540 D	TMN	12/01/14
Non-Metallics								
Acidity (CaCO3)	64.0	mg/L	1	4.33	10.0	SM 2310 B	TNA	12/01/14
Alkalinity (CaCO3)	132	mg/L	1	0.421	10.0	SM 2320 B	JAM	12/02/14
Bicarbonate	161	mg/L	1	0.513	10.0	SM 2320 B	JAM	12/02/14
Carbonate	0.00	mg/L	1	0.210	5.00	SM 2320 B	JAM	12/02/14
Chloride (Cl-)	125	mg/L	10	2.54	5.00	SM 4500-Cl E	BLL	12/01/14
Cyanide, Total	< 0.010	mg/L	1	0.00037	0.010	Kelada 01	TMN	12/01/14
Cyanide, WAD	< 0.010	mg/L	1	0.00055	0.010	Kelada 01	TMN	12/02/14
Cyanide, Free	< 0.010	mg/L	1	0.007	0.020	116-D588-01	TMN	12/01/14
Fluoride	5.60	mg/L	2	0.008	0.100	SM 4500 F-C	TNA	12/01/14
Nitrogen, Ammonia (NH3)	< 0.050	mg/L	1	0.007	0.050	SM 4500-NH3 D	JAM	12/01/14
Nitrogen, Nitrate (NO3)	< 0.050	mg/L	1	0.014	0.050	SM 4500-NO3 F	BLL	12/01/14
Nitrogen, Nitrite (NO2)	< 0.050	mg/L	1	0.005	0.050	SM 4500-NO2 B	BLL	12/01/14
Sulfate (SO4)	892	mg/L	40	27.2	40.0	SM 4500-SO4 E	BLL	12/01/14
Metals - Dissolved								
Aluminum (Al)	0.014	mg/L	10	0.004	0.010	EPA 200.8	TNA	12/01/14
Arsenic (As)	< 0.005	mg/L	10	0.0006	0.005	EPA 200.8	TNA	12/01/14
Cadmium (Cd)	< 0.001	mg/L	10	0.0001	0.001	EPA 200.8	TNA	12/01/14
Chromium (Cr)	0.002	mg/L	10	0.0001	0.001	EPA 200.8 DRC	TNA	12/01/14
Copper (Cu)	< 0.005	mg/L	10	0.0009	0.005	EPA 200.8	TNA	12/01/14
Iron (Fe)	5.81	mg/L	10	0.004	0.050	EPA 200.8	TNA	12/01/14
Lead (Pb)	< 0.001	mg/L	10	0.000026	0.001	EPA 200.8	TNA	12/01/14
Manganese (Mn)	2.81	mg/L	10	0.00004	0.010	EPA 200.8	TNA	12/01/14
Nickel (Ni)	0.015	mg/L	10	0.0003	0.005	EPA 200.8	TNA	12/01/14
Selenium (Se)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	TNA	12/01/14
Silver (Ag)	< 0.001	mg/L	10	0.0002	0.001	EPA 200.8	TNA	12/01/14
Zinc (Zn)	0.341	mg/L	10	0.002	0.050	EPA 200.8	TNA	12/01/14

Report of Analysis for: **Cripple Creek / Victor Gold** Sample Site: **SGMW-6B-60**

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst	Date
Metals - Total								
Calcium (Ca)	390	mg/L	15	1.99	15.0	SM 3111 B	GRT	12/01/14
Magnesium (Mg)	28.1	mg/L	1	0.030	0.500	SM 3111 B	GRT	12/01/14
Mercury (Hg)	< 0.0002	mg/L	1	0.000035	0.0002	EPA 245.1	GRT	12/02/14
Potassium (K)	5.24	mg/L	1	0.025	0.500	SM 3111 B	GRT	12/01/14
Sodium (Na)	32.5	mg/L	2	0.352	1.00	SM 3111 B	GRT	12/01/14
Anion - Cation Balance								
Anions	25.0	meq/L	1			Calculation	JAM	12/02/14
Anion - Cation Balance	-1.04	%	1			Calculation	JAM	12/02/14
Cations	24.5	meq/L	1			Calculation	JAM	12/02/14
Field Test								
Field Conductivity	2040	µmhos/cm	1			Field Conductivity	BLL	12/01/14
Field pH	6.54	S.U.	1			Field pH	BLL	12/01/14
Field Temperature	10.5	° C	1			Field Temp.	BLL	12/01/14

Report Approved By:

Report Approved On: 12/2/2014 3:13:26 PM

MIDCONTINENT
TESTING LABORATORIES, INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Lab Numbers: 20141201308 - 20141201308

QC Sample Report

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Spike								
TSS	1126930	24.8	4.40	20.0	250ml	102.0 %	(87.36) - (111.6)	SM 2540 D
Acidity	1201308	84.0	64.0	20.0	1	100.0 %	(72.47) - (127.5)	SM 2310 B
Chloride	1201308	168	119	5.00	10	96.5 %	(88.90) - (115.7)	SM 4500-Cl E
CN, Total	1201309	0.021	0.003	0.020	1	90.0 %	(76.36) - (118.5)	Kelada 01
CN, Total	1201210	0.100	0.078	0.020	1	110.0 %	(76.36) - (118.5)	Kelada 01
CN, Total	1201110	0.094	0.075	0.020	1	95.0 %	(76.36) - (118.5)	Kelada 01
CN, WAD	1201307	0.022	0.001	0.020	1	105.0 %	(76.29) - (111.2)	Kelada 01
CN, Free	1201306	0.211	0.013	0.200	1	99.0 %	(79.73) - (119.2)	116-D588-01
Fluoride	1201205	2.98	1.94	1.00	1	104.8 %	(83.21) - (119.4)	SM 4500 F-C
N, Ammonia	1126930	0.472	0.062	0.400	1	102.5 %	(89.30) - (114.3)	SM 4500-NH3 D
N, Nitrate	1201108	7.73	3.68	0.400	10	101.3 %	(88.16) - (111.8)	SM 4500-NO3 F
N, Nitrate	1201308	0.400	0.00	0.400	1	100.0 %	(88.16) - (111.8)	SM 4500-NO3 F
N, Nitrite	1201109	0.383	- 0.012	0.400	1	92.8 %	(86.40) - (104.5)	SM 4500-NO2 B
Sulfate	1201308	1640	892	19.2	40	101.6 %	(83.25) - (109.8)	SM 4500-SO4 E
Aluminum - D	1201308	0.205	0.014	0.025	10	76.3 %	(75.56) - (116.1)	EPA 200.8
Arsenic - D	1201308	0.227	< 0.005	0.025	10	90.8 %	(86.69) - (100.6)	EPA 200.8
Cadmium - D	1201308	0.232	< 0.001	0.025	10	92.6 %	(86.40) - (107.5)	EPA 200.8
Chromium - D	1201308	0.226	0.002	0.025	10	89.6 %	(79.33) - (104.4)	EPA 200.8 DRC
Copper - D	1201308	0.221	< 0.005	0.025	10	88.5 %	(80.46) - (100.1)	EPA 200.8
Iron - D	1201308	7.05	5.81	0.125	10	99.77%	(78.90) - (108.8)	EPA 200.8
Lead - D	1201308	0.230	< 0.001	0.025	10	92.0 %	(89.23) - (101.1)	EPA 200.8
Manganese - D	1201308	3.01	2.81	0.025	10	82.3 %	(75.14) - (106.4)	EPA 200.8
Nickel - D	1201308	0.232	0.015	0.025	10	86.9 %	(79.20) - (102.9)	EPA 200.8
Selenium - D	1201308	1.17	< 0.005	0.125	10	93.7 %	(90.29) - (102.3)	EPA 200.8
Silver - D	1201308	0.234	< 0.001	0.025	10	93.5 %	(73.04) - (119.3)	EPA 200.8
Zinc - D	1201308	0.571	0.341	0.025	10	92.0 %	(72.16) - (120.6)	EPA 200.8
Calcium - T	1201308	495	390	10.0	10	104.6 %	(81.68) - (118.5)	SM 3111 B
Magnesium - T	1201308	37.5	28.1	10.0	1	93.9 %	(83.15) - (112.4)	SM 3111 B
Mercury - T	1201309	0.0019	< 0.0002	0.002	1	96.5 %	(83.99) - (115.5)	EPA 245.1
Potassium - T	1201308	8.35	5.24	3.00	1	103.7 %	(85.28) - (114.2)	SM 3111 B
Sodium - T	1201308	87.1	32.5	5.00	10	109.3 %	(80.44) - (125.2)	SM 3111 B
Arsenic - TR	1201312	0.252	0.029	0.025	10	89.0 %	(84.78) - (111.9)	EPA 200.8
Arsenic - TR	1201309	0.246	0.028	0.025	10	87.3 %	(84.78) - (111.9)	EPA 200.8
Copper - TR	1201312	0.224	0.005	0.025	10	87.5 %	(76.58) - (108.5)	EPA 200.8
Copper - TR	1201309	0.225	< 0.005	0.025	10	90.0 %	(76.58) - (108.5)	EPA 200.8
Lead - TR	1201309	0.223	< 0.001	0.025	10	89.4 %	(88.33) - (103.1)	EPA 200.8
Lead - TR	1201312	0.223	< 0.001	0.025	10	89.1 %	(88.33) - (103.1)	EPA 200.8
Selenium - TR	1201312	1.19	< 0.005	0.125	10	95.2 %	(84.74) - (114.1)	EPA 200.8

Lab Numbers: **20141201308 - 20141201308**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Spike								
Selenium - TR	1201309	1.18	< 0.005	0.125	10	**94.0 %**	(84.74) - (114.1)	EPA 200.8
Silver - TR	1201312	0.232	< 0.001	0.025	10	**92.8 %**	(82.54) - (110.0)	EPA 200.8
Silver - TR	1201309	0.230	< 0.001	0.025	10	**92.1 %**	(82.54) - (110.0)	EPA 200.8
Matrix Spike Duplicate								
Acidity	1201308	80.0	84.0		1	**-4.88%**	(-21.58) - (13.80)	SM 2310 B
Chloride	1201308	171	168		10	**1.68%**	(-6.366) - (5.004)	SM 4500-Cl E
CN, Total	1201309	0.021	0.021		1	**0.00%**	(-11.89) - (13.20)	Kelada 01
CN, Total	1201110	0.095	0.094		1	**1.06%**	(-11.89) - (13.20)	Kelada 01
CN, Total	1201210	0.095	0.100		1	**-5.13%**	(-11.89) - (13.20)	Kelada 01
CN, WAD	1201307	0.022	0.022		1	**0.00%**	(-9.829) - (10.27)	Kelada 01
CN, Free	1201306	0.211	0.211		1	**0.00%**	(-2.629) - (3.360)	116-D588-01
Fluoride	1201205	3.06	2.98		1	**2.48%**	(-9.676) - (7.270)	SM 4500 F-C
N, Ammonia	1126930	0.464	0.472		1	**-1.71%**	(-8.900) - (11.18)	SM 4500-NH3 D
N, Nitrate	1201108	7.96	7.73		10	**2.89%**	(-5.831) - (7.358)	SM 4500-NO3 F
N, Nitrate	1201308	0.413	0.400		1	**3.20%**	(-5.831) - (7.358)	SM 4500-NO3 F
N, Nitrite	1201109	0.382	0.383		1	**-0.261%**	(-6.462) - (7.909)	SM 4500-NO2 B
Sulfate	1201308	1650	1640		40	**0.847%**	(-6.189) - (3.664)	SM 4500-SO4 E
Aluminum - D	1201308	0.204	0.205		10	**-0.284%**	(-8.467) - (6.147)	EPA 200.8
Arsenic - D	1201308	0.225	0.227		10	**-0.929%**	(-6.111) - (6.291)	EPA 200.8
Cadmium - D	1201308	0.229	0.232		10	**-1.13%**	(-5.867) - (5.001)	EPA 200.8
Chromium - D	1201308	0.222	0.226		10	**-1.87%**	(-3.596) - (4.400)	EPA 200.8 DRC
Copper - D	1201308	0.217	0.221		10	**-2.07%**	(-5.363) - (4.317)	EPA 200.8
Iron - D	1201308	6.95	7.05		10	**-1.41%**	(-6.939) - (6.287)	EPA 200.8
Lead - D	1201308	0.231	0.230		10	**0.520%**	(-4.501) - (3.730)	EPA 200.8
Manganese - D	1201308	3.03	3.01		10	**0.682%**	(-5.134) - (4.425)	EPA 200.8
Nickel - D	1201308	0.227	0.232		10	**-2.14%**	(-5.694) - (4.530)	EPA 200.8
Selenium - D	1201308	1.19	1.17		10	**1.34%**	(-6.706) - (6.884)	EPA 200.8
Silver - D	1201308	0.243	0.234		10	**4.07%**	(-4.372) - (5.549)	EPA 200.8
Zinc - D	1201308	0.573	0.571		10	**0.446%**	(-7.339) - (6.251)	EPA 200.8
Calcium - T	1201308	494	495		10	**-0.123%**	(-8.399) - (8.434)	SM 3111 B
Magnesium - T	1201308	36.9	37.5		1	**-1.48%**	(-6.917) - (5.270)	SM 3111 B
Mercury - T	1201309	0.0019	0.0019		1	**0.00%**	(-12.44) - (8.366)	EPA 245.1
Potassium - T	1201308	8.23	8.35		1	**-1.45%**	(-7.607) - (6.536)	SM 3111 B
Sodium - T	1201308	86.5	87.1		10	**-0.714%**	(-8.182) - (8.553)	SM 3111 B
Arsenic - TR	1201309	0.251	0.246		10	**2.14%**	(-10.63) - (9.353)	EPA 200.8
Arsenic - TR	1201312	0.244	0.252		10	**-3.03%**	(-10.63) - (9.353)	EPA 200.8
Copper - TR	1201312	0.217	0.224		10	**-3.24%**	(-7.019) - (7.160)	EPA 200.8
Copper - TR	1201309	0.229	0.225		10	**1.79%**	(-7.019) - (7.160)	EPA 200.8
Lead - TR	1201312	0.218	0.223		10	**-1.96%**	(-5.008) - (6.261)	EPA 200.8
Lead - TR	1201309	0.218	0.223		10	**-2.59%**	(-5.008) - (6.261)	EPA 200.8
Selenium - TR	1201312	1.17	1.19		10	**-1.60%**	(-10.26) - (10.18)	EPA 200.8
Selenium - TR	1201309	1.21	1.18		10	**3.06%**	(-10.26) - (10.18)	EPA 200.8
Silver - TR	1201309	0.229	0.230		10	**-0.619%**	(-5.996) - (6.076)	EPA 200.8
Silver - TR	1201312	0.226	0.232		10	**-2.81%**	(-5.996) - (6.076)	EPA 200.8

Lab Numbers: **20141201308 - 20141201308**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Duplicate									
Conductivity	1201113	2220	2220		1	0.00%	(-0.8721) - (0.8048)	SM 2510B	
Conductivity	1201108	758	758		1	0.00%	(-0.8721) - (0.8048)	SM 2510B	
Conductivity	1201102	699	700		1	-0.143%	(-0.8721) - (0.8048)	SM 2510B	
pH	1202102	7.16	7.03		1	1.83%	(-1.623) - (1.491)	SM 4500-H+ B	X
- Recovery was within 10% of expected value									
TDS	1201309	3240	3210		100ml	0.992%	(-5.172) - (9.085)	SM 2540 C	
TSS	1201212	< 10.0	< 10.0		100ml	0.00%	(-27.36) - (26.71)	SM 2540 D	
TSS	1126934	9.60	7.20		250ml	28.6 %	(-27.36) - (26.71)	SM 2540 D	X
- Close to detection limit actual difference of 2.4 mg/L									
Alkalinity	1202102	479	489		1	-2.07%	(-4.370) - (3.607)	SM 2320 B	
Bicarbonate	1202102	584	596		1	-2.03%	(-4.821) - (3.659)	SM 2320 B	
Carbonate	1202102	0.00	0.00		1	0.00%	(-15.56) - (16.53)	SM 2320 B	
Chloride	1201308	119	125		10	-4.53%	(-7.420) - (5.140)	SM 4500-Cl E	
CN, Total	1201105	3.81	3.56		200	6.78%	(-15.83) - (17.51)	Kelada 01	
N, Ammonia	1201206	< 0.050	< 0.050		1	0.00%	(-14.15) - (16.12)	SM 4500-NH3 D	
N, Nitrate	1201108	3.68	3.88		10	-5.34%	(-3.911) - (1.634)	SM 4500-NO3 F	X
- Recovery was within 10% of expected value									
N, Nitrate	1201308	< 0.050	< 0.050		1	0.00%	(-3.911) - (1.634)	SM 4500-NO3 F	
N, Nitrite	1201109	- 0.012	- 0.012		1	0.00%	(-5.911) - (4.225)	SM 4500-NO2 B	
Sulfate	1201308	892	909		40	-1.85%	(-6.058) - (5.271)	SM 4500-SO4 E	
Initial Calibration Verification									
Conductivity		538	549		1	-2.00%	(-11.96) - (7.570)	SM 2510B	
Acidity		6.95	7.00		1	-0.714%	(-5.707) - (7.692)	SM 2310 B	
Chloride		25.2	25.0		1	0.640%	(-9.143) - (12.50)	SM 4500-Cl E	
CN, Total		0.112	0.100		1	12.0 %	(-13.49) - (13.69)	Kelada 01	
CN, WAD		0.104	0.100		1	4.00%	(-12.55) - (11.05)	Kelada 01	
CN, Free		0.978	1.00		1	-2.20%	(-6.081) - (6.351)	116-D588-01	
Fluoride		0.402	0.400		1	0.500%	(-15.04) - (8.294)	SM 4500 F-C	
N, Ammonia		0.420	0.400		1	5.00%	(-7.338) - (12.39)	SM 4500-NH3 D	
N, Nitrate		1.02	1.00		1	1.50%	(-3.801) - (5.821)	SM 4500-NO3 F	
N, Nitrite		1.03	1.00		1	2.60%	(0.2702) - (5.740)	SM 4500-NO2 B	
Sulfate		52.6	50.0		1	5.24%	(1.617) - (6.875)	SM 4500-SO4 E	
Aluminum - D		0.046	0.050		1	-7.66%	(-10.55) - (11.06)	EPA 200.8	
Arsenic - D		0.045	0.050		1	-9.76%	(-11.42) - (9.027)	EPA 200.8	
Cadmium - D		0.046	0.050		1	-8.68%	(-9.596) - (6.170)	EPA 200.8	
Chromium - D		0.046	0.050		1	-7.40%	(-8.972) - (7.156)	EPA 200.8 DRC	
Copper - D		0.046	0.050		1	-8.96%	(-9.590) - (6.648)	EPA 200.8	
Iron - D		0.225	0.250		1	-10.1 %	(-10.28) - (7.418)	EPA 200.8	
Lead - D		0.046	0.050		1	-7.74%	(-7.986) - (4.816)	EPA 200.8	
Manganese - D		0.047	0.050		1	-5.80%	(-10.49) - (8.436)	EPA 200.8	
Nickel - D		0.045	0.050		1	-9.56%	(-11.11) - (6.928)	EPA 200.8	
Selenium - D		0.232	0.250		1	-7.04%	(-10.39) - (6.984)	EPA 200.8	
Silver - D		0.047	0.050		1	-6.98%	(-11.28) - (9.612)	EPA 200.8	
Zinc - D		0.045	0.050		1	-9.52%	(-12.36) - (8.966)	EPA 200.8	
Mercury - T		0.0030	0.0030		1	0.333%	(-14.00) - (10.80)	EPA 245.1	

Lab Numbers: **20141201308 - 20141201308**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Continuing Calibration Verification								
Conductivity		540	549		1	-1.64%	(-13.14) - (6.631)	SM 2510B
Conductivity		543	549		1	-1.09%	(-13.14) - (6.631)	SM 2510B
pH		4.08	4.00		1	2.00%	(-2.083) - (3.026)	SM 4500-H+ B
pH		9.97	10.0		1	-0.300%	(-2.083) - (3.026)	SM 4500-H+ B
pH		7.01	7.00		1	0.143%	(-2.083) - (3.026)	SM 4500-H+ B
TDS		1010	1000		100ml	0.700%	(-7.267) - (9.167)	SM 2540 C
TSS		49.0	50.0		100ml	-2.00%	(-15.16) - (13.56)	SM 2540 D
Acidity		20.0	20.0		1	0.00%	(-8.610) - (10.33)	SM 2310 B
Acidity		20.0	20.0		1	0.00%	(-8.610) - (10.33)	SM 2310 B
Alkalinity		211	212		1	-0.283%	(-7.426) - (3.120)	SM 2320 B
Alkalinity		204	212		1	-3.58%	(-7.426) - (3.120)	SM 2320 B
Chloride		26.0	25.0		1	4.16%	(-11.87) - (16.00)	SM 4500-Cl E
Chloride		24.4	25.0		1	-2.44%	(-11.87) - (16.00)	SM 4500-Cl E
CN, Total		0.106	0.100		1	6.00%	(-13.62) - (11.72)	Kelada 01
CN, Total		0.107	0.100		1	7.00%	(-13.62) - (11.72)	Kelada 01
CN, Total		0.107	0.100		1	7.00%	(-13.62) - (11.72)	Kelada 01
CN, Total		0.106	0.100		1	6.00%	(-13.62) - (11.72)	Kelada 01
CN, Total		0.106	0.100		1	6.00%	(-13.62) - (11.72)	Kelada 01
CN, WAD		0.104	0.100		1	4.00%	(-16.37) - (12.37)	Kelada 01
CN, Free		0.978	1.00		1	-2.20%	(-5.074) - (5.394)	116-D588-01
Fluoride		0.992	1.00		1	-0.800%	(-7.454) - (7.884)	SM 4500 F-C
Fluoride		2.95	3.00		1	-1.57%	(-7.454) - (7.884)	SM 4500 F-C
N, Ammonia		0.484	0.500		1	-3.20%	(-12.16) - (13.64)	SM 4500-NH3 D
N, Ammonia		1.02	1.00		1	2.00%	(-12.16) - (13.64)	SM 4500-NH3 D
N, Nitrate		1.01	1.00		1	0.900%	(-5.533) - (11.02)	SM 4500-NO3 F
N, Nitrate		1.00	1.00		1	0.00%	(-5.533) - (11.02)	SM 4500-NO3 F
N, Nitrite		1.01	1.00		1	0.800%	(-3.165) - (4.515)	SM 4500-NO2 B
Sulfate		52.6	50.0		1	5.24%	(1.010) - (10.30)	SM 4500-SO4 E
Sulfate		53.7	50.0		1	7.36%	(1.010) - (10.30)	SM 4500-SO4 E
Aluminum - D		0.046	0.050		1	-8.34%	(-17.35) - (9.136)	EPA 200.8
Aluminum - D		0.045	0.050		1	-9.14%	(-17.35) - (9.136)	EPA 200.8
Arsenic - D		0.047	0.050		1	-6.40%	(-13.01) - (0.8140)	EPA 200.8
Arsenic - D		0.046	0.050		1	-8.22%	(-13.01) - (0.8140)	EPA 200.8
Arsenic - D		0.048	0.050		1	-4.50%	(-13.01) - (0.8140)	EPA 200.8
Arsenic - D		0.047	0.050		1	-6.64%	(-13.01) - (0.8140)	EPA 200.8
Cadmium - D		0.045	0.050		1	-9.24%	(-12.98) - (9.409)	EPA 200.8
Cadmium - D		0.046	0.050		1	-7.42%	(-12.98) - (9.409)	EPA 200.8
Calcium - D		26.2	25.0		1	4.60%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		26.0	25.0		1	4.12%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		26.7	25.0		1	6.68%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		26.7	25.0		1	6.72%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		27.0	25.0		1	7.88%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		26.5	25.0		1	5.84%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		26.1	25.0		1	4.36%	(-3.095) - (9.947)	SM 3111 B
Calcium - D		25.3	25.0		1	1.32%	(-3.095) - (9.947)	SM 3111 B
Chromium - D		0.046	0.050		1	-8.54%	(-11.71) - (3.623)	EPA 200.8 DRC

Lab Numbers: **20141201308 - 20141201308**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Continuing Calibration Verification								
Chromium - D		0.046	0.050		1	-7.70%	(-11.71) - (3.623)	EPA 200.8 DRC
Copper - D		0.047	0.050		1	-6.96%	(-11.85) - (-0.9006)	EPA 200.8
Copper - D		0.047	0.050		1	-7.08%	(-11.85) - (-0.9006)	EPA 200.8
Copper - D		0.046	0.050		1	-8.70%	(-11.85) - (-0.9006)	EPA 200.8
Copper - D		0.047	0.050		1	-5.66%	(-11.85) - (-0.9006)	EPA 200.8
Iron - D		0.227	0.250		1	-9.35%	(-15.17) - (8.269)	EPA 200.8
Iron - D		0.227	0.250		1	-9.14%	(-15.17) - (8.269)	EPA 200.8
Lead - D		0.047	0.050		1	-6.98%	(-8.701) - (0.4654)	EPA 200.8
Lead - D		0.047	0.050		1	-6.34%	(-8.701) - (0.4654)	EPA 200.8
Lead - D		0.047	0.050		1	-5.62%	(-8.701) - (0.4654)	EPA 200.8
Lead - D		0.047	0.050		1	-6.60%	(-8.701) - (0.4654)	EPA 200.8
Magnesium - D		24.9	25.0		1	-0.360%	(-8.561) - (6.273)	SM 3111 B
Magnesium - D		24.8	25.0		1	-0.800%	(-8.561) - (6.273)	SM 3111 B
Magnesium - D		24.6	25.0		1	-1.44%	(-8.561) - (6.273)	SM 3111 B
Magnesium - D		25.0	25.0		1	-0.040%	(-8.561) - (6.273)	SM 3111 B
Magnesium - D		25.1	25.0		1	0.560%	(-8.561) - (6.273)	SM 3111 B
Manganese - D		0.047	0.050		1	-7.10%	(-12.66) - (-0.3185)	EPA 200.8
Manganese - D		0.047	0.050		1	-6.74%	(-12.66) - (-0.3185)	EPA 200.8
Nickel - D		0.046	0.050		1	-7.66%	(-12.66) - (-0.0763)	EPA 200.8
Nickel - D		0.046	0.050		1	-8.62%	(-12.66) - (-0.0763)	EPA 200.8
Potassium - D		5.19	5.00		1	3.80%	(-6.382) - (9.102)	SM 3111 B
Potassium - D		4.95	5.00		1	-1.00%	(-6.382) - (9.102)	SM 3111 B
Potassium - D		5.03	5.00		1	0.600%	(-6.382) - (9.102)	SM 3111 B
Potassium - D		5.16	5.00		1	3.20%	(-6.382) - (9.102)	SM 3111 B
Potassium - D		5.10	5.00		1	2.00%	(-6.382) - (9.102)	SM 3111 B
Selenium - D		0.243	0.250		1	-2.97%	(-11.61) - (3.015)	EPA 200.8
Selenium - D		0.235	0.250		1	-6.17%	(-11.61) - (3.015)	EPA 200.8
Selenium - D		0.238	0.250		1	-4.73%	(-11.61) - (3.015)	EPA 200.8
Selenium - D		0.240	0.250		1	-3.86%	(-11.61) - (3.015)	EPA 200.8
Silver - D		0.046	0.050		1	-7.68%	(-13.68) - (10.81)	EPA 200.8
Silver - D		0.050	0.050		1	0.660%	(-13.68) - (10.81)	EPA 200.8
Silver - D		0.051	0.050		1	1.52%	(-13.68) - (10.81)	EPA 200.8
Silver - D		0.047	0.050		1	-5.38%	(-13.68) - (10.81)	EPA 200.8
Sodium - D		15.6	15.0		1	3.87%	(-3.401) - (10.11)	SM 3111 B
Sodium - D		15.7	15.0		1	4.60%	(-3.401) - (10.11)	SM 3111 B
Sodium - D		15.6	15.0		1	4.00%	(-3.401) - (10.11)	SM 3111 B
Sodium - D		15.7	15.0		1	4.73%	(-3.401) - (10.11)	SM 3111 B
Sodium - D		15.7	15.0		1	4.53%	(-3.401) - (10.11)	SM 3111 B
Zinc - D		0.046	0.050		1	-8.72%	(-10.72) - (-1.027)	EPA 200.8
Zinc - D		0.046	0.050		1	-7.66%	(-10.72) - (-1.027)	EPA 200.8
Mercury - T		0.0050	0.0050		1	-0.400%	(-18.13) - (9.365)	EPA 245.1
Mercury - T		0.0011	0.0010		1	6.00%	(-18.13) - (9.365)	EPA 245.1
Mercury - T		0.0019	0.0020		1	-6.00%	(-18.13) - (9.365)	EPA 245.1
Initial Calibration Blank								
Conductivity		0.500	0.00		1	0.5	(0.1067) - (1.123)	SM 2510B

Lab Numbers: **20141201308 - 20141201308**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Initial Calibration Blank								
Acidity		2.00	0.00		1	2	(2.000) - (2.000)	SM 2310 B
Alkalinity		4.20	0.00		1	4.2	(-1.164) - (6.018)	SM 2320 B
Chloride		0.420	0.00		1	0.42	(-0.2096) - (1.019)	SM 4500-Cl E
Fluoride		0.006	0.00		1	0.006	(-0.0008) - (0.0129)	SM 4500 F-C
N, Ammonia		0.018	0.00		1	0.0175	(0.0137) - (0.0217)	SM 4500-NH3 D
N, Nitrate		- 0.014	0.00		1	0.014	(-0.0163) - (0.0289)	SM 4500-NO3 F
N, Nitrite		- 0.014	0.00		1	0.014	(-0.0096) - (0.0180)	SM 4500-NO2 B
Sulfate		1.61	0.00		1	1.61	(1.068) - (2.527)	SM 4500-SO4 E
Mercury - T		0.0000	0.000		1	0.00004	(-0.0001) - (0.0002)	EPA 245.1
Continuing Calibration Blank								
Conductivity		0.500	0.00		1	0.5	(0.0438) - (1.113)	SM 2510B
Conductivity		0.900	0.00		1	0.9	(0.0438) - (1.113)	SM 2510B
TDS		-11.0	0.00		100ml	-11	(-26.95) - (31.65)	SM 2540 C
TSS		-2.00	0.00		100ml	-2	(-5.046) - (0.9461)	SM 2540 D
Acidity		2.00	0.00		1	2	(0.3532) - (4.047)	SM 2310 B
Alkalinity		3.90	0.00		1	3.9	(0.1141) - (3.910)	SM 2320 B
Chloride		0.440	0.00		1	0.44	(0.0167) - (0.7213)	SM 4500-Cl E
Chloride		0.280	0.00		1	0.28	(0.0167) - (0.7213)	SM 4500-Cl E
CN, Total		0.00	0.00		1	0	(-0.0013) - (0.0035)	Kelada 01
CN, Total		-0.001	0.00		1	-0.001	(-0.0013) - (0.0035)	Kelada 01
CN, Total		-0.001	0.00		1	-0.001	(-0.0013) - (0.0035)	Kelada 01
CN, Total		-0.001	0.00		1	-0.001	(-0.0013) - (0.0035)	Kelada 01
CN, Total		-0.001	0.00		1	-0.001	(-0.0013) - (0.0035)	Kelada 01
CN, WAD		0.00	0.00		1	0	(-0.0031) - (0.0038)	Kelada 01
CN, Free		0.007	0.00		1	0.007	(-0.0240) - (0.0232)	116-D588-01
N, Ammonia		0.019	0.00		1	0.0193	(0.0145) - (0.0221)	SM 4500-NH3 D
N, Nitrate		- 0.011	0.00		1	0.011	(-0.0233) - (0.0439)	SM 4500-NO3 F
N, Nitrate		0.009	0.00		1	0.009	(-0.0233) - (0.0439)	SM 4500-NO3 F
N, Nitrite		- 0.014	0.00		1	0.014	(-0.0087) - (0.0146)	SM 4500-NO2 B
Sulfate		1.90	0.00		1	1.9	(0.8969) - (2.737)	SM 4500-SO4 E
Sulfate		1.75	0.00		1	1.75	(0.8969) - (2.737)	SM 4500-SO4 E
Aluminum - D		0.000	0.00		1	0.00027	(-0.0001) - (0.0004)	EPA 200.8
Arsenic - D		0.000	0.00		1	0.0002	(0.0000) - (0.0004)	EPA 200.8
Cadmium - D		0.000	0.00		1	0.00022	(0.0000) - (0.0004)	EPA 200.8
Calcium - D		0.010	0.00		1	0.01	(-0.0301) - (0.0791)	SM 3111 B
Calcium - D		0.010	0.00		1	0.01	(-0.0301) - (0.0791)	SM 3111 B
Calcium - D		0.010	0.00		1	0.01	(-0.0301) - (0.0791)	SM 3111 B
Calcium - D		0.010	0.00		1	0.01	(-0.0301) - (0.0791)	SM 3111 B
Calcium - D		0.030	0.00		1	0.03	(-0.0301) - (0.0791)	SM 3111 B
Chromium - D		0.000	0.00		1	0.00001	(0.0000) - (0.0000)	EPA 200.8 DRC
Copper - D		0.000	0.00		1	0.00021	(0.0000) - (0.0004)	EPA 200.8
Iron - D		0.000	0.00		1	-0.00028	(-0.0005) - (0.0007)	EPA 200.8
Lead - D		0.000	0.00		1	0.00019	(-0.0001) - (0.0004)	EPA 200.8
Magnesium - D		-0.010	0.00		1	-0.01	(-0.0278) - (0.0248)	SM 3111 B
Magnesium - D		-0.010	0.00		1	-0.01	(-0.0278) - (0.0248)	SM 3111 B

Lab Numbers: **20141201308 - 20141201308**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Continuing Calibration Blank									
Magnesium - D		-0.010	0.00		1	-0.01	(-0.0278) - (0.0248)	SM 3111 B	
Magnesium - D		0.030	0.00		1	0.03	(-0.0278) - (0.0248)	SM 3111 B	X
- Blank value is less than half of the reporting limit									
Manganese - D		0.000	0.00		1	0.0002	(-0.0001) - (0.0004)	EPA 200.8	
Nickel - D		0.000	0.00		1	0.00021	(0.0000) - (0.0004)	EPA 200.8	
Potassium - D		0.010	0.00		1	0.01	(-0.0415) - (0.0165)	SM 3111 B	
Potassium - D		0.00	0.00		1	0	(-0.0415) - (0.0165)	SM 3111 B	
Potassium - D		0.00	0.00		1	0	(-0.0415) - (0.0165)	SM 3111 B	
Potassium - D		0.00	0.00		1	0	(-0.0415) - (0.0165)	SM 3111 B	
Selenium - D		0.001	0.00		1	0.00078	(-0.0004) - (0.0017)	EPA 200.8	
Silver - D		0.000	0.00		1	0.0001	(-0.0001) - (0.0003)	EPA 200.8	
Sodium - D		0.00	0.00		1	0	(-0.0435) - (0.0455)	SM 3111 B	
Sodium - D		0.00	0.00		1	0	(-0.0435) - (0.0455)	SM 3111 B	
Sodium - D		0.00	0.00		1	0	(-0.0435) - (0.0455)	SM 3111 B	
Sodium - D		0.00	0.00		1	0	(-0.0435) - (0.0455)	SM 3111 B	
Zinc - D		0.000	0.00		1	0.00023	(-0.0005) - (0.0006)	EPA 200.8	

Approved By:

M

MIDCONTINENT TESTING LABORATORIES

SAMPLE RECEIPT CHECKLIST

Company Name CCVG

Date/Time Received 11-26-14 / 1045 (Date / Time)

Project Cresson

Received by

Lab Number(s) 302-308 12-1-14

Carrier Name USPS

Yes	No	UNPACKING	Initials
✓	☐	1. Shipping container in good condition?	
✓	☐	2. Custody seals present on shipping container? Condition: (Intact) Broken	
✓	☐	3. (Ice) / Blue Ice (circle one) present in shipping container? Container(s) Temp. 1. 2.1 2. ____ 3. ____ 4. ____	
☐	✓	4. Bottles broken and/or leaking? (Photograph broken bottles.)	
☐	☐	5. Custody seals on sample bottles? NA Condition: Intact Broken	

Yes No LABELING Initials

Yes	No	LABELING	Initials
☑	☐	6. Chain of custody Present?	________
☑	☐	7. Chain of custody includes signatures, dates, and times when relinquished and received?	________
☑	☐	8. Chain of custody agrees with bottle count?	________
☑	☐	9. Chain of custody agrees with labels?	________
☑	☐	10. Samples received within holding times?	________
☑	☐	11. Samples in proper container?	________
☑	☐	12. Sufficient sample volume for indicated tests?	________

PRESERVATIVE

Yes	No		Initials	Yes	No		Initials
☑	☐	13. Metals bottle(s) pH < 2?	________	☐	☐	17. TOC bottle(s) pH < 2?	________
☑	☐	14. Nutrient bottle(s) pH < 2?	________	☐	☐	18. Oil & Grease bottle(s) pH < 2?	________
☑	☐	15. Cyanide bottle(s) pH > 12?	________	☐	☐	19. Volatiles pH < 2?	________
☑	☐	16. Sulfide bottle(s) pH > 9?	________				

COMMENTS: ____

MIDCONTINENT
TESTING LABORATORIES, INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: VIN 2B-140
Sampled: 05/06/09 at 12:45 PM
by Lawrence Myers
Sample Matrix: Water

Lab ID#: 20090511104
Received: 05/07/09 at 01:00 PM
by Bobbie Laurenz
Account: W1123 - Cripple Creek / Victor Gold

RON PARRATT
CRIPPLE CREEK/VICTOR GOLD
PO BOX 191
VICTOR, CO 80860

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst	Date
Physical Properties								
Electrical Conductivity	1420	µmhos/cm	1	0.299	5.00	EPA 120.1	JAM	05/11/09
Hardness	730	mg/L	1			SM 2340 B	GAM	05/12/09
pH	7.44	S.U.	1			SM 4500-H+ B	JAM	05/11/09
Total Dissolved Solids	1150	mg/L	100ml	11.0	50.0	SM 2540 C	TMN	05/10/09
Total Suspended Solids	< 10.0	mg/L	100ml	4.00	10.0	SM 2540 D	TMN	05/10/09
Non-Metallics								
Acidity (CaCO3)	10.0	mg/L	1	4.75	10.0	SM 2310 B	PAT	05/11/09
Alkalinity (CaCO3)	64.8	mg/L	1	0.510	10.0	SM 2320 B	JAM	05/11/09
Bicarbonate	79.1	mg/L	1	0.622	10.0	SM 2320 B	JAM	05/11/09
Carbonate	0.00	mg/L	1	0.255	5.00	SM 2320 B	JAM	05/11/09
Chloride (Cl-)	8.75	mg/L	1	0.453	0.500	SM 4500-Cl B	AJS	05/11/09
Cyanide, Total	< 0.010	mg/L	1	0.00081	0.010	Kelada 01	TMN	05/12/09
Cyanide, WAD	< 0.010	mg/L	1	0.00083	0.010	Kelada 01	TMN	05/12/09
Cyanide, Free	< 0.010	mg/L	1	0.010	0.020	116-D588-01	TMN	05/12/09
Fluoride	0.198	mg/L	1	0.00066	0.050	SM 4500 F-C	AJS	05/09/09
Nitrogen, Ammonia (NH3)	< 0.050	mg/L	1	0.005	0.050	SM 4500-NH3 D	JAM	05/11/09
Nitrogen, Nitrate (NO3)	< 0.050	mg/L	1	0.012	0.050	SM 4500-NO3 F	BLL	05/11/09
Nitrogen, Nitrite (NO2)	< 0.050	mg/L	1	0.004	0.050	SM 4500-NO2 B	BLL	05/11/09
Sulfate (SO4)	716	mg/L	4	20.9	40.0	EPA 375.2	BLL	05/11/09
Metals - Dissolved								
Aluminum (Al)	0.022	mg/L	10	0.004	0.010	EPA 200.8	SAC	05/11/09
Arsenic (As)	< 0.005	mg/L	10	0.0003	0.005	EPA 200.8	SAC	05/11/09
Cadmium (Cd)	< 0.001	mg/L	10	0.0002	0.001	EPA 200.8	SAC	05/11/09
Chromium (Cr)	< 0.001	mg/L	10	0.0001	0.001	EPA 200.8 DRC	SAC	05/11/09
Copper (Cu)	< 0.005	mg/L	10	0.00015	0.005	EPA 200.8	SAC	05/11/09
Iron (Fe)	0.227	mg/L	10	0.010	0.050	EPA 200.8	SAC	05/11/09
Lead (Pb)	< 0.001	mg/L	10	0.0001	0.001	EPA 200.8	SAC	05/11/09
Manganese (Mn)	3.38	mg/L	10	0.00012	0.010	EPA 200.8	SAC	05/11/09
Nickel (Ni)	0.008	mg/L	10	0.0001	0.005	EPA 200.8	SAC	05/11/09
Selenium (Se)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC	05/11/09
Silver (Ag)	< 0.001	mg/L	10	0.0001	0.001	EPA 200.8	SAC	05/11/09
Zinc (Zn)	< 0.050	mg/L	10	0.008	0.050	EPA 200.8	SAC	05/11/09

Report of Analysis for: **Cripple Creek / Victor Gold** Sample Site: **VIN 2B-140**

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst	Date
Metals - Total								
Calcium (Ca)	200	mg/L	5	0.312	5.00	SM 3111 B	NMA	05/11/09
Magnesium (Mg)	56.1	mg/L	5	0.487	2.50	SM 3111 B	NMA	05/11/09
Mercury (Hg)	< 0.0002	mg/L	1	0.000027	0.0002	EPA 245.1	NMA	05/11/09
Potassium (K)	2.21	mg/L	5	0.524	2.50	SM 3111 B	NMA	05/11/09
Sodium (Na)	33.1	mg/L	5	0.810	2.50	SM 3111 B	NMA	05/11/09
Anion - Cation Balance								
Anions	16.4	meq/L	1			Calculation	GAM	05/12/09
Anion - Cation Balance	-0.214	%	1			Calculation	GAM	05/12/09
Cations	16.4	meq/L	1			Calculation	GAM	05/12/09
Field Test								
Field Conductivity	1390	µmhos/cm	1			Field Conductivity	BLL	05/08/09
Field pH	7.15	S.U.	1			Field pH	BLL	05/08/09
Field Temperature	9.60	° C	1			Field Temp.	BLL	05/08/09

Report Approved By:

Report Approved On: 5/12/2009 3:04:35 PM

MIDCONTINENT
TESTING LABORATORIES, INC.

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Lab Numbers: 20090511104 - 20090511104

QC Sample Report

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Spike									
TSS	0511206	48.0	-2.00	50.0	100ml	100.0 %	(78.68) - (125.4)	SM 2540 D	
Acidity		28.0	8.00	20.0	1	100.0 %	(67.72) - (132.3)	SM 2310 B	
Alkalinity	0511103	217	115	106	1	96.2 %	(93.05) - (98.47)	SM 2320 B	
Chloride	0511501	1730	725	10.0	100	100.0 %	(97.08) - (106.6)	SM 4500-Cl B	
CN, Total	0511307	0.020	0.004	0.020	1	80.0 %	(65.70) - (135.2)	Kelada 01	
CN, WAD	0508308	0.036	0.017	0.020	1	95.0 %	(62.44) - (133.4)	Kelada 01	
CN, WAD	0511214	1.19	0.794	0.020	20	99.0 %	(69.53) - (128.8)	Kelada 01	
Fluoride	0511210	4.30	3.18	1.00	1	112.0 %	(81.90) - (115.0)	SM 4500 F-C	
- matrix interference due to suspended solids									
N, Ammonia	0511207	0.440	0.067	0.400	1	93.3 %	(93.84) - (119.1)	SM 4500-NH3 D	X
- This is an acceptable recovery.									
N, Ammonia	0511501	0.473	0.035	0.400	1	109.5 %	(93.84) - (119.1)	SM 4500-NH3 D	
N, Nitrate	0511209	0.947	0.557	0.400	1	97.5 %	(75.27) - (117.7)	SM 4500-NO3 F	
N, Nitrate	0511302	26.1	18.5	0.400	20	95.0 %	(75.27) - (117.7)	SM 4500-NO3 F	
N, Nitrite	0511302	0.247	0.030	0.200	1	108.5 %	(77.24) - (122.9)	SM 4500-NO2 B	
N, Nitrite	0511209	0.234	0.030	0.200	1	102.0 %	(77.24) - (122.9)	SM 4500-NO2 B	
Sulfate	0511210	99.4	< 10.0	100	1	99.4 %	(76.85) - (128.0)	EPA 375.2	
Aluminum - D	0511105	0.961	0.755	0.025	10	82.4 %	(74.57) - (115.8)	EPA 200.8	
Aluminum - D	0511101	0.274	0.056	0.025	10	87.4 %	(74.57) - (115.8)	EPA 200.8	
Aluminum - D	0511209	0.566	0.316	0.025	10	99.96%	(74.57) - (115.8)	EPA 200.8	
Arsenic - D	0511209	0.256	< 0.005	0.025	10	102.4 %	(86.18) - (119.0)	EPA 200.8	
Arsenic - D	0511101	0.247	< 0.005	0.025	10	98.9 %	(86.18) - (119.0)	EPA 200.8	
Arsenic - D	0511105	0.246	< 0.005	0.025	10	98.6 %	(86.18) - (119.0)	EPA 200.8	
Cadmium - D	0511105	0.254	< 0.001	0.025	10	101.5 %	(97.09) - (108.0)	EPA 200.8	
Cadmium - D	0511209	0.257	0.006	0.025	10	100.7 %	(97.09) - (108.0)	EPA 200.8	
Cadmium - D	0511101	0.255	< 0.001	0.025	10	102.1 %	(97.09) - (108.0)	EPA 200.8	
Calcium - D	0511210	127	26.0	20.0	5	101.0 %	(85.37) - (115.5)	SM 3111 B	
Chromium - D	0511209	0.243	0.001	0.025	10	96.7 %	(82.95) - (115.8)	EPA 200.8 DRC	
Chromium - D	0511105	0.269	< 0.001	0.025	10	107.7 %	(82.95) - (115.8)	EPA 200.8 DRC	
Chromium - D	0511101	0.258	< 0.001	0.025	10	103.1 %	(82.95) - (115.8)	EPA 200.8 DRC	
Copper - D	0511101	0.254	< 0.005	0.025	10	101.5 %	(82.69) - (116.6)	EPA 200.8	
Copper - D	0511209	0.250	0.009	0.025	10	96.4 %	(82.69) - (116.6)	EPA 200.8	
Copper - D	0511105	0.259	< 0.005	0.025	10	103.8 %	(82.69) - (116.6)	EPA 200.8	
Iron - D	0511105	1.46	< 0.050	0.125	10	116.9 %	(83.38) - (119.7)	EPA 200.8	
Iron - D	0511101	1.37	< 0.050	0.125	10	109.4 %	(83.38) - (119.7)	EPA 200.8	
Iron - D	0511209	1.87	0.650	0.125	10	97.9 %	(83.38) - (119.7)	EPA 200.8	
Lead - D	0511101	0.248	< 0.001	0.025	10	99.4 %	(91.97) - (112.5)	EPA 200.8	
Lead - D	0511105	0.252	< 0.001	0.025	10	100.9 %	(91.97) - (112.5)	EPA 200.8	

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Spike									
Lead - D	0511209	0.260	0.010	0.025	10	100.3 %	(91.97) - (112.5)	EPA 200.8	
Magnesium - D	0511210	61.9	10.6	10.0	5	102.6 %	(86.08) - (111.6)	SM 3111 B	
Manganese - D	0511101	0.320	0.048	0.025	10	109.0 %	(72.08) - (126.2)	EPA 200.8	
Manganese - D	0511209	0.726	0.465	0.025	10	104.8 %	(72.08) - (126.2)	EPA 200.8	
Manganese - D	0511105	0.320	0.040	0.025	10	111.8 %	(72.08) - (126.2)	EPA 200.8	
Nickel - D	0511209	0.271	0.016	0.025	10	101.9 %	(85.19) - (110.9)	EPA 200.8	
Nickel - D	0511101	0.263	< 0.005	0.025	10	105.2 %	(85.19) - (110.9)	EPA 200.8	
Nickel - D	0511105	0.278	0.011	0.025	10	106.8 %	(85.19) - (110.9)	EPA 200.8	
Potassium - D	0511210	24.2	0.995	5.00	5	92.8 %	(85.02) - (105.7)	SM 3111 B	
Selenium - D	0511209	1.30	< 0.005	0.125	10	103.8 %	(84.89) - (123.9)	EPA 200.8	
Selenium - D	0511101	1.26	< 0.005	0.125	10	100.9 %	(84.89) - (123.9)	EPA 200.8	
Selenium - D	0511105	1.26	< 0.005	0.125	10	100.8 %	(84.89) - (123.9)	EPA 200.8	
Silver - D	0511105	0.237	< 0.001	0.025	10	94.7 %	(73.19) - (116.6)	EPA 200.8	
Silver - D	0511101	0.245	< 0.001	0.025	10	98.2 %	(73.19) - (116.6)	EPA 200.8	
Silver - D	0511209	0.242	< 0.001	0.025	10	96.9 %	(73.19) - (116.6)	EPA 200.8	
Sodium - D	0511210	55.3	5.95	10.0	5	98.7 %	(85.10) - (104.2)	SM 3111 B	
Zinc - D	0511105	0.293	< 0.050	0.025	10	117.4 %	(89.97) - (121.9)	EPA 200.8	
Zinc - D	0511209	0.303	0.053	0.025	10	100.1 %	(89.97) - (121.9)	EPA 200.8	
- Within QC limits of 70-130%.									
Zinc - D	0511101	0.256	< 0.050	0.025	10	102.6 %	(89.97) - (121.9)	EPA 200.8	
- Within QC limits of 70-130%.									
Mercury - T	0511105	0.0018	< 0.0002	0.002	1	90.0 %	(80.29) - (114.7)	EPA 245.1	
Mercury - T	0511307	0.0018	< 0.0002	0.002	1	90.0 %	(80.29) - (114.7)	EPA 245.1	
Mercury - T	0511210	0.0018	< 0.0002	0.002	1	90.0 %	(80.29) - (114.7)	EPA 245.1	
Matrix Spike Duplicate									
Chloride	0511501	1750	1730		100	1.44%	(-3.414) - (3.657)	SM 4500-Cl B	
Fluoride	0511210	4.32	4.30		1	0.464%	(-5.795) - (5.054)	SM 4500 F-C	
N, Ammonia	0511207	0.453	0.440		1	2.91%	(-11.74) - (12.57)	SM 4500-NH3 D	
N, Nitrate	0511209	0.959	0.947		1	1.26%	(-4.616) - (5.320)	SM 4500-NO3 F	
N, Nitrate	0511302	26.5	26.1		20	1.52%	(-4.616) - (5.320)	SM 4500-NO3 F	
N, Nitrite	0511302	0.247	0.247		1	0.00%	(-5.529) - (7.018)	SM 4500-NO2 B	
N, Nitrite	0511209	0.241	0.234		1	2.95%	(-5.529) - (7.018)	SM 4500-NO2 B	
Sulfate	0511210	102	99.4		1	2.58%	(-0.7785) - (3.256)	EPA 375.2	
Aluminum - D	0511209	0.598	0.566		10	5.64%	(-6.338) - (4.947)	EPA 200.8	X
- Within 10%.									
Aluminum - D	0511105	0.973	0.961		10	1.28%	(-6.338) - (4.947)	EPA 200.8	
Aluminum - D	0511101	0.264	0.274		10	-3.68%	(-6.338) - (4.947)	EPA 200.8	
Arsenic - D	0511209	0.264	0.256		10	3.22%	(-6.992) - (7.394)	EPA 200.8	
Arsenic - D	0511101	0.254	0.247		10	2.61%	(-6.992) - (7.394)	EPA 200.8	
Arsenic - D	0511105	0.245	0.246		10	-0.566%	(-6.992) - (7.394)	EPA 200.8	
Cadmium - D	0511209	0.266	0.257		10	3.22%	(-5.143) - (4.157)	EPA 200.8	
Cadmium - D	0511105	0.253	0.254		10	-0.260%	(-5.143) - (4.157)	EPA 200.8	
Cadmium - D	0511101	0.257	0.255		10	0.691%	(-5.143) - (4.157)	EPA 200.8	
Calcium - D	0511210	138	127		5	8.30%	(-19.96) - (26.00)	SM 3111 B	
Chromium - D	0511105	0.272	0.269		10	0.946%	(-6.937) - (7.102)	EPA 200.8 DRC	

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Matrix Spike Duplicate									
Chromium - D	0511101	0.265	0.258		10	2.67%	(-6.937) - (7.102)	EPA 200.8 DRC	
Chromium - D	0511209	0.260	0.243		10	6.96%	(-6.937) - (7.102)	EPA 200.8 DRC	
- Within 10%.									
Copper - D	0511105	0.252	0.259		10	-2.75%	(-5.612) - (4.899)	EPA 200.8	
Copper - D	0511101	0.256	0.254		10	1.02%	(-5.612) - (4.899)	EPA 200.8	
Copper - D	0511209	0.259	0.250		10	3.24%	(-5.612) - (4.899)	EPA 200.8	
Iron - D	0511209	2.01	1.87		10	6.82%	(-6.225) - (4.808)	EPA 200.8	X
- Within 10%.									
Iron - D	0511105	1.45	1.46		10	-0.728%	(-6.225) - (4.808)	EPA 200.8	
Iron - D	0511101	1.36	1.37		10	-0.217%	(-6.225) - (4.808)	EPA 200.8	
Lead - D	0511209	0.267	0.260		10	2.51%	(-5.756) - (5.218)	EPA 200.8	
Lead - D	0511101	0.252	0.248		10	1.60%	(-5.756) - (5.218)	EPA 200.8	
Lead - D	0511105	0.251	0.252		10	-0.541%	(-5.756) - (5.218)	EPA 200.8	
Magnesium - D	0511210	58.5	61.9		5	-5.65%	(-18.66) - (15.25)	SM 3111 B	
Manganese - D	0511209	0.752	0.726		10	3.44%	(-8.063) - (8.517)	EPA 200.8	
Manganese - D	0511105	0.318	0.320		10	-0.558%	(-8.063) - (8.517)	EPA 200.8	
Manganese - D	0511101	0.320	0.320		10	-0.153%	(-8.063) - (8.517)	EPA 200.8	
Nickel - D	0511209	0.276	0.271		10	1.89%	(-7.994) - (7.861)	EPA 200.8	
Nickel - D	0511101	0.263	0.263		10	0.072%	(-7.994) - (7.861)	EPA 200.8	
Nickel - D	0511105	0.274	0.278		10	-1.25%	(-7.994) - (7.861)	EPA 200.8	
Potassium - D	0511210	23.8	24.2		5	-1.67%	(-4.961) - (4.205)	SM 3111 B	
Selenium - D	0511105	1.25	1.26		10	-0.989%	(-7.054) - (6.725)	EPA 200.8	
Selenium - D	0511101	1.30	1.26		10	2.62%	(-7.054) - (6.725)	EPA 200.8	
Selenium - D	0511209	1.34	1.30		10	2.94%	(-7.054) - (6.725)	EPA 200.8	
Silver - D	0511105	0.235	0.237		10	-0.729%	(-6.387) - (6.678)	EPA 200.8	
Silver - D	0511209	0.251	0.242		10	3.39%	(-6.387) - (6.678)	EPA 200.8	
Silver - D	0511101	0.246	0.245		10	0.163%	(-6.387) - (6.678)	EPA 200.8	
Sodium - D	0511210	53.9	55.3		5	-2.56%	(-7.412) - (4.798)	SM 3111 B	
Zinc - D	0511101	0.262	0.256		10	2.33%	(-7.134) - (5.322)	EPA 200.8	
Zinc - D	0511105	0.292	0.293		10	-0.612%	(-7.134) - (5.322)	EPA 200.8	
Zinc - D	0511209	0.313	0.303		10	3.35%	(-7.134) - (5.322)	EPA 200.8	
Mercury - T	0511210	0.0021	0.0018		1	15.4 %	(-10.80) - (13.10)	EPA 245.1	X
- both within 10% of original value									
Mercury - T	0511105	0.0018	0.0018		1	0.00%	(-10.80) - (13.10)	EPA 245.1	
Mercury - T	0511307	0.0017	0.0018		1	-5.71%	(-10.80) - (13.10)	EPA 245.1	
Duplicate									
Conductivity	0511202	1690	1690		1	-0.059%	(-1.110) - (1.290)	EPA 120.1	
Conductivity	0511210	276	276		1	0.00%	(-1.110) - (1.290)	EPA 120.1	
Conductivity	0511104	1420	1420		1	-0.211%	(-1.110) - (1.290)	EPA 120.1	
Conductivity	0511304	1660	1660		1	-0.060%	(-1.110) - (1.290)	EPA 120.1	
pH	0511103	7.29	7.20		1	1.24%	(-2.768) - (2.937)	SM 4500-H+ B	
pH	0511501	7.65	7.63		1	0.262%	(-2.768) - (2.937)	SM 4500-H+ B	
TSS	0511102	< 10.0	< 10.0		100ml	0.00%	(-80.50) - (78.33)	SM 2540 D	
- good qc									
Alkalinity	0511501	158	158		1	0.00%	(-7.737) - (7.400)	SM 2320 B	

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Duplicate								
Bicarbonate	0511501	192	193		1	-0.519%	(-7.537) - (7.174)	SM 2320 B
Carbonate	0511501	0.00	0.00		1	0.00%	(-14.41) - (21.02)	SM 2320 B
CN, Total	0511303	20.3	18.6		500	8.74%	(-10.12) - (12.17)	Kelada 01
CN, Total	0511303	20.7	20.1		1	2.94%	(-10.12) - (12.17)	Kelada 01
CN, Total	0511304	21.4	21.1		1	1.41%	(-10.12) - (12.17)	Kelada 01
CN, WAD	0508106	< 0.010	< 0.010		1	0.00%	(-7.598) - (8.663)	Kelada 01
CN, WAD	0511302	< 0.010	< 0.010		1	0.00%	(-7.598) - (8.663)	Kelada 01
CN, WAD	0511203	19.0	19.6		500	-3.11%	(-7.598) - (8.663)	Kelada 01
CN, WAD	0512208	0.430	0.430		20	0.00%	(-8.109) - (8.864)	Kelada 01
Fluoride	0511211	6.58	6.80		1	-3.29%	(-3.685) - (5.476)	SM 4500 F-C
N, Ammonia	0511213	21.8	21.9		50	-0.458%	(-12.75) - (14.42)	SM 4500-NH3 D
N, Nitrate	0511105	0.814	0.814		1	0.00%	(-5.861) - (6.761)	SM 4500-NO3 F
N, Nitrate	0511214	93.6	94.7		100	-1.17%	(-5.861) - (6.761)	SM 4500-NO3 F
N, Nitrite	0511214	1.83	1.90		10	-3.75%	(-4.552) - (4.013)	SM 4500-NO2 B
- peak heights within 10%								
N, Nitrite	0511105	< 0.050	< 0.050		1	0.00%	(-4.552) - (4.013)	SM 4500-NO2 B
Sulfate	0511104	716	710		4	0.842%	(-2.934) - (3.860)	EPA 375.2
Calcium - D	0511302	92.4	92.3		1	0.108%	(-10.68) - (9.548)	SM 3111 B
Magnesium - D	0511302	22.9	23.1		1	-0.870%	(-10.18) - (9.881)	SM 3111 B
Calcium - T	0511105	176	179		5	-1.69%	(-10.56) - (7.345)	SM 3111 B
Magnesium - T	0511105	39.2	39.5		5	-0.762%	(-10.70) - (7.275)	SM 3111 B
Potassium - T	0511105	5.95	5.98		5	-0.503%	(-11.12) - (11.10)	SM 3111 B
Sodium - T	0511105	35.2	35.5		5	-0.849%	(-6.648) - (6.790)	SM 3111 B
- within 10%								
Initial Calibration Verification								
Conductivity		525	506		1	3.75%	(-8.493) - (8.671)	EPA 120.1
Acidity		6.97	7.00		1	-0.429%	(-3.041) - (3.013)	SM 2310 B
Chloride		10.0	10.0		1	0.00%	(-1.552) - (1.802)	SM 4500-Cl B
- good qC								
Fluoride		4.99	5.00		1	-0.200%	(-0.6422) - (0.4222)	SM 4500 F-C
N, Ammonia		0.409	0.400		1	2.25%	(-5.552) - (12.48)	SM 4500-NH3 D
N, Nitrate		0.981	1.00		1	-1.90%	(-5.860) - (6.800)	SM 4500-NO3 F
N, Nitrite		0.980	1.00		1	-2.00%	(-4.514) - (4.604)	SM 4500-NO2 B
Sulfate		146	150		1	-2.67%	(-6.221) - (0.8874)	EPA 375.2
Aluminum - D		0.050	0.050		1	-0.640%	(-6.714) - (7.596)	EPA 200.8
Arsenic - D		0.050	0.050		1	0.540%	(-5.817) - (4.333)	EPA 200.8
Cadmium - D		0.050	0.050		1	0.00%	(-7.454) - (7.904)	EPA 200.8
Calcium - D		62.2	60.0		1	3.67%	(-9.099) - (7.916)	SM 3111 B
Chromium - D		0.051	0.050		1	1.24%	(-8.115) - (5.433)	EPA 200.8 DRC
Copper - D		0.050	0.050		1	-0.580%	(-5.314) - (4.324)	EPA 200.8
Iron - D		0.258	0.250		1	3.19%	(-12.90) - (9.776)	EPA 200.8
- Within 10%.								
Lead - D		0.050	0.050		1	0.600%	(-8.306) - (9.796)	EPA 200.8
Magnesium - D		11.7	12.0		1	-2.50%	(-7.493) - (4.493)	SM 3111 B
Manganese - D		0.050	0.050		1	0.180%	(-8.522) - (7.712)	EPA 200.8

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Initial Calibration Verification								
Nickel - D		0.051	0.050		1	1.82%	(-5.697) - (5.197)	EPA 200.8
Potassium - D		4.40	4.00		1	10.0 %	(2.163) - (13.39)	SM 3111 B
Selenium - D		0.250	0.250		1	0.012%	(-4.921) - (3.750)	EPA 200.8
- Within 10%.								
Silver - D		0.050	0.050		1	-0.960%	(-6.913) - (7.561)	EPA 200.8
Sodium - D		29.9	30.0		1	-0.333%	(-4.184) - (1.051)	SM 3111 B
Zinc - D		0.049	0.050		1	-1.42%	(-5.597) - (5.779)	EPA 200.8
Mercury - T		0.0029	0.0030		1	-3.33%	(-17.59) - (8.589)	EPA 245.1
Continuing Calibration Verification								
Conductivity		525	506		1	3.75%	(-9.144) - (4.482)	EPA 120.1
- Within 10% of expected value.								
Conductivity		1360	1410		1	-3.40%	(-9.144) - (4.482)	EPA 120.1
pH		10.1	10.0		1	0.600%	(-1.878) - (3.077)	SM 4500-H+ B
pH		7.00	7.00		1	0.00%	(-1.878) - (3.077)	SM 4500-H+ B
pH		4.02	4.00		1	0.500%	(-1.878) - (3.077)	SM 4500-H+ B
TSS		53.0	50.0		100ml	6.00%	(-10.38) - (23.58)	SM 2540 D
Acidity		22.0	20.0		1	10.0 %	(-4.416) - (22.42)	SM 2310 B
Acidity		22.0	20.0		1	10.0 %	(-4.416) - (22.42)	SM 2310 B
Alkalinity		103	106		1	-2.89%	(-6.621) - (-0.7314)	SM 2320 B
Alkalinity		203	212		1	-4.13%	(-6.621) - (-0.7314)	SM 2320 B
Chloride		10.0	10.0		1	0.00%	(-3.295) - (4.045)	SM 4500-Cl B
CN, Total		0.100	0.100		1	0.00%	(-11.32) - (10.92)	Kelada 01
CN, WAD		0.107	0.100		1	7.00%	(-11.14) - (14.34)	Kelada 01
CN, WAD		0.106	0.100		1	6.00%	(-11.14) - (14.34)	Kelada 01
CN, WAD		0.104	0.100		1	4.00%	(-11.14) - (14.34)	Kelada 01
CN, WAD		0.106	0.100		1	6.00%	(-11.14) - (14.34)	Kelada 01
Fluoride		0.427	0.400		1	6.75%	(-10.04) - (15.64)	SM 4500 F-C
Fluoride		0.425	0.400		1	6.25%	(-10.04) - (15.64)	SM 4500 F-C
N, Ammonia		0.096	0.100		1	-4.30%	(-11.06) - (14.83)	SM 4500-NH3 D
N, Ammonia		0.971	1.00		1	-2.90%	(-11.06) - (14.83)	SM 4500-NH3 D
N, Ammonia		1.00	1.00		1	0.00%	(-11.06) - (14.83)	SM 4500-NH3 D
N, Ammonia		0.486	0.500		1	-2.80%	(-11.06) - (14.83)	SM 4500-NH3 D
N, Ammonia		0.435	0.400		1	8.75%	(-11.06) - (14.83)	SM 4500-NH3 D
N, Nitrate		0.970	1.00		1	-3.00%	(-8.996) - (6.156)	SM 4500-NO3 F
N, Nitrate		0.981	1.00		1	-1.90%	(-8.996) - (6.156)	SM 4500-NO3 F
N, Nitrite		1.01	1.00		1	1.00%	(-2.828) - (11.33)	SM 4500-NO2 B
N, Nitrite		1.06	1.00		1	6.00%	(-2.828) - (11.33)	SM 4500-NO2 B
Sulfate		145	150		1	-3.33%	(-9.324) - (1.257)	EPA 375.2
Aluminum - D		0.050	0.050		1	0.500%	(-7.899) - (5.685)	EPA 200.8
Aluminum - D		0.050	0.050		1	0.500%	(-7.899) - (5.685)	EPA 200.8
Aluminum - D		0.052	0.050		1	3.60%	(-7.899) - (5.685)	EPA 200.8
Aluminum - D		0.048	0.050		1	-3.52%	(-7.899) - (5.685)	EPA 200.8
Aluminum - D		0.050	0.050		1	0.240%	(-7.899) - (5.685)	EPA 200.8
Arsenic - D		0.049	0.050		1	-2.26%	(-7.683) - (7.143)	EPA 200.8
Arsenic - D		0.050	0.050		1	0.220%	(-7.683) - (7.143)	EPA 200.8
- Within 10%.								

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Continuing Calibration Verification									
Arsenic - D		0.048	0.050		1	-4.12%	(-7.683) - (7.143)	EPA 200.8	
Arsenic - D		0.049	0.050		1	-2.56%	(-7.683) - (7.143)	EPA 200.8	
Arsenic - D		0.049	0.050		1	-2.58%	(-7.683) - (7.143)	EPA 200.8	
Cadmium - D		0.050	0.050		1	-0.060%	(-4.927) - (4.891)	EPA 200.8	
Cadmium - D		0.050	0.050		1	-0.540%	(-4.927) - (4.891)	EPA 200.8	
Cadmium - D		0.052	0.050		1	3.04%	(-4.927) - (4.891)	EPA 200.8	
Cadmium - D		0.050	0.050		1	0.760%	(-4.927) - (4.891)	EPA 200.8	
Cadmium - D		0.050	0.050		1	-0.720%	(-4.927) - (4.891)	EPA 200.8	
Calcium - D		48.3	50.0		1	-3.40%	(-7.024) - (1.284)	SM 3111 B	
Chromium - D		0.050	0.050		1	-0.500%	(-12.65) - (5.790)	EPA 200.8 DRC	
Chromium - D		0.048	0.050		1	-3.98%	(-12.65) - (5.790)	EPA 200.8 DRC	
Chromium - D		0.050	0.050		1	-0.560%	(-12.65) - (5.790)	EPA 200.8 DRC	
Chromium - D		0.055	0.050		1	10.0 %	(-12.65) - (5.790)	EPA 200.8 DRC	X
- Within 10%.									
Chromium - D		0.050	0.050		1	0.240%	(-12.65) - (5.790)	EPA 200.8 DRC	
Copper - D		0.050	0.050		1	0.740%	(-4.183) - (2.999)	EPA 200.8	
Copper - D		0.049	0.050		1	-1.54%	(-4.183) - (2.999)	EPA 200.8	
Copper - D		0.050	0.050		1	-0.040%	(-4.183) - (2.999)	EPA 200.8	
Copper - D		0.050	0.050		1	-0.460%	(-4.183) - (2.999)	EPA 200.8	
Copper - D		0.050	0.050		1	-0.920%	(-4.183) - (2.999)	EPA 200.8	
Iron - D		0.259	0.250		1	3.62%	(-12.19) - (5.490)	EPA 200.8	
Iron - D		0.257	0.250		1	2.79%	(-12.19) - (5.490)	EPA 200.8	
Iron - D		0.250	0.250		1	0.040%	(-12.19) - (5.490)	EPA 200.8	
Iron - D		0.281	0.250		1	12.5 %	(-12.19) - (5.490)	EPA 200.8	X
- End of run, within 15%.									
Iron - D		0.259	0.250		1	3.57%	(-12.19) - (5.490)	EPA 200.8	
Lead - D		0.049	0.050		1	-1.82%	(-9.462) - (11.21)	EPA 200.8	
Lead - D		0.049	0.050		1	-2.02%	(-9.462) - (11.21)	EPA 200.8	
Lead - D		0.051	0.050		1	1.54%	(-9.462) - (11.21)	EPA 200.8	
- Within 10%.									
Lead - D		0.050	0.050		1	-0.900%	(-9.462) - (11.21)	EPA 200.8	
Lead - D		0.050	0.050		1	-0.980%	(-9.462) - (11.21)	EPA 200.8	
Magnesium - D		14.5	15.0		1	-3.33%	(-8.164) - (3.231)	SM 3111 B	
Manganese - D		0.052	0.050		1	4.30%	(-6.948) - (4.410)	EPA 200.8	
Manganese - D		0.051	0.050		1	0.940%	(-6.948) - (4.410)	EPA 200.8	
Manganese - D		0.050	0.050		1	0.400%	(-6.948) - (4.410)	EPA 200.8	
Manganese - D		0.055	0.050		1	9.88%	(-6.948) - (4.410)	EPA 200.8	X
- Within 10%.									
Manganese - D		0.052	0.050		1	4.58%	(-6.948) - (4.410)	EPA 200.8	X
- Within 10%.									
Nickel - D		0.051	0.050		1	2.64%	(-5.672) - (4.036)	EPA 200.8	
Nickel - D		0.052	0.050		1	2.92%	(-5.672) - (4.036)	EPA 200.8	
Nickel - D		0.051	0.050		1	0.900%	(-5.672) - (4.036)	EPA 200.8	
Nickel - D		0.053	0.050		1	5.22%	(-5.672) - (4.036)	EPA 200.8	X
- Within 10%.									
Nickel - D		0.051	0.050		1	1.18%	(-5.672) - (4.036)	EPA 200.8	

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method
Continuing Calibration Verification								
Potassium - D		5.05	5.00		1	1.00%	(-4.767) - (4.047)	SM 3111 B
Selenium - D		0.245	0.250		1	-2.14%	(-6.748) - (6.613)	EPA 200.8
Selenium - D		0.247	0.250		1	-1.13%	(-6.748) - (6.613)	EPA 200.8
Selenium - D		0.251	0.250		1	0.472%	(-6.748) - (6.613)	EPA 200.8
Selenium - D		0.245	0.250		1	-1.95%	(-6.748) - (6.613)	EPA 200.8
Selenium - D		0.240	0.250		1	-3.94%	(-6.748) - (6.613)	EPA 200.8
Silver - D		0.049	0.050		1	-2.46%	(-7.168) - (6.520)	EPA 200.8
Silver - D		0.050	0.050		1	0.460%	(-7.168) - (6.520)	EPA 200.8
Silver - D		0.051	0.050		1	0.960%	(-7.168) - (6.520)	EPA 200.8
Silver - D		0.049	0.050		1	-1.74%	(-7.168) - (6.520)	EPA 200.8
Silver - D		0.049	0.050		1	-2.26%	(-7.168) - (6.520)	EPA 200.8
Sodium - D		24.5	25.0		1	-2.00%	(-4.336) - (0.3360)	SM 3111 B
Zinc - D		0.051	0.050		1	0.940%	(-3.750) - (3.498)	EPA 200.8
- Within 10%.								
Zinc - D		0.051	0.050		1	1.26%	(-3.750) - (3.498)	EPA 200.8
- Within 10%.								
Zinc - D		0.050	0.050		1	-1.06%	(-3.750) - (3.498)	EPA 200.8
Zinc - D		0.051	0.050		1	1.34%	(-3.750) - (3.498)	EPA 200.8
- Within 10%.								
Zinc - D		0.050	0.050		1	0.540%	(-3.750) - (3.498)	EPA 200.8
- Within 10%.								
Mercury - T		0.0018	0.0020		1	-10.0 %	(-13.23) - (5.234)	EPA 245.1
Initial Calibration Blank								
Conductivity		0.600	0.00		1	0.6	(0.0542) - (1.056)	EPA 120.1
Acidity		2.00	0.00		1	2	(0.3532) - (4.047)	SM 2310 B
Alkalinity		1.50	0.00		1	1.5	(1.105) - (2.459)	SM 2320 B
Fluoride		0.015	0.00		1	0.015	(0.0098) - (0.0224)	SM 4500 F-C
N, Ammonia		0.014	0.00		1	0.0144	(0.0118) - (0.0216)	SM 4500-NH3 D
N, Nitrate		0.022	0.00		1	0.022	(-0.0046) - (0.0321)	SM 4500-NO3 F
N, Nitrite		0.017	0.00		1	0.017	(-0.0132) - (0.0304)	SM 4500-NO2 B
- peak heights within 10%								
Sulfate		5.55	0.00		1	5.55	(-1.262) - (11.49)	EPA 375.2
Continuing Calibration Blank								
Conductivity		0.400	0.00		1	0.4	(-0.0632) - (1.143)	EPA 120.1
Conductivity		0.500	0.00		1	0.5	(-0.0632) - (1.143)	EPA 120.1
TSS		-2.00	0.00		100ml	-2	(-3.654) - (2.654)	SM 2540 D
Acidity		2.00	0.00		1	2	(0.1019) - (4.498)	SM 2310 B
Alkalinity		1.88	0.00		1	1.88	(1.030) - (2.791)	SM 2320 B
Chloride		0.00	0.00		1	0	(0.000) - (0.000)	SM 4500-Cl B
CN, Total		0.001	0.00		1	0.001	(-0.0060) - (0.0088)	Kelada 01
- good qc								
CN, WAD		0.00	0.00		1	0	(-0.0029) - (0.0037)	Kelada 01
CN, WAD		0.00	0.00		1	0	(-0.0029) - (0.0037)	Kelada 01
CN, WAD		0.00	0.00		1	0	(-0.0029) - (0.0037)	Kelada 01

Lab Numbers: **20090511104 - 20090511104**

Parameter	Lab#	QC Value	Smp Value	Spike	DF	Result	Limits	Method	
Continuing Calibration Blank									
CN, WAD		0.00	0.00		1	0	(-0.0029) - (0.0037)	Kelada 01	
Fluoride		0.016	0.00		1	0.016	(0.0115) - (0.0236)	SM 4500 F-C	
- good QC									
N, Ammonia		0.013	0.00		1	0.013	(0.0087) - (0.0243)	SM 4500-NH3 D	
N, Ammonia		0.016	0.00		1	0.0163	(0.0087) - (0.0243)	SM 4500-NH3 D	
N, Ammonia		0.015	0.00		1	0.0152	(0.0087) - (0.0243)	SM 4500-NH3 D	
N, Nitrate		0.011	0.00		1	0.011	(-0.0099) - (0.0460)	SM 4500-NO3 F	
N, Nitrate		0.033	0.00		1	0.033	(-0.0099) - (0.0460)	SM 4500-NO3 F	
N, Nitrite		0.017	0.00		1	0.017	(-0.0108) - (0.0471)	SM 4500-NO2 B	
N, Nitrite		0.024	0.00		1	0.024	(-0.0108) - (0.0471)	SM 4500-NO2 B	
Sulfate		2.42	0.00		1	2.42	(-5.589) - (15.86)	EPA 375.2	
Aluminum - D		0.00	0.00		1	0	(-0.0001) - (0.0001)	EPA 200.8	
Arsenic - D		0.000	0.00		1	0.00001	(-0.0001) - (0.0001)	EPA 200.8	
Cadmium - D		0.000	0.00		1	0.00004	(0.0000) - (0.0000)	EPA 200.8	
Calcium - D		0.030	0.00		1	0.03	(-0.0243) - (0.1773)	SM 3111 B	
Chromium - D		0.000	0.00		1	0.00002	(0.0000) - (0.0000)	EPA 200.8 DRC	
Copper - D		0.000	0.00		1	0.00003	(-0.0004) - (0.0005)	EPA 200.8	
- Well below detection limit.									
Iron - D		0.000	0.00		1	-0.00006	(-0.0002) - (0.0009)	EPA 200.8	
Lead - D		0.000	0.00		1	0.00002	(0.0000) - (0.0000)	EPA 200.8	
Magnesium - D		0.020	0.00		1	0.02	(-0.0273) - (0.0533)	SM 3111 B	
Manganese - D		0.000	0.00		1	0.00003	(0.0000) - (0.0000)	EPA 200.8	X
- Well below detection limit.									
Nickel - D		0.000	0.00		1	0.00002	(-0.0001) - (0.0001)	EPA 200.8	
- Well below detection limit.									
Potassium - D		0.100	0.00		1	0.1	(-0.0622) - (0.0674)	SM 3111 B	X
- within 10%									
Selenium - D		0.000	0.00		1	0.00015	(-0.0001) - (0.0004)	EPA 200.8	
Silver - D		0.000	0.00		1	0.00004	(-0.0002) - (0.0002)	EPA 200.8	
- Well below detection limit.									
Sodium - D		0.200	0.00		1	0.2	(0.0742) - (0.4338)	SM 3111 B	
Zinc - D		0.000	0.00		1	-0.00004	(-0.0002) - (0.0001)	EPA 200.8	
Mercury - T		0.000	0.000		1	0	(-0.0001) - (0.0000)	EPA 245.1	
Continuing Calibration Check									
Calcium - D		25.9	25.0		1	3.60%	(-6.858) - (1.444)	SM 3111 B	X
- within 10%									
Calcium - D		75.1	75.0		1	0.133%	(-6.858) - (1.444)	SM 3111 B	
Magnesium - D		22.0	22.0		1	0.00%	(-8.353) - (7.837)	SM 3111 B	
Magnesium - D		10.2	10.0		1	2.00%	(-8.353) - (7.837)	SM 3111 B	
Potassium - D		7.43	7.50		1	-0.933%	(-3.712) - (4.832)	SM 3111 B	
Potassium - D		2.51	2.50		1	0.400%	(-3.712) - (4.832)	SM 3111 B	
Sodium - D		14.8	15.0		1	-1.33%	(-3.898) - (-0.3974)	SM 3111 B	
Sodium - D		34.5	35.0		1	-1.43%	(-3.898) - (-0.3974)	SM 3111 B	
Mercury - T		0.0010	0.0010		1	-5.00%	(-9.795) - (6.995)	EPA 245.1	
Mercury - T		0.0048	0.0050		1	-4.00%	(-9.795) - (6.995)	EPA 245.1	

Approved By:___________________________

Cripple Creek and Victor Gold Mining Company
Analytical Request Form

SAMPLE IDENTIFIER: VIN 2B-140 104

SAMPLE DATE: 5/6/2009

ANALYSIS SUITE NAME: Ground Water

Batch / 5-11-09

LAB: MCT SHIPMENT DATE: 05/06/2009 SHIPPED VIA:

Physical/Anions/Other Parameters		Metals				
		Parameter	Total	Total Recoverable	Dissolved	Potentially Dissolved
Acidity, Total	X	Aluminum			X	
Alkalinity, Bicarbonate (as CaCO3)	X	Antimony				
Alkalinity, Carbonate (as CaCO3)	X	Arsenic			X	
Alkalinity, Total (as CaCO3)	X	Barium				
Carbon, Total Organic (mg/l as C)		Beryllium				
Chloride	X	Boron				
Conductivity	X	Cadmium			X	
Cyanide, Free	X	Calcium	X			
Cyanide, Total	X	Chromium			X	
Cyanide, WAD	X	Cobalt				
Fluoride	X	Copper			X	
Hardness	X	Gold				
Nitrate (as N)	X	Iron			X	
Nitrite (as N)	X	Lead			X	
Nitrogen, Ammonia	X	Lithium				
pH	X	Magnesium	X			
Phosphorus (mg/l as P)		Manganese			X	
Solids, Total Suspended	X	Mercury	X			
Solids,Total Dissolved	X	Molybdenum				
Sulfate	X	Nickel			X	
Thiocyanate		Potassium	X			
Turbidity		Selenium			X	
		Silicon				
		Silver			X	

Sodium	X			
Strontium				
Thallium				
Vanadium				
Zinc			X	

Note: Analyze for parameters and forms identified by X.

MIDCONTINENT
TESTING LABORATORIES, INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: WCMW 6-234
Sampled: 02/11/98 at 03:45 PM
by LRM/H
Sample Matrix: Water

Lab ID#: 19980216303
Received: 02/16/98 at 09:15 AM
by System Account
Account: W1123 - Cripple Creek / Victor Gold

RON PARRATT
CRIPPLE CREEK/VICTOR GOLD
PO BOX 191
VICTOR, CO 80860

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date	
Physical Properties								
Hardness	153	mg/L	1	0.179	5.00	SM 2340 B	SYS	02/16/98
Total Dissolved Solids	236	mg/L	100ml	15.0	50.0	EPA 160.1	SYS	02/16/98
Total Suspended Solids	< 10.0	mg/L	100ml	2.56	10.0	EPA 160.2	SYS	02/16/98
Non-Metallics								
Acidity (CaCO3)	< 10.0	mg/L	1	3.36	10.0	EPA 305.1	SYS	02/16/98
Bicarbonate	159	mg/L	1	0.511	10.0	SM 2320 B	SYS	02/16/98
Carbonate	0.00	mg/L	1	0.209	5.00	SM 2320 B	SYS	02/16/98
Chloride (Cl-)	2.00	mg/L	1	0.297	0.500	SM 4500-Cl B	SYS	02/16/98
Cyanide, Total	< 0.010	mg/L	1	0.00088	0.010	EPA 335.4	SYS	02/16/98
Cyanide, WAD	< 0.010	mg/L	1	0.00045	0.010	EPA 335.4	SYS	02/16/98
Cyanide, Free	< 0.010	mg/L	1	0.005	0.020	116-D588-01	SYS	02/16/98
Fluoride	2.22	mg/L	1	0.008	0.050	SM 4500 F-C	SYS	02/16/98
Nitrogen, Ammonia (NH3)	< 0.050	mg/L	1	0.008	0.050	EPA 350.3	SYS	02/16/98
Nitrogen, Nitrate (NO3)	< 0.050	mg/L	1	0.018	0.050	EPA 353.2	SYS	02/16/98
Nitrogen, Nitrite (NO2)	< 0.050	mg/L	1	0.009	0.050	EPA 353.2	SYS	02/16/98
Sulfate (SO4)	48.2	mg/L	1	2.62	10.0	EPA 375.2	SYS	02/16/98
Metals - Dissolved								
Aluminum (Al)	< 0.050	mg/L	1			EPA 202.2	SYS	02/16/98
Cadmium (Cd)	< 0.001	mg/L	1			EPA 213.2	SYS	02/16/98
Chromium (Cr)	< 0.001	mg/L	1			EPA 218.2	SYS	02/16/98
Copper (Cu)	< 0.005	mg/L	1			EPA 220.2	SYS	02/16/98
Iron (Fe)	0.620	mg/L	1	0.007	0.050	EPA 236.1	SYS	02/16/98
Lead (Pb)	< 0.001	mg/L	1			EPA 239.2	SYS	02/16/98
Manganese (Mn)	0.115	mg/L	1			EPA 243.2	SYS	02/16/98
Nickel (Ni)	< 0.005	mg/L	1			EPA 249.2	SYS	02/16/98
Selenium (Se)	< 0.005	mg/L	1			EPA 270.2	SYS	02/16/98
Silver (Ag)	< 0.001	mg/L	1			EPA 272.2	SYS	02/16/98
Zinc (Zn)	< 0.050	mg/L	1	0.002	0.050	EPA 289.1	SYS	02/16/98
Metals - Total								
Calcium (Ca)	43.8	mg/L	1	0.054	1.00	EPA 215.1	SYS	02/16/98
Magnesium (Mg)	10.6	mg/L	1	0.035	0.500	EPA 242.1	SYS	02/16/98
Mercury (Hg)	< 0.0002	mg/L	1	0.00004	0.0002	EPA 245.1	SYS	02/16/98

Report of Analysis for: **Cripple Creek / Victor Gold** Sample Site: **WCMW 6-234**

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date	
Metals - Total								
Potassium (K)	1.96	mg/L	1	0.035	0.500	EPA 258.1	SYS	02/16/98
Sodium (Na)	15.5	mg/L	1	0.059	0.500	EPA 273.1	SYS	02/16/98

Report Approved By:

Report Approved On: 9/28/2005 9:46:37 AM

MIDCONTINENT
TESTING LABORATORIES, INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: GVMW 8A-250
Sampled: 06/05/01 at 02:45 PM by LRM
Sample Matrix: Water

Lab ID#: 20010608401
Received: 06/07/01 at 02:20 PM by System Account
Account: W1123 - Cripple Creek / Victor Gold

RON PARRATT
CRIPPLE CREEK/VICTOR GOLD
PO BOX 191
VICTOR, CO 80860

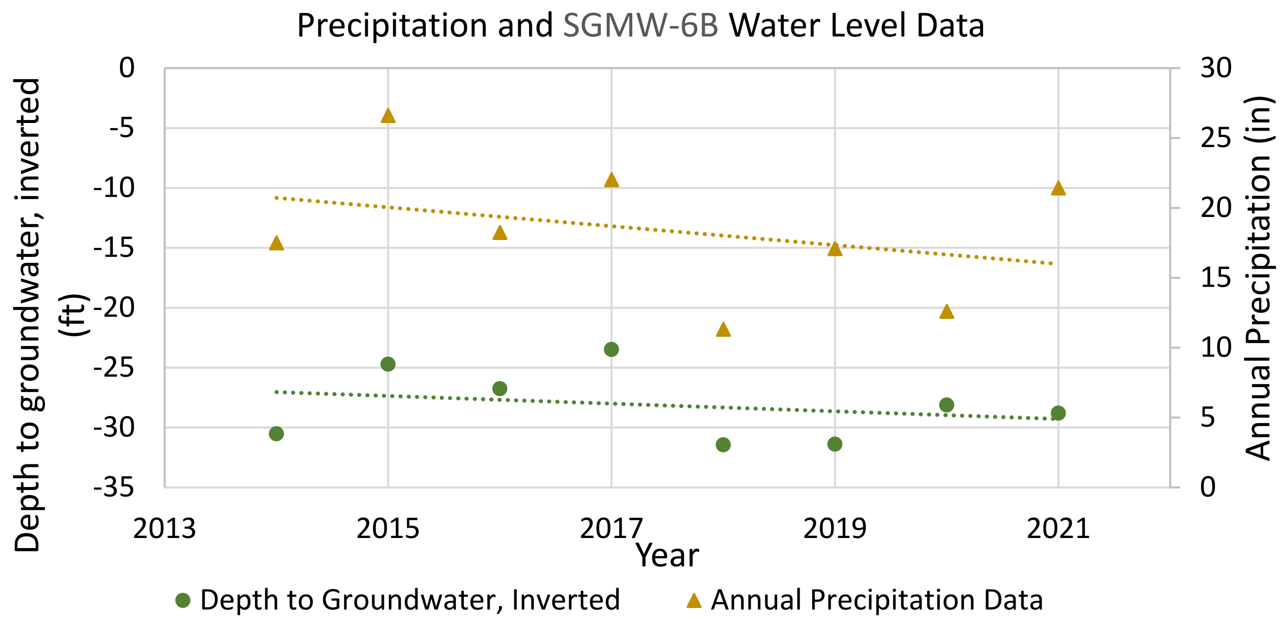
Parameter	Result	Units	DF	MDL	PQL	Method	Analyst	Date
Physical Properties								
Hardness	105	mg/L	1	0.179	5.00	SM 2340 B	SYS	06/08/01
Total Dissolved Solids	207	mg/L	100ml	15.0	50.0	EPA 160.1	SYS	06/08/01
Total Suspended Solids	< 10.0	mg/L	100ml	2.56	10.0	EPA 160.2	SYS	06/08/01
Non-Metallics								
Acidity (CaCO3)	< 10.0	mg/L	1	3.36	10.0	EPA 305.1	SYS	06/08/01
Bicarbonate	66.9	mg/L	1	0.511	10.0	SM 2320 B	SYS	06/08/01
Carbonate	0.00	mg/L	1	0.209	5.00	SM 2320 B	SYS	06/08/01
Chloride (Cl-)	3.50	mg/L	1	0.297	0.500	SM 4500-Cl B	SYS	06/08/01
Cyanide, Total	< 0.010	mg/L	1	0.00088	0.010	EPA 335.4	SYS	06/08/01
Cyanide, WAD	< 0.010	mg/L	1	0.00045	0.010	EPA 335.4	SYS	06/08/01
Cyanide, Free	< 0.010	mg/L	1	0.005	0.020	116-D588-01	SYS	06/08/01
Fluoride	2.77	mg/L	1	0.008	0.050	SM 4500 F-C	SYS	06/08/01
Nitrogen, Ammonia (NH3)	< 0.050	mg/L	1	0.008	0.050	EPA 350.3	SYS	06/08/01
Nitrogen, Nitrate (NO3)	0.240	mg/L	1	0.018	0.050	EPA 353.2	SYS	06/08/01
Nitrogen, Nitrite (NO2)	< 0.050	mg/L	1	0.009	0.050	EPA 353.2	SYS	06/08/01
Sulfate (SO4)	70.3	mg/L	1	2.62	10.0	EPA 375.2	SYS	06/08/01
Metals - Dissolved								
Aluminum (Al)	< 0.050	mg/L	1			EPA 202.2	SYS	06/08/01
Cadmium (Cd)	< 0.001	mg/L	1			EPA 213.2	SYS	06/08/01
Chromium (Cr)	< 0.001	mg/L	1			EPA 218.2	SYS	06/08/01
Copper (Cu)	< 0.005	mg/L	1			EPA 220.2	SYS	06/08/01
Iron (Fe)	< 0.050	mg/L	1	0.007	0.050	EPA 236.1	SYS	06/08/01
Lead (Pb)	< 0.001	mg/L	1			EPA 239.2	SYS	06/08/01
Manganese (Mn)	0.761	mg/L	1			EPA 243.2	SYS	06/08/01
Nickel (Ni)	< 0.005	mg/L	1			EPA 249.2	SYS	06/08/01
Selenium (Se)	< 0.005	mg/L	1			EPA 270.2	SYS	06/08/01
Silver (Ag)	< 0.001	mg/L	1			EPA 272.2	SYS	06/08/01
Zinc (Zn)	< 0.050	mg/L	1	0.002	0.050	EPA 289.1	SYS	06/08/01
Metals - Total								
Calcium (Ca)	34.6	mg/L	1	0.054	1.00	EPA 215.1	SYS	06/08/01
Magnesium (Mg)	4.41	mg/L	1	0.035	0.500	EPA 242.1	SYS	06/08/01
Mercury (Hg)	< 0.0002	mg/L	1	0.00004	0.0002	EPA 245.1	SYS	06/08/01

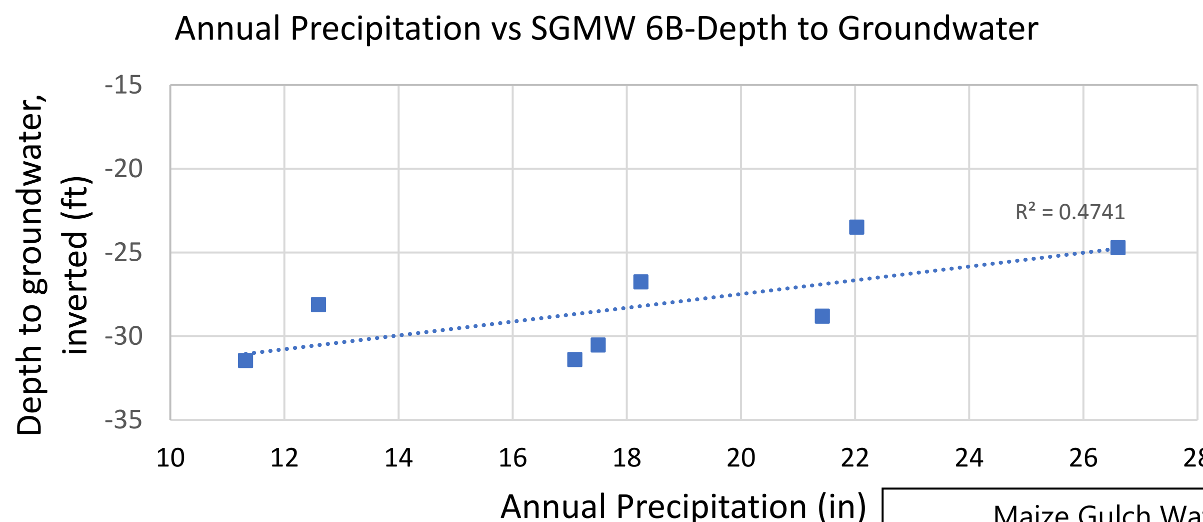
Report of Analysis for: **Cripple Creek / Victor Gold** Sample Site: **GVMW 8A-250**

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date	
Metals - Total								
Potassium (K)	0.590	mg/L	1	0.035	0.500	EPA 258.1	SYS	06/08/01
Sodium (Na)	19.8	mg/L	1	0.059	0.500	EPA 273.1	SYS	06/08/01

Report Approved By:

Report Approved On: 9/28/2005 9:46:37 AM



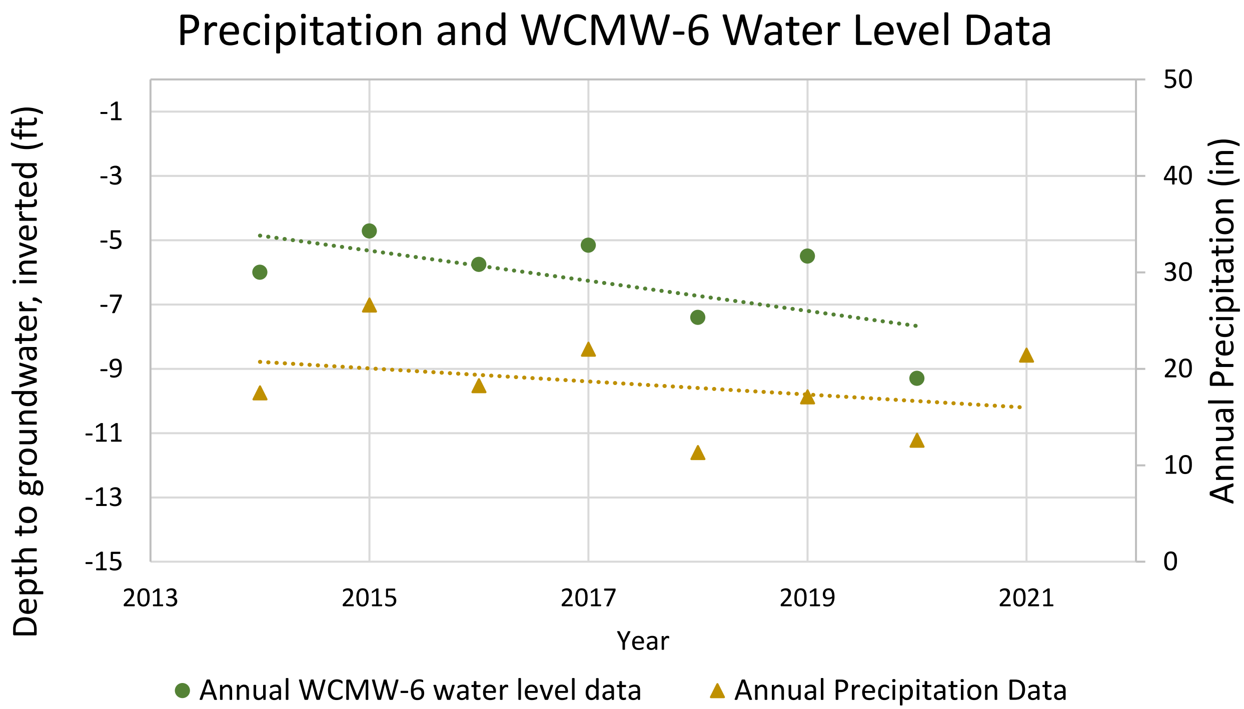


Notes

1. Depth to water and (averaged annually for each point displayed) for Maize Gulch point of compliance well SGMW-6B with monthly precipitation data averaged to annually.
2. ft = feet; in= inches
3. The first month of depth to water and dissolved oxygen data after well development is removed as it may be impacted by well development activities and not representative of underlying aquifer conditions

Maize Gulch Water Levels Compared to Precipitation Victor, CO		
Geosyntec consultants		Figure 1
Lakewood, CO	July 2023	

P:_Project_Files\Newmont\2022 CCV GW Statistics\Report\Figures



Notes
1. Depth to water and (averaged annually for each point displayed) for Wilson Creek point of compliance well WCMW-6. Monthly precipitation data averaged to annually.
2. ft = feet; in= inches
3. The 2021 WCMW-6 is omitted as it shows a dramatic water level decrease that appears to an outlier.

Wilson Creek Water Levels Compared to Precipitation

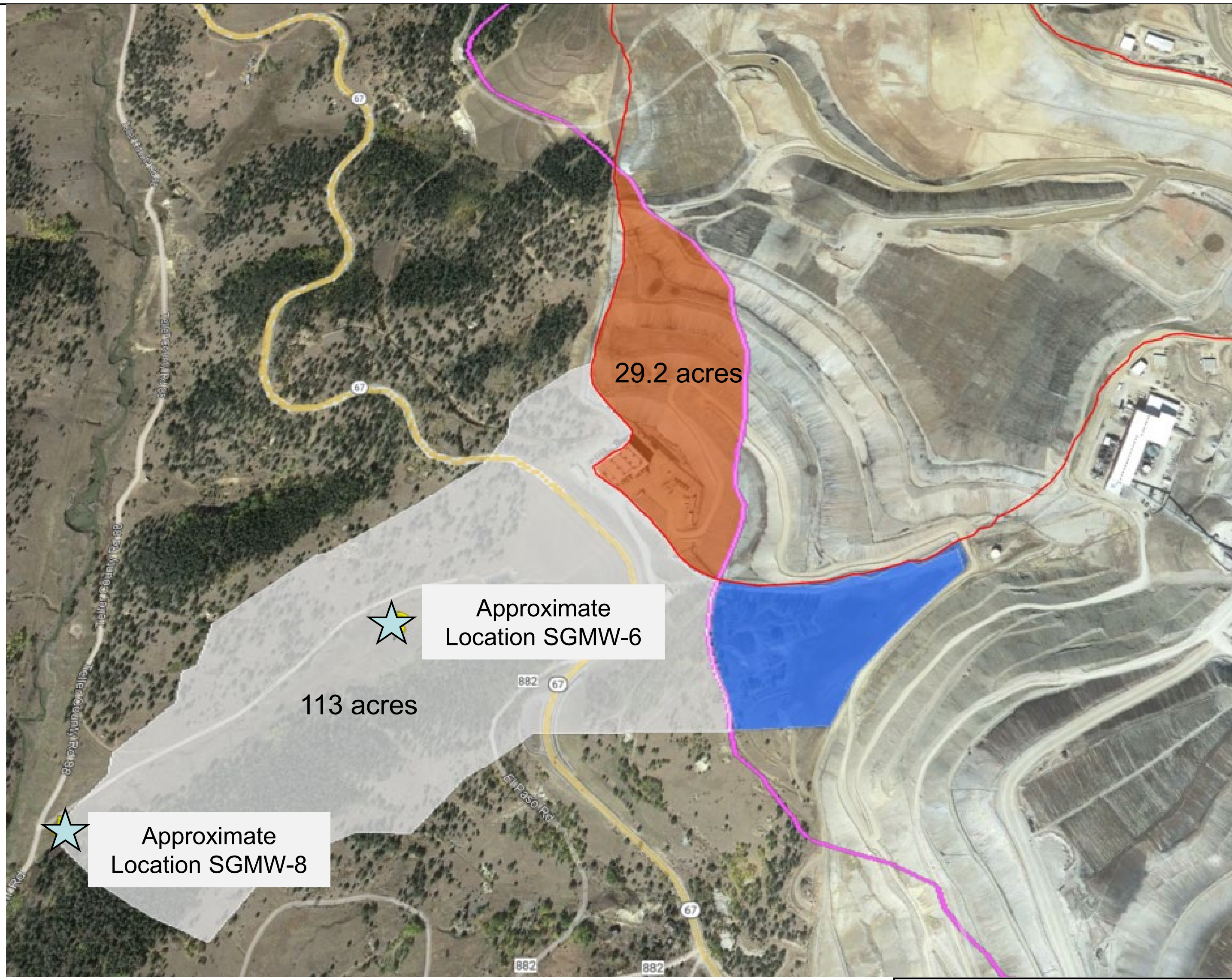
Victor, CO

Geosyntec consultants

Lakewood, CO

July 2023

Figure 2



- Diatreme Boundary
- Current VLF Extent
- Unlined Maize – Outside diatreme
- Lined by VLF – Outside diatreme
- Unlined Maize – Inside diatreme, not included in recharge calculation

SGMW-6 and SGMW-8 Basin Map

Victor, CO

Geosyntec consultants

Lakewood, CO

July 2023

Figure 3

Notes

1. Precipitation on the diatreme is assumed to infiltrate into the diatreme and not into surrounding, shallow groundwater.

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