TETRA TECH EBA

OQM | Organizational Quality Management Program

BRALORNE TAILINGS STORAGE FACILITY
UPDATED 2014 ANNUAL DAM SAFETY INSPECTION

PREPARED FOR

BRALORNE GOLD MINES LTD.

NOVEMBER 21, 2014
ISSUED FOR USE
FILE: V15103090-01

CONSULTING ENGINEERS & SCIENTISTS · www.eba.ca

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LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Bralorne Gold Mines Ltd. and their agents. Tetra Tech EBA Inc. (Tetra Tech EBA) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Bralorne Gold Mines Ltd., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are provided in Appendix A of this report.

1.0 INTRODUCTION

Bralorne Gold Mines Ltd. (Bralorne) retained Tetra Tech EBA Inc. (Tetra Tech EBA) to prepare this update of the 2014 Annual Dam Safety Inspection of the Bralorne Tailings Storage Facility (TSF). This report summarizes the geotechnical observations and recommendations related to the site inspections conducted by Mr. Chris Johns, P.Eng. on May 1, 2014 and September 9, 2014 and includes updated information. We have relied upon visual inspection, engineering judgement, existing documentation, and monitoring data gathered by Bralorne to develop our opinions. The site visit was undertaken and the report was prepared in accordance with regulatory requirements.

The Bralorne Gold Mine is situated approximately 160 km north of Vancouver in the Cadwallader Creek Valley as shown in Figure 1. The locations of the specific structures at the mine site are shown in Figure 2.

This assessment was based on Tetra Tech EBA's site inspection and the following documents that were provided by Bralorne or are on file at Tetra Tech EBA:

- Digital TSF monitoring records, including data from early 2014, for pond water levels, piezometer levels, and settlement point coordinates.
- *Geotechnical Stability Assessment of Proposed TSF Embankment Raise*, Letter Report prepared for Bralorne Gold Mines Ltd. by Tetra Tech EBA, 1 October 2014, File: V15103090-01.
- *Borrow Assessment at Bralorne Gold Mine Tailings Storage Facility*, Letter Report prepared for Bralorne Gold Mines Ltd. by Tetra Tech EBA, 1 October 2014, File: V15103090-01.
- *2013 Bralorne Tailings Storage Facility, Interim Desktop Assessment, Bralorne Gold Mine, BC*, Tetra Tech EBA Inc, January 2014.
- *Water Treatment 2013 Summary Report*, Prepared by Bralorne Mines Ltd., July 2013.
- *2012 Bralorne Tailings Storage Facility, Site Inspection, Bralorne Gold Mine, BC*, EBA, A Tetra Tech Company, June 2012.
- *2011 Bralorne Tailings Storage Facility Inspection, Bralorne Gold Mine, BC*, EBA Engineering Consultants Ltd., July 2011.
- *Bralorne Gold Mine, Tailings Dam Annual Report 2009*, P.K. Read Engineering Ltd., March 2010.
- *Bralorne Gold Mines Ltd., Tailings Dam Annual Report, for 2008,* P.K. Read Engineering Ltd., February 2009.
- Update to *Manual for Operation and Inspection, Bralorne Tailings Impoundment Facilities*, Bralorne Gold Mines Ltd., 2008.
- *Bralorne Gold Tailings Dam Emergency Preparedness Plan*, P.K. Read Engineering Ltd. and Northwest Hydraulic Consultants Ltd, November 2007.
- *2004 Construction Report, Bralorne Tailings Impoundment*, Jacques Whitford and Associates Ltd., February 2005.
- *Manual for Operation and Inspection, Bralorne Tailings Impoundment Facilities*, Jacques Whitford and Associates, February 2004.

- Replies to the Review Comments on the Report *Tailings Dam Facilities: Design Verification and 2003 Construction Report Bralorne-Pioneer Gold Mine, Bralorne, B.C.*, Jacques Whitford and Associates Ltd., January 2004.
- *Tailings Dam Facilities: Design Verification and 2003 Construction Report Bralorne-Pioneer Gold Mine, Bralorne, B.C.,* Jacques Whitford and Associates Ltd., January 2004.

2.0 BACKGROUND

Construction of the Bralorne mine tailings storage facility commenced in 2003 and was completed to its present height in 2005. The impoundment was originally designed by SRK-Robinson Inc. in 1995; however, SRK's design was reviewed and updated by Jacques Whitford and Associates Ltd., who carried through with monitoring and verification during construction.

The tailings storage facility infrastructure consists of the following earthwork components:

- The main embankment, which although connected has been historically described as the South Section, North Section, Mid-North Section and Mid-South Section.
- South Seepage Collection (#1).
- North Seepage Collection Ditch and Pond (#2).
- Middle Seepage Collection Ditch (#3).

The current design crest elevation is 3459 ft., however, survey data indicates that an area at the north end of the dam was built to 3457 feet elevation, and an area at the south end is approximately 0.5 ft. below design grade. The South Section is approximately 30 feet in height at its maximum elevation and the North Section is roughly 24 feet in height. The connecting mid-section varies between less than 3 feet and 15 feet in height. The embankment was designed with an upstream and downstream slope gradient of 1.75H:1V and 2H:1V, respectively.

The facility was designed and constructed as a tailings storage facility, with the associated tailings beaches being an integral part of the design. The facility was primarily used as a mine water storage facility until 2011, with approximately 32,000 tons of tailings deposited in the facility between April 2004 and November 2005. The stability of the facility as a water retention structure was assessed in the 2008 Tailings Dam Annual Report (P.K. Read, Feb 2009). Tailings deposition re-commenced in 2011 at approximately 73 tonnes (85 tons) per day.

Three seepage zones; north, south and central, were noted during previous assessments. Rates and quality of the discharge fluctuates seasonally, as does the level of water within the tailings impoundment.

Tetra Tech EBA undertook a desktop assessment of the facility based on monitoring data available at the end of 2013 and completed the annual dam inspections in 2011 and 2012 and, as such, is familiar with site conditions and background data. In addition, Tetra Tech EBA has recently undertaken design and site investigation work to support raising the embankment by approximately 10 feet to 3467 feet elevation. Work completed includes an assessment of borrow materials for construction and a geotechnical assessment of the design raised embankment.

3.0 TAILINGS STORAGE FACILITY

The TSF comprises a single pond and tailings retained by an embankment in a small (nominal 300 m wide) valley. As-built drawings of the current facility are included in Appendix B. The embankment is separated into north and

south sections by a ridge of native material. The tailings and water pond are contained within a footprint area of approximately 4 ha. Tailings are pumped as a slurry from the Plant via a fully welded 76 mm OD polyethylene overland pipe and are discharged into the storage cell from the embankment. Tailings discharge is from a single point discharge that is periodically shifted along the embankment to create tailings beach adjacent to the embankment.

The facility does not contain a spillway and outflow occurs through seepage and evaporation with minor amounts recovered for use in mine operations. Bralorne commissioned a water treatment system in May 2013 and this unit was used to treat and discharge approximately 7800 m³ of water from the tailings pond. Small amounts of water are periodically recovered from the TSF for process needs.

3.1 CDA Dam Classification

The Bralorne TSF has been previously classified in the Significant and more recently in the High category of the CDA guidelines. There is no permanent population at risk or infrastructure between the Bralorne TSF and Cadwallader Creek. These classifications were based on the potential environmental impact of a release on the Cadwallader Creek and Hurley River, and the potential for impact further downstream. The risk classification is being assessed as part of a 'dam break' study that includes inundation mapping for a potential release from the TSF.

3.2 Tailings Storage Facility Capacity

Bralorne has estimated the total tailings deposited since construction of the dam is 106,000 dry tonnes, and currently produces approximately 2,700 dry tonnes tailings per month.

Based on a topographic survey of the tailings beach and embankment on May 4, 2014 and soundings of the tailings below pond in September 2013, there was approximately 45,000 cubic metres of capacity in the TSF at current crest elevation.

A hydrotechnical assessment of the proposed embankment raise design has been commissioned by Bralorne that will include calculation of design floods and storage requirements. The TSF capacity will be re-assessed based on these updated studies.

3.3 Embankment Stability

The geotechnical stability of the current embankment geometry was reviewed by PK Reid in 2008 and was determined to meet the design standards applicable at that time. The proposed embankment raise design was assessed by Tetra Tech EBA to meet current design guidelines including the requirements of the British Columbia Dam Safety Regulation and the Canadian Dam Association (CDA) Dam Safety Guidelines (DSG), 2007.

3.4 Construction Activities

Bralorne advised that no major earthwork construction activities were undertaken at the tailings facility in 2013 or in 2014 to date. Works conducted related to the TSF include:

- Cleaning of the ditch adjacent to the East Hurley Forest Service Road that diverts surface water upstream of the TSF in September 2014.
- Installation of wind fencing on the tailings beach in August 2014 to mitigate tailings dust issues.

- Installation of a water treatment system in 2013 which is used to treat mine drainage and could be used to treat water from the tailings storage facility.

3.5 Visual Inspection

A visual assessment of the tailings storage embankment and tailings management practices was undertaken on May 1, 2014. The facility was subsequently inspected again on September 9, 2014 at the time of a borrow investigation for embankment raising construction materials. The weather on May 1, 2014 was sunny and warm, and conditions were suitable for unhindered inspection of the facility. Tailings discharge was actively occurring from a single point discharge positioned at the north end of the tailings beach. A segment of the discharge pipe had been buried under recent tailings deposition.

A relatively even beach had been developed along the upstream portion of the embankment with an apparent slope of approximately 1% to 2% toward the water pond. The tailings beach elevation was between 0.3 m and 1.0 m below the current dam crest and the beach was approximately 150 to 200 feet wide.

No evidence of embankment cracking or distress was observed (see photographs in Appendix C). The embankment crest surface was slightly hummocky and uneven, but no ponding or soft ground was noted.

A small amount of windblown tailings was observed on the upstream side of the embankment crest at a few locations. This is considered a minor maintenance issue that may locally impact the trafficability of the crest in wet conditions.

Diversion of surface water run-on from a portion of the upstream catchment is achieved via a ditch adjacent to the East Hurley Forest Service Road. This ditch was cleaned out by Bralorne in September 2014. No visual evidence of significant run-on flow was observed from the catchment area above the dam at the time of the inspection.

A minor zone of instability was observed at the northern end of the upstream crest in 2012. This area has now been adequately buttressed by tailings and no further instability was noted.

3.6 Pond Water Levels

The water elevation within the tailings facility varied between 3452.70 ft. and 3454.93 ft. during 2013 based on periodic staff gauge measurements. The design minimum freeboard of 1 metre (3.3 feet) (PK Reid, 2009) was exceeded for a portion of each of the last three years as shown in Figure 3-1. Bralorne advised that they treat and release water from the underground operation by utilizing the new water treatment plant, which has reduced the water loading to the tailings facility.

Bralorne was advised by the Ministry of Environment that they require additional regulatory approval before they can treat and release water from the TSF in 2014 and they are currently working towards this approval. Pond water was pumped from the tailings facility, treated, and released from June 23, 2013 until and July 31, 2013 (Bralorne, 2013). The increase in freeboard that occurred during this period is shown on Figure 3–1.

It should be noted that the mine does not have a permit to discharge untreated water directly from the facility. Therefore, if the pond elevation approaches the embankment crest, an emergency raise may be required.

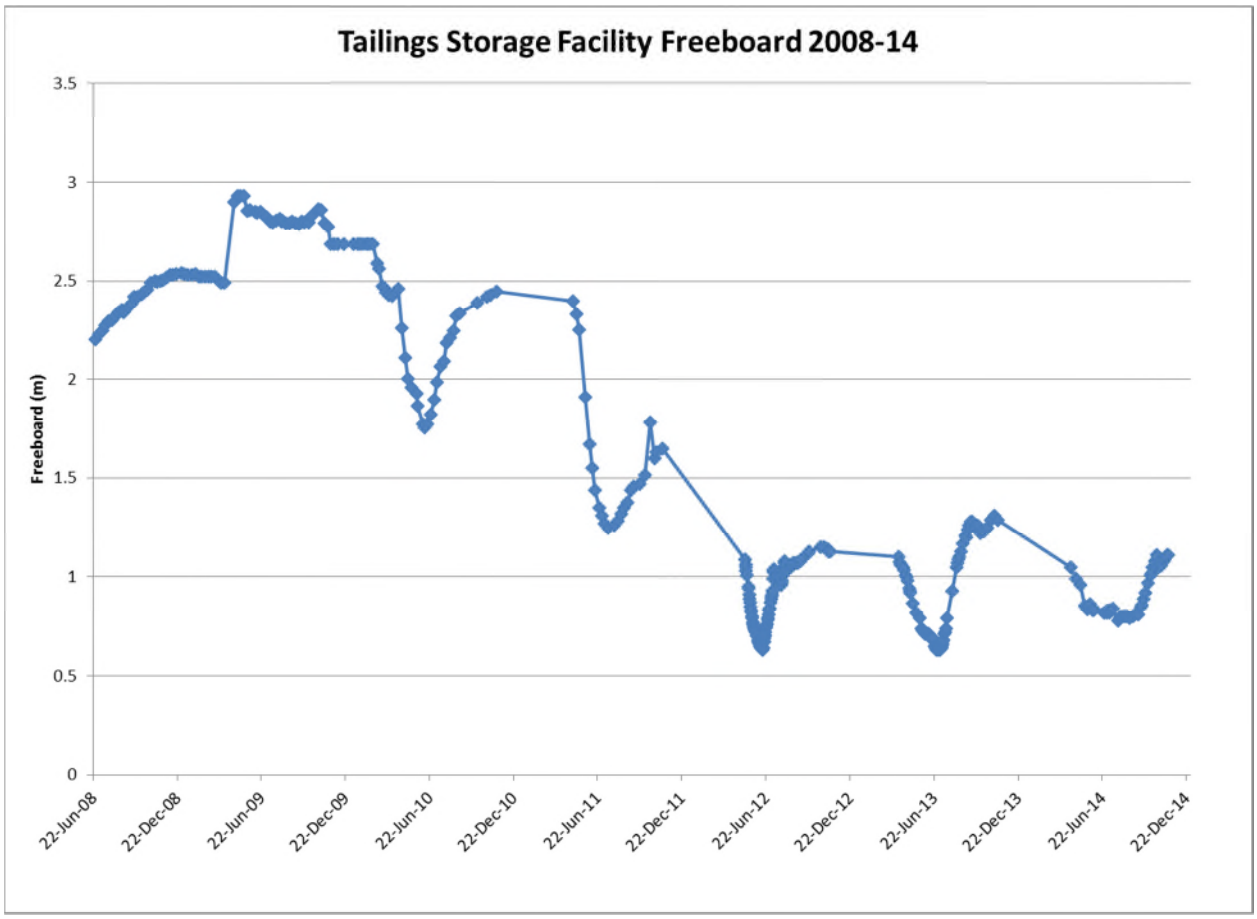

Figure 3-1 Bralorne TSF Freeboard Measurements, 2008 – 2014

3.7 TSF Water Balance and Climate Data

The Bralorne TSF water balance and climate data was reviewed as part of the scope of this inspection report. The Bralorne TSF lies on the boundary between West Coast Marine and Interior climatic zones and is in the rain shadow created by the Coast Mountains. Precipitation is moderate, with generally warm, dry summers. The Hurley Weather Station is considered to best represent the climatic conditions at the TSF site from available sources. Table 1 provides a summary of the average and wet year precipitation data from 2002 – 2012 inclusive.

Table 1: Average and Wet Year Precipitation Data, Hurley at Lone Goat (2002-2012)

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Average (mm)	140	74	121	60	47	57	34	40	70	131	200	138	1112
Wet Year (2006) (mm)	231	159	44.5	64.2	33.8	92.1	14.3	8.1	47.6	69.3	443.1	180	1388

Note: Precipitation occurring as rain or snow was recorded as water equivalent.

The sources of water inflow to the TSF include direct precipitation and surface runoff to the TSF, groundwater discharge, water in the tailings slurry, and 'mine water' pumped from the underground mine. The main sources of water outflow from the TSF are attributed to seepage, evaporation, and water recovered for operational purposes.

The key results of the Bralorne TSF water balance review are:

- For the average year rainfall, there will be an annual net water loss from the facility.
- Seasonal precipitation flows dominate the inflow to the TSF water balance.
- Seepage is the most significant water outflow from the facility. As tailings solids accumulate the seepage rate may continue to decrease.
- Effective management of the TSF supernatant pond levels is critical to minimize the risks of overtopping or excessive seepage.

4.0 EMBANKMENT MONITORING

Monitoring instrumentation at the Tailings Storage Facility embankment includes piezometers and survey pins.

4.1 Piezometers

Data from the following piezometers was provided by Bralorne:

- P1 to P4: Main Embankment.
- P5: Settling Pond Embankment.

The piezometer locations are shown in Figure 2.

The water level in the piezometers was measured monthly during 2013 and 2014, as recommended in the 2012 TSF Site Inspection. The results are plotted with historical data since 2011 in Figure 4–1. The results indicate that the seasonal trends in 2013 and 2014 were consistent with previous results, and the general trend appears to be a decreasing water level in the shallow piezometers which has flattened in the last year.

These results were reviewed in relation to the phreatic surface applied in the embankment stability analyses and do not pose a concern at this time.

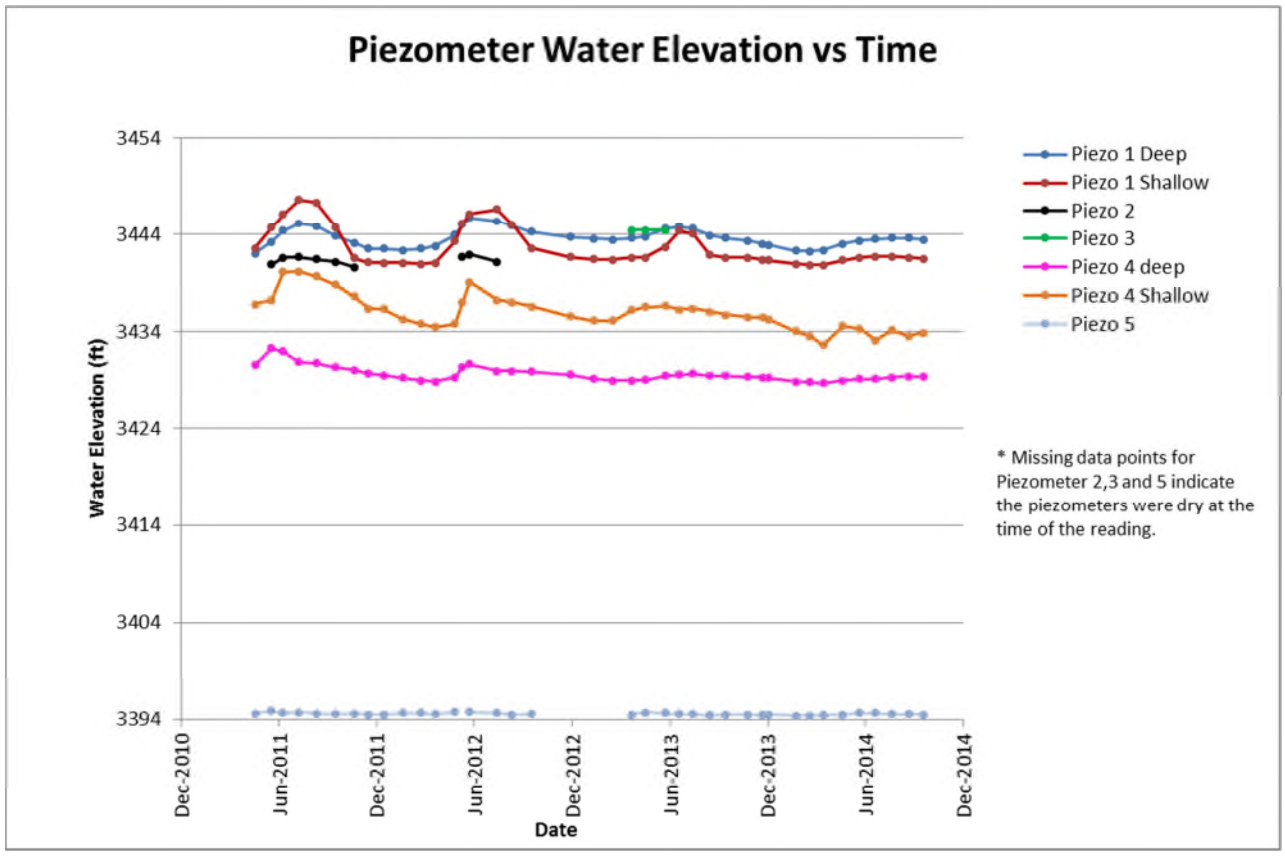

Figure 4-1 Bralorne TSF Piezometer Measurements, 2011 – Sep 2014

4.2 Survey Pin Monitoring

Monitoring of six survey hubs established on the dam in 2008 indicates negligible settlement has occurred across the crest of the embankment. The hubs are positioned in pairs at the upstream and downstream edge of the crest at three intervals along the length of the embankment. A plot of surveyed pin elevation vs. time is shown in Figure 4–2. The current trends do not pose a concern at this time.

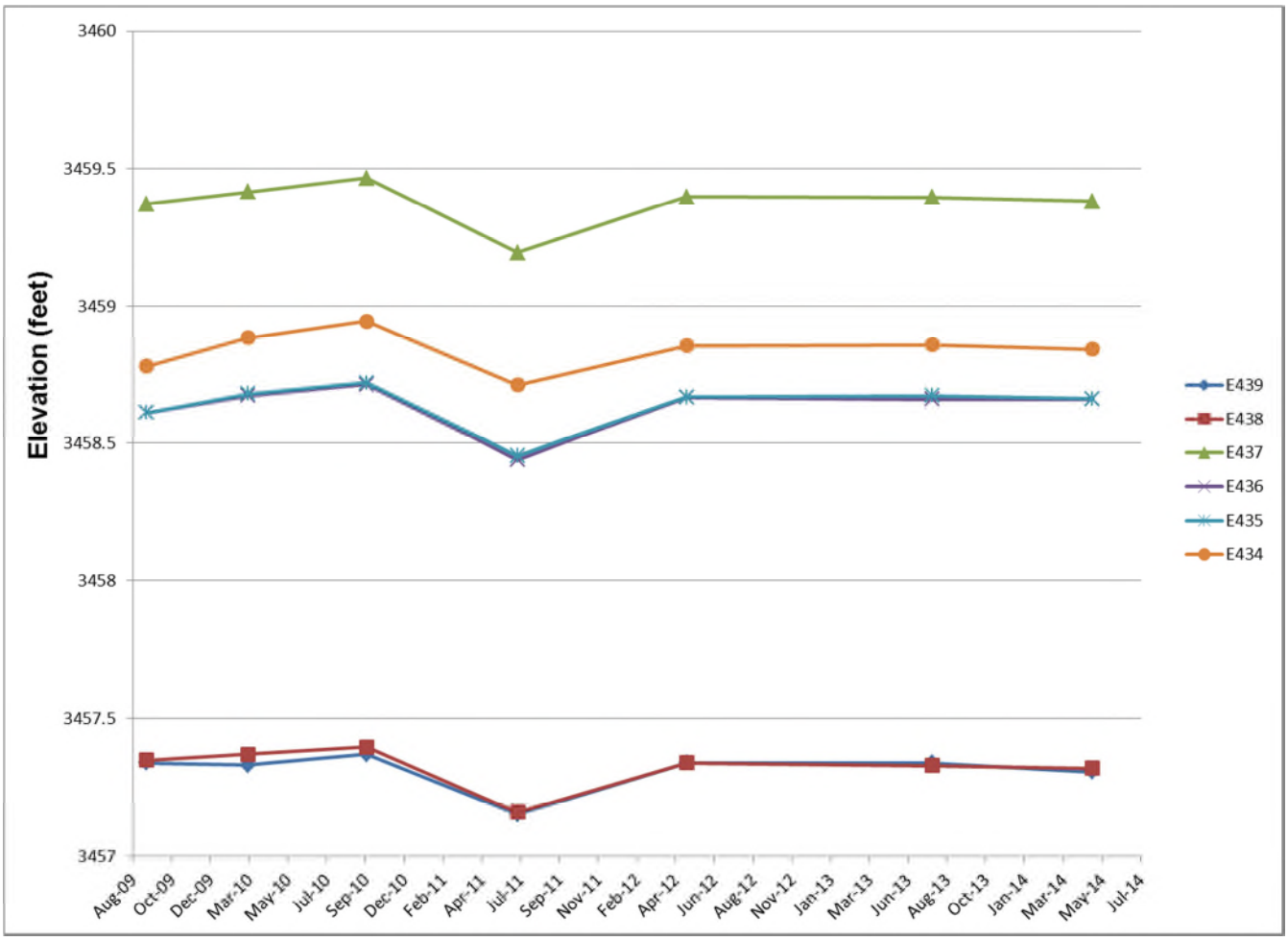

Figure 4-2 Bralorne TSF Dam Settlement Points – Elevation

4.3 Seepage

Bralorne monitored seepage rates at three weirs located downstream of the TSF embankment on a bi-weekly basis. In addition, Bralorne monitored water quality at several locations around the mine area on a monthly basis in 2013. These sample locations included the TSF pond, the seepage weirs, monitoring wells down gradient of the TSF, and various other water sources including creeks and mine seepage areas. A detailed assessment of water quality is beyond the scope of this assessment, but the TSF related water quality parameters and the sampling frequency was reviewed in relation to historical results and the recommendations of the TSF Operation, Maintenance and Surveillance (OMS) Manual.

4.3.1 Seepage Flow

The seepage flow measurements recorded downstream of the TSF embankment on a bi-weekly basis in 2013 and early 2014 are plotted with historical results in Figure 4–3. The results indicate that seepage flow decreased in 2013 and stabilised in 2014 as compared to seepage rates measured since 2008.

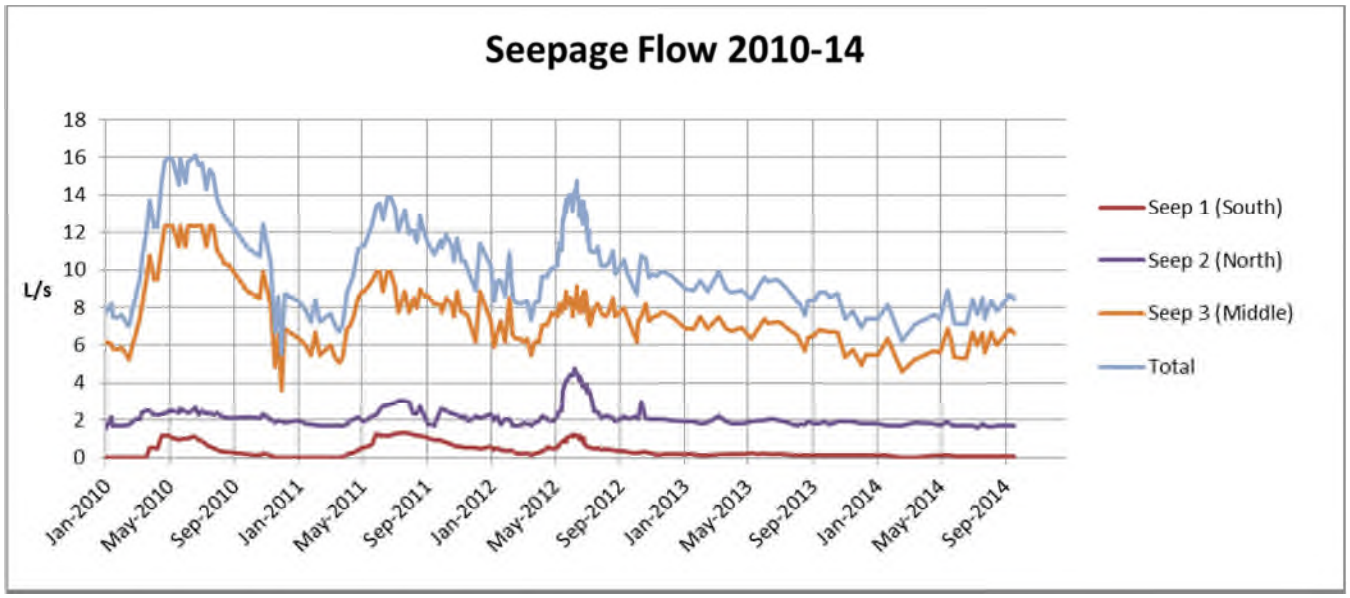

Figure 4-3 Bralorne TSF Seepage Flow Monitoring, 2008 – Sep 2014

4.3.2 Seepage Quality

Water samples from the three seepage collection weirs were tested on a monthly basis in 2013 for routine parameters and a suite of metals. The results of the water quality monitoring at the three seepage collection locations are presented in Appendix B and a summary of selected results includes:

- All pH values were within the range of 6.5 to 9. The range of pH in the three seepages in 2013 was between 8.0 and 8.4 which is slightly basic and suggests that acid rock drainage is not of concern.
- Total hardness ($CaCO_3$) was typically over 200 mg/L which is representative of relatively hard water.
- The total arsenic concentration in the three seepage locations ranged between 0.6 ppb and 26.5 ppb. There is a decreasing trend in total arsenic concentration in these seepages since 2011 as shown in Figure 4–4 below. These arsenic concentrations are all below the Federal Metal Mining Effluent Regulation criterion of 500 micrograms/L.

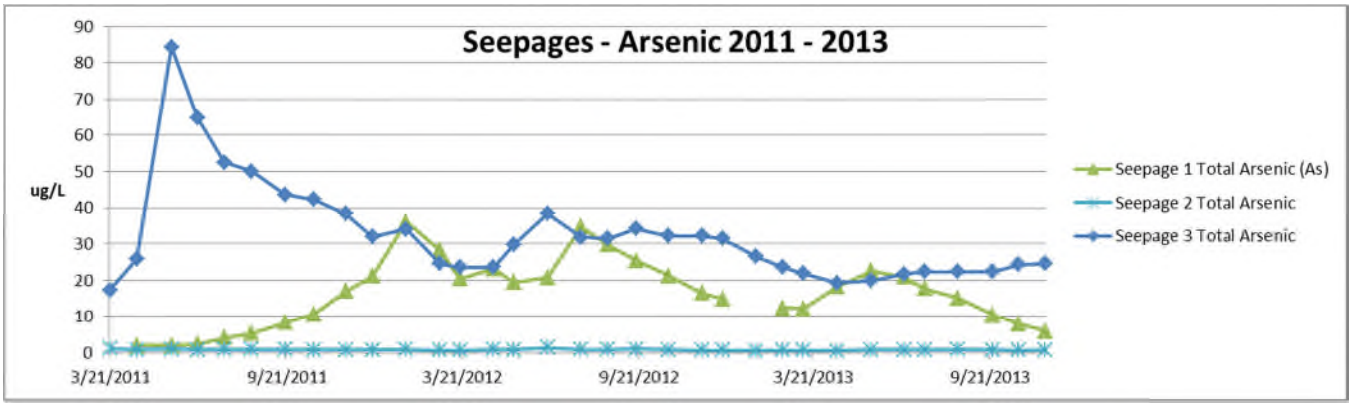

Figure 4-4 Bralorne TSF Seepage Flow As (total) Concentration, 2011 – 13

- Measurements of total Mercury were undertaken in the first half of 2013 and all but one indicated non-detectable concentrations. The one detectable result in 2013 of 0.01 micrograms/L was measured in Seepage 2 and this is below CCME water quality guideline limit.

5.0 DOCUMENTATION

Documentation for the Bralorne TSF under regulatory requirements includes a current Operation, Maintenance and Surveillance (OMS) Manual and an Emergency Preparedness Plan (EPP). A Dam Safety Review (DSR) is recommended every seven years for a dam with a high consequence classification. Most critical aspects of a DSR will be addressed for the Bralorne TSF as part of design assessments currently underway, including the hydrotechnical assessment with dam break assessment, geotechnical stability analyses, and updates to the OMS Manual and EPP in accordance with current guidelines. This information will be compiled in the embankment raise design/construction report and should be reviewed as part of the 2015 Annual Dam Safety Inspection. It is recommended that the next DSR at Bralorne TSF be scheduled in consultation with regulatory authorities after completion of the current hydrotechnical and dam classification assessments.

5.1 Operation, Maintenance, and Surveillance Manual

The latest revision of the Bralorne TSF OMS Manual (Bralorne, 2008) was provided by Bralorne for review. Aspects of the Manual are out of date and Bralorne has committed to update the OMS Manual to reflect the requirements of the CDA DSG by early December in accordance with the requirements of the BC Chief Inspector of Mines.

5.2 Emergency Preparedness Plan

The latest revision of the Bralorne TSF EPP (PK Reid, 2007) was provided by Bralorne for review. Aspects of the EPP are out of date and Bralorne has committed to update the EPP by early December to reflect the requirements of the CDA DSG.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The Bralorne TSF 2014 Annual Dam Safety Inspection has confirmed that no visual or monitoring instrumentation evidence of embankment cracking or distress was observed and the stability analysis for the embankment reflects current guideline requirements. The tailings storage capacity is of concern and efforts to address this have been initiated by Bralorne. The following recommendations are provided in relation to the Bralorne TSF:

1. It is recommended that the proposed embankment raise be constructed at earliest opportunity to create adequate capacity for tailings, process water, and design storm event storage.

2. Pond water elevations should continue to be collected and reviewed as per the plan outlined below.

    a. >1 m of freeboard = as per OMS.

    b. 1.0 to 0.5 m of freeboard = daily monitoring (see recommendation #5).

    c. 0.5 m to 0.3 m of freeboard = twice daily monitoring.

    d. <0.3 m = hourly monitoring.

3. Water from in the supernatant pond should be managed to ensure that the minimum freeboard is maintained. If the recommended minimum freeboard of 1.0 m is impinged upon, Bralorne should notify the

Ministry of Environment and, should freeboard reach 0.5 m, Bralorne will seek approval for an emergency bypass. If an emergency bypass is required, Bralorne will install a pump and water would be pumped to an unlined settling pond on site where it would seep into the substrate. We understand that this plan is consistent with what occurred in 2012 before the treatment system was in place.

4. The risk classification of the dam and the tailings storage facility capacity should be reviewed after completion of the hydrotechnical assessments currently in progress.

5. The EPP and OMS Manual should be updated to reflect the requirements of the CDA DSG.

6. Monitoring and review of the survey hubs should continue as per the OMS Manual.

7. Tailings deposition should continue to be managed to maintain a tailings beach against the upstream face of the embankment and maintain the pond away from the embankment, thereby reducing the potential for erosion and seepage through the dam.

8. Seepage quality and quantity measurements should continue to be collected and reviewed.

9. It is noted that Bralorne now use a flume at Seepage 3 to monitor flow rate as approved by the Ministry of Environment. Measurements using the 5 gallon pail at the outlet pipe further downstream at SP3 should be continued to provide reference with historical measurements.

10. During the routine inspections, the mine should monitor for evidence of 'run-on' surface water flow and consider further improvements to surface water diversion around the dam if this is observed. In addition, the slurry and water pipe lines should be visually assessed during these inspections.

7.0 CLOSURE

We trust that this report meets your present requirements. Please contact the undersigned should you have questions or comments.

Respectfully submitted,
Tetra Tech EBA Inc.

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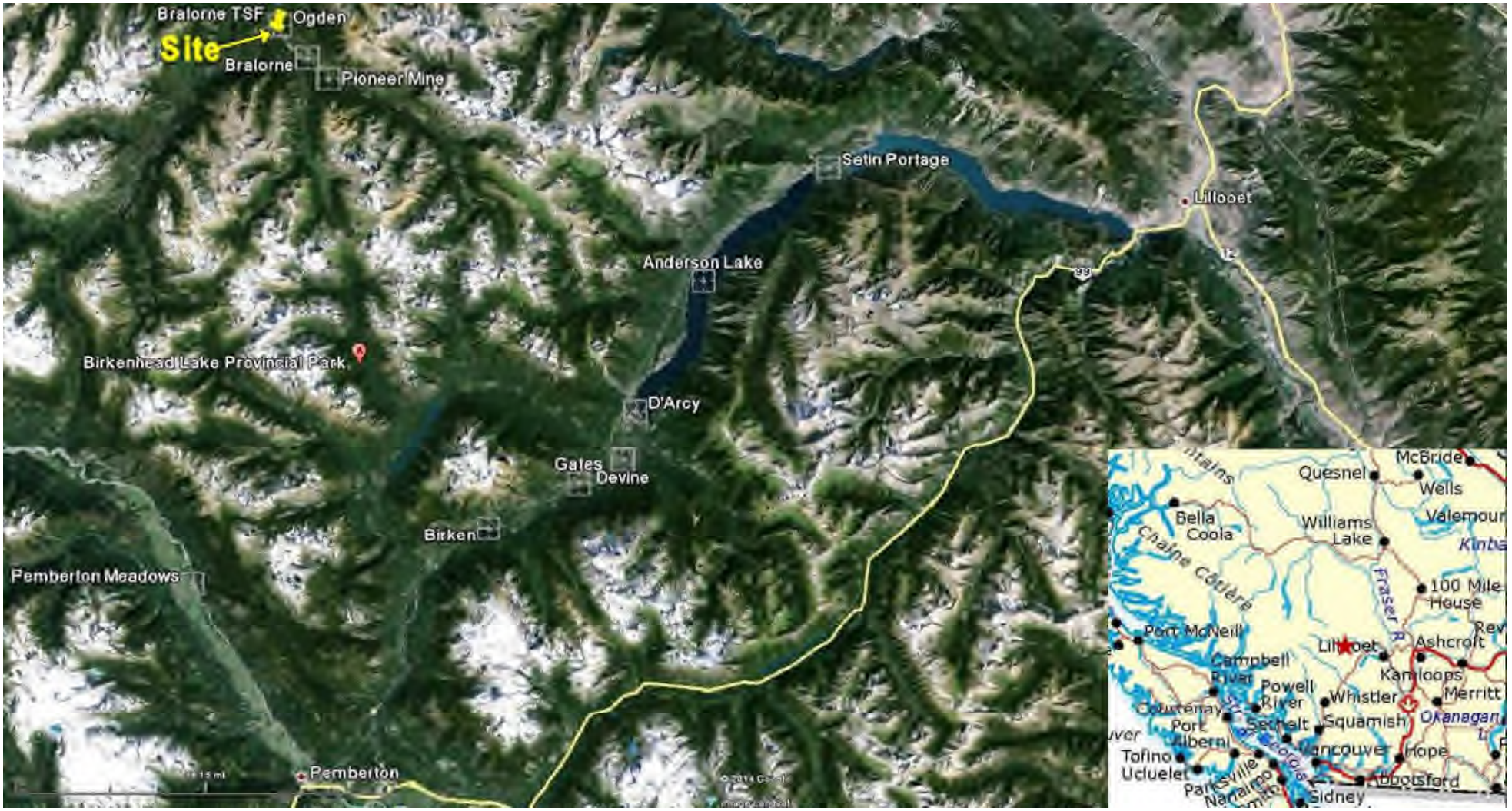
FIGURES



LEGEND

Base Image from Google Earth Pro

NOTES

STATUS
ISSUED FOR USE

CLIENT
BRALORNE GOLD MINES LTD.

TETRA TECH EBA

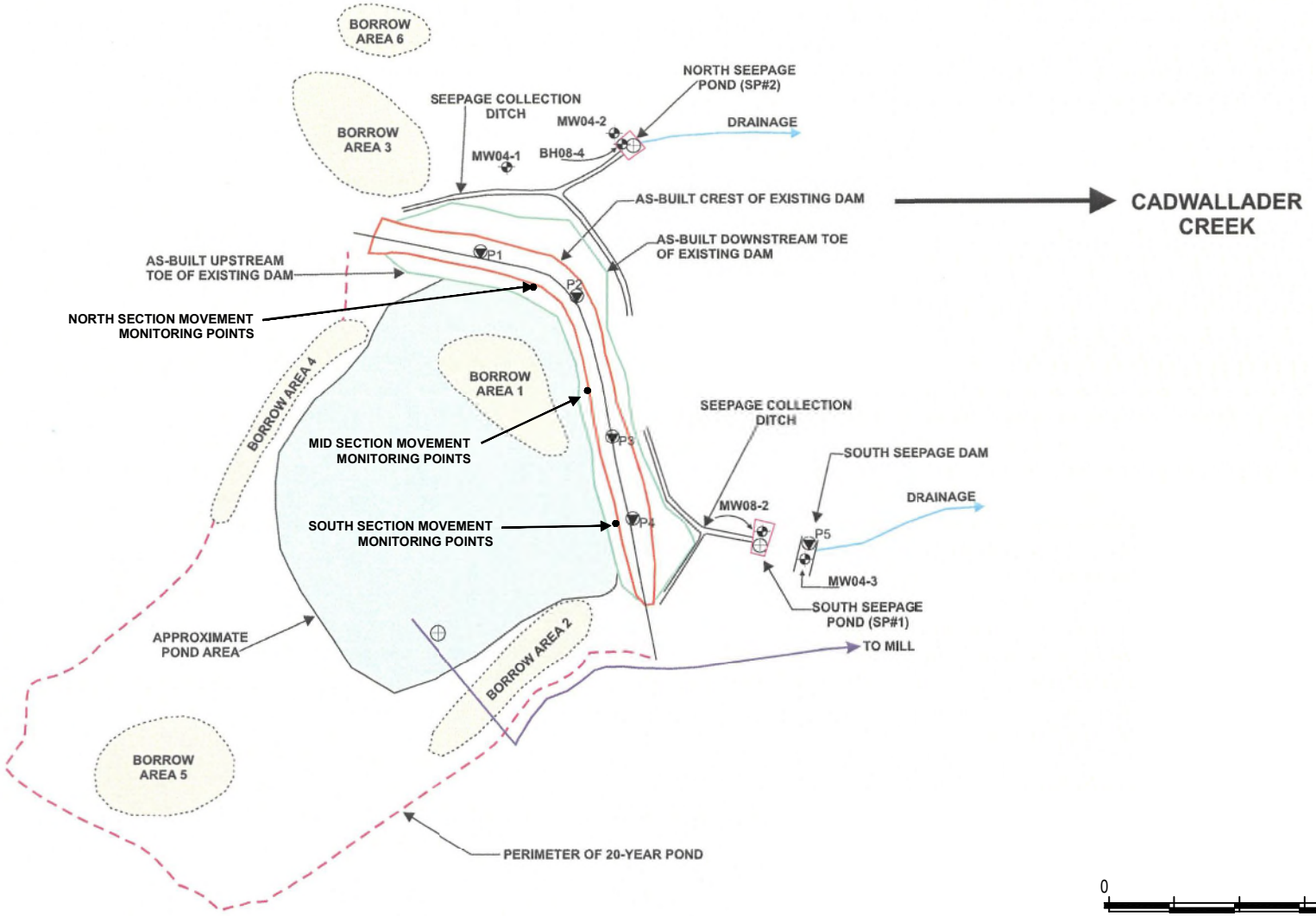
Bralorne Tailings Storage Facility 2014 Inspection

Site Location Plan

PROJECT NO.	DWN	CKD	APVD	REV
V15103090-01	TP	CJ	SM	0

OFFICE	DATE
EBA-Kelowna	May 13, 2014

Figure 1



LEGEND

- Groundwater Monitoring Wells
- Piezometer
- Water Course
- Surface Water Quality Sampling Site

NOTES
BASED ON DRAWING PROVIDED BY CLIENT

STATUS
ISSUED FOR USE

CLIENT
BRALORNE GOLD MINES LTD.

BRALORNE TAILINGS DAM REVIEW
BRALORNE, BC

SITE PLAN

TETRA TECH EBA

PROJECT NO.	DWN	CKD	REV
V15103090-01	CJ	SM	0

OFFICE	DATE
EBA-KELOWNA	January 8, 2014

Figure 2

APPENDIX A

TETRA TECH EBA'S GENERAL CONDITIONS – GEOTECHNICAL REPORT

GENERAL CONDITIONS

GEOTECHNICAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of Tetra Tech EBA’s Client. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Tetra Tech EBA’s Client unless otherwise authorized in writing by Tetra Tech EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of Tetra Tech EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Tetra Tech EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of Tetra Tech EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Tetra Tech EBA. Tetra Tech EBA’s instruments of professional service will be used only and exactly as submitted by Tetra Tech EBA.

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, Tetra Tech EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. Tetra Tech EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. Tetra Tech EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

10.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

11.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

12.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

13.0 SAMPLES

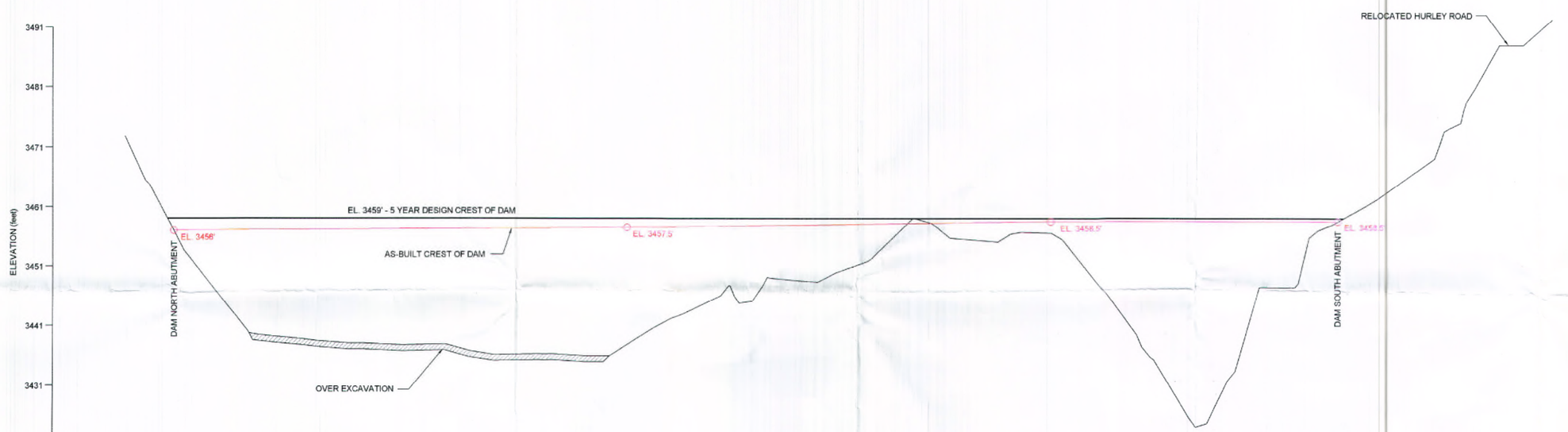
Tetra Tech EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

14.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

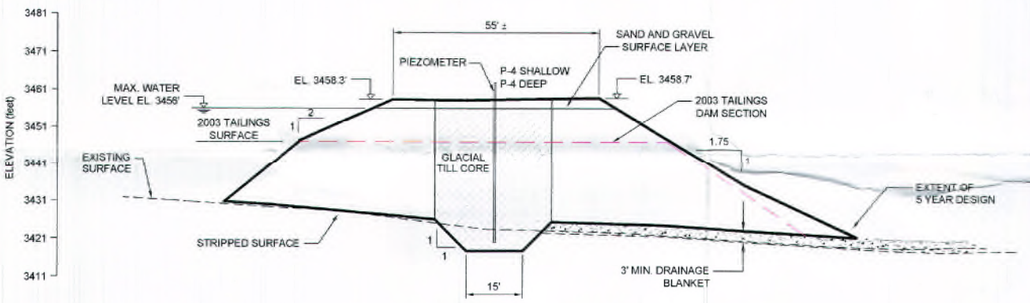
During the performance of the work and the preparation of the report, Tetra Tech EBA may rely on information provided by persons other than the Client. While Tetra Tech EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, Tetra Tech EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX B
AS-BUILT DRAWINGS

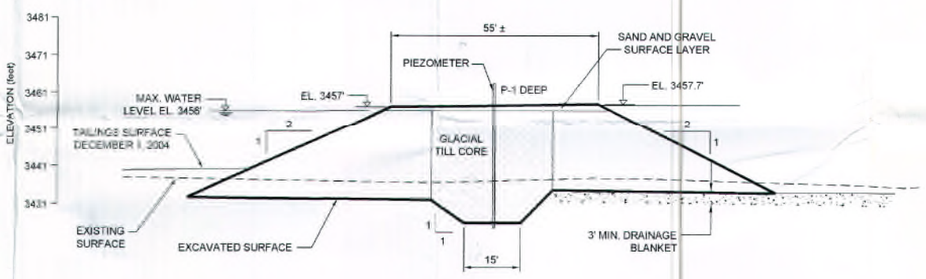
FILENAME: BCV41020 D01 R0



PROFILE
VERTICAL SCALE 1" = 10'
HORIZONTAL SCALE 1" = 50'



SECTION A
SCALE 1" = 20'



SECTION B
SCALE 1" = 20'

02/23/05

REV	DESCRIPTION	DATE	BY	CHK'D
0	AS BUILT	23-Feb-05	NP	

Jacques Whitford

DRAWN: NP
DATE: 23-Feb-05
CHECKED:
SCALE: AS SHOWN

CLIENT: BRALORNE PIONEER GOLD MINES LTD.
SITE: BRALORNE, BRITISH COLUMBIA
PROJECT No: BCV41020

AS BUILT 2004 EMBANKMENT SECTIONS

DWG No: 2

FILENAME: BCV41020 DG2 R0

APPENDIX C
SITE PHOTOS

Photo 1: Embankment crest and beach development, looking north

Photo 2: Downstream middle northern embankment, looking southeast

Photo 3: Embankment crest and beach development, looking toward south abutment

Photo 4: Downstream embankment, mid-section, looking north

Photo 5: Downstream embankment, mid-section, looking south

Photo 6: South abutment from below dam, looking southwest

Photo 7: Downstream embankment bench, looking south – Note: variable batter slope

Photo 8: Tailings beach development, looking south from northern abutment

Photo 9: Tailings beach development, northern abutment looking west

Photo 10: Tailings beach development, looking toward northern abutment

Photo 11: Tailings beach at south abutment

Photo 12: Tailings discharge – line partially buried (maintenance required)

Photo 13: South seepage pond #1

Photo 14: SP#1 south seepage monitoring point

Photo 15: Looking downstream from crest at north seepage ditch (toward monitoring point SP#2)

Photo 16: SP#2 north seepage monitoring point

Photo 17: Weir upstream of SP#3 monitoring point

Photo 18: SP#3 monitoring point – high flow from wider contributing catchment

Photo 19: Tailings slurry line and underground water lines

Photo 1: Embankment crest looking south

Photo 2: Looking downstream from midway along embankment crest

Photo 3: Looking south at embankment downstream batter

Photo 4: Tailings beach with wind fence, looking north from south abutment