

19 November 2014

TE143007

VIA COURIER

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Toronto, ON M5X 1E3

**Attention: Mr. John Stroiazzo
Reclamation Manager**

Dear John;

**Reference: Bell Mine Site
2014 Dam Safety Inspection**

Please find enclosed two CDs and three hard copies of the 2014 Dam Safety Inspection of the Bell Mine site near the Village of Granisle, British Columbia.

Please contact the undersigned should you have any questions or wish to discuss any aspects of the report.

**AMEC Environment & Infrastructure,
a Division of AMEC Americas Limited**

**Original hard copies signed by
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Senior Associate Geotechnical Engineer

BELL MINE SITE
2014 DAM SAFETY INSPECTION
FINAL REPORT

Submitted to:

Glencore Canada Corporation
Toronto, ON

Submitted by:

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November 2014

AMEC File: TE143007

EXECUTIVE SUMMARY

AMEC Environment & Infrastructure, a division of AMEC Americas Limited (AMEC), was retained by Glencore Canada Corporation (Glencore), to conduct a Dam Safety Inspection (DSI) on the Bell Mine Site near the Village of Granisle, British Columbia (BC). The DSI was completed by a senior dam safety engineer who is also a registered Professional Engineer in the Province of BC. The DSI was carried out following the Canadian Dam Association (CDA) 2007 Dam Safety Guidelines, the *BC Water Act* Dam Safety Regulations (Reg. 163/2011), and other best practices and procedures in the industry. This report has been prepared in accordance with the requirements of the BC Ministry of Energy and Mines (MEM) guidance, including MEM's updated guidelines for Annual DSI's, revised August 2013.

The Main Tailings Impoundment Dams, TEX Dams, and Collection Pond Dykes were inspected and appeared to be in satisfactory condition. The following presents the findings of the DSI in accordance with MEM's guidelines for annual DSIs.

a) Classification of the Dam(s) in Terms of Consequence of Failure (ref. Canadian Dam Association, 2007 Dam Safety Guidelines)

In 2009, a dam safety review was conducted by AMEC for the Bell Mine dams. At that time, the dams at the Bell Mine were all classified as low. In the 2013 DSI, the classification for Bell Tailings Dams 1, 3, 4 and 7 was indicated as high. This was as a result of a risk assessment process that was undertaken by Glencore (formerly Xstrata) in 2011 that concluded that the classification should possibly be increased for these dams. In 2014, Glencore further assessed the dam classifications and determined that this increase in classification was not warranted. As a result, the dams remain classified as low (per the 2009 DSR). All of the other water collection damson the site (a total of 10) are also classified as low.

b) Significant Changes in Instrumentation Monitoring Records

No significant changes to dam instrumentation readings were observed at the time of the 2014 DSI at Bell Mine.

c) Significant Changes to Dam Stability and/or Surface Water Control

No significant changes to dam stability or surface water controls were observed at the time of the 2014 DSI at Bell Mine. There were no concerns noted during the DSI with respect to dam stability and surface water control.

d) For major tailings impoundments, as described in Part 10.5.2 of the Health, Safety and Reclamation Code for Mines in British Columbia, all operating dams shall have a current Operations, Maintenance and Surveillance (OMS) Manual. The annual report shall indicate the latest revision date of the OMS Manual

The Operations, Maintenance and Surveillance (OMS) Manual for the Bell Mine is combined with that of the Granisle Mine and was first issued in April 1999. The most recent revision is Version 3 dated December 2008.

Based on the review conducted as part of the 2014 DSI, the OMS Manual is generally complete and covers the important elements, including management roles and responsibilities, for safe operations. Nevertheless, the OMS Manual should be updated to reflect the current Dam class for the dams forming the Main Tailings Impoundment and TEX, and the dykes forming the Collection Ponds (based on CDA's 2007 five level classification system).

- e) For tailings dams classified as High or Very High Consequence, an EPP is required. The annual report shall indicate the latest revision date of the EPP document**

The Emergency Preparedness Plan (EPP) for the Bell Mine site was incorporated in the 2008 revision of the OMS Manual. A separate Emergency Preparedness and Response Plan for the combined Bell and Granisle Mines was issued in February 2013.

- f) Scheduled date for formal DSR (ref. Canadian Dam Association, 2007 Dam Safety Guidelines)**

The recommended schedule for carrying out a DSR for the Tailings Dams 1, 3, 4 and 7 is 2019. No DSRs are required for Tailings Dams 2, 5, 6 and 8 or the Collection Pond Dykes, which are low consequence structures.

- g) Summary of Past Year's Construction**

No construction at the Bell Mine Tailings Dams or their appurtenances has been carried out since the time of the 2013 DSI.

- h) Tailings and Flood Storage/Freeboard**

The freeboards observed at the time of the 2014 DSI were approximately 8 m for the Main Tailings Impoundment. Freeboards were more than adequate on TEX and Collection Ponds.

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IMPORTANT NOTICE

This report was prepared exclusively for Glencore Canada Corporation by AMEC Environment & Infrastructure, a wholly owned subsidiary of AMEC Americas Limited. The quality of information, conclusions and estimates contained herein is consistent with the level-of-effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by Glencore Canada Corporation only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

1.0 INTRODUCTION

AMEC Environmental & Infrastructure, a division of AMEC Americas Limited (AMEC), was retained by Glencore Canada Corporation (Glencore), to conduct a Dam Safety Inspection (DSI) at the Bell Mine Site near the Village of Granisle, British Columbia (BC). This report presents the findings of the DSI.

The previous DSI was conducted by MBS GeoConsulting (MBS) in May 2013. The results of that inspection are described in the report titled *"2013 DSI Report, Bell and Granisle Mine Sites, Granisle, BC"*, which was issued in July 2013 (MBS, 2013).

This DSI was carried out following the Canadian Dam Association (CDA) 2007 Dam Safety Guidelines, as well as guidelines for Dam Safety Inspections provided by the British Columbia (BC) Ministry of Energy and Mines (MEM) under the *Mines Act* and Health, Safety and Reclamation Code for Mines in BC, and other best practices and procedures in the industry.

This report provides the following:

- Section 2.0 - Site description;
- Section 3.0 – Scope of the 2014 annual inspection
- Section 4.0 – Activities since 2013 annual inspection;
- Section 5.0 - Climate and water balance;
- Section 6.0 – Instrumentation monitoring;
- Section 7.0 - Results of dam safety inspection;
- Section 8.0 - Status of previous recommendations; and
- Section 9.0 – 2014 DSI recommendations.

2.0 SITE DESCRIPTION

The former Bell Mine Site is located approximately 10 km northeast of the Village of Granisle, BC on the Newman Peninsula within Babine Lake, as illustrated in Figure 1.1. Figure 1.2 presents an aerial view of the Bell Mine Site.

The Bell Mine was an open pit copper producer that operated between 1972 and 1992. The mine is permanently closed. However, ongoing care and maintenance activities are currently carried out and involve operation of a runoff collection system (comprising a series of collection ponds and associated pump houses and pipelines), continuing monitoring and surveillance of the site as well as ongoing reclamation works.

Throughout the life of the mine, approximately 49,000,000 m³ of tailings were generated and stored in two impoundments, the Main Impoundment and the Tailings Pond Extension (TEX). The Main Impoundment comprises six dams, Dam 1 to 6, with three of them classified in the high consequence category (Dams 1, 3 and 4) and the other three in the low consequence category (Dams 2, 5 and 6). TEX, on the other hand, consists of two dams, with Dam 7 classified in the high consequence category and Dam 8 in the low consequence category. The current classifications of the Bell Mine dams were assigned during a dam safety workshop organized by Xstrata Canada Corporation in May 2011 (MBS, 2013). The dams comprising both impoundments consist of waste rock embankments with upstream filter zones. Tailings were originally spigoted from and later cycloned on the upstream side of the dams to form wide beaches. The dams were raised in the downstream direction. In its final configuration, the Main Impoundment dams reached an approximate total length of 3,125 m and a maximum height of 52 m, whereas the TEX dams reached an approximate total length of 670 m and a maximum height of 55 m. The total area of the tailings impoundment is about 178 ha. The available dam design sections are attached in Appendix A.

Monitoring of the tailings pond water level in the Main Tailings Impoundment indicates a long-term trend toward a lower pond level, with water levels currently sitting at approximately El. 784.3 m. This is equivalent to a tailings beach length over 300 m. The Main Tailings Impoundment has no spillway. Water that accumulates in the pond seeps through the tailings dams.

Seepage from the Main Tailings Impoundment, waste rock piles, and local overland runoff is intercepted and managed by 9 water collection ponds, including CP 1-3, CP 1-5, CP 3-1, CP 7-1, CP 2, CP 4-1, CP 5, CP D7, CP 8. Water collected in these ponds is monitored for quality and pumped to the Bell open pit, as necessary. The collection ponds are formed by low earthfill dams, less than 8 m (25 ft.) high, typically constructed of clayey till or rockfill shells with a clayey till upstream low permeability zone. At some collection facilities (CP 3-1, CP 4-1, CP D7 and CP 8), discharge of collected waters to Babine Lake is permitted if the water quality meets specific permit criteria.

Figure 2.1 Overview Location Map Bell Mine Site (source: EcoMetrix)

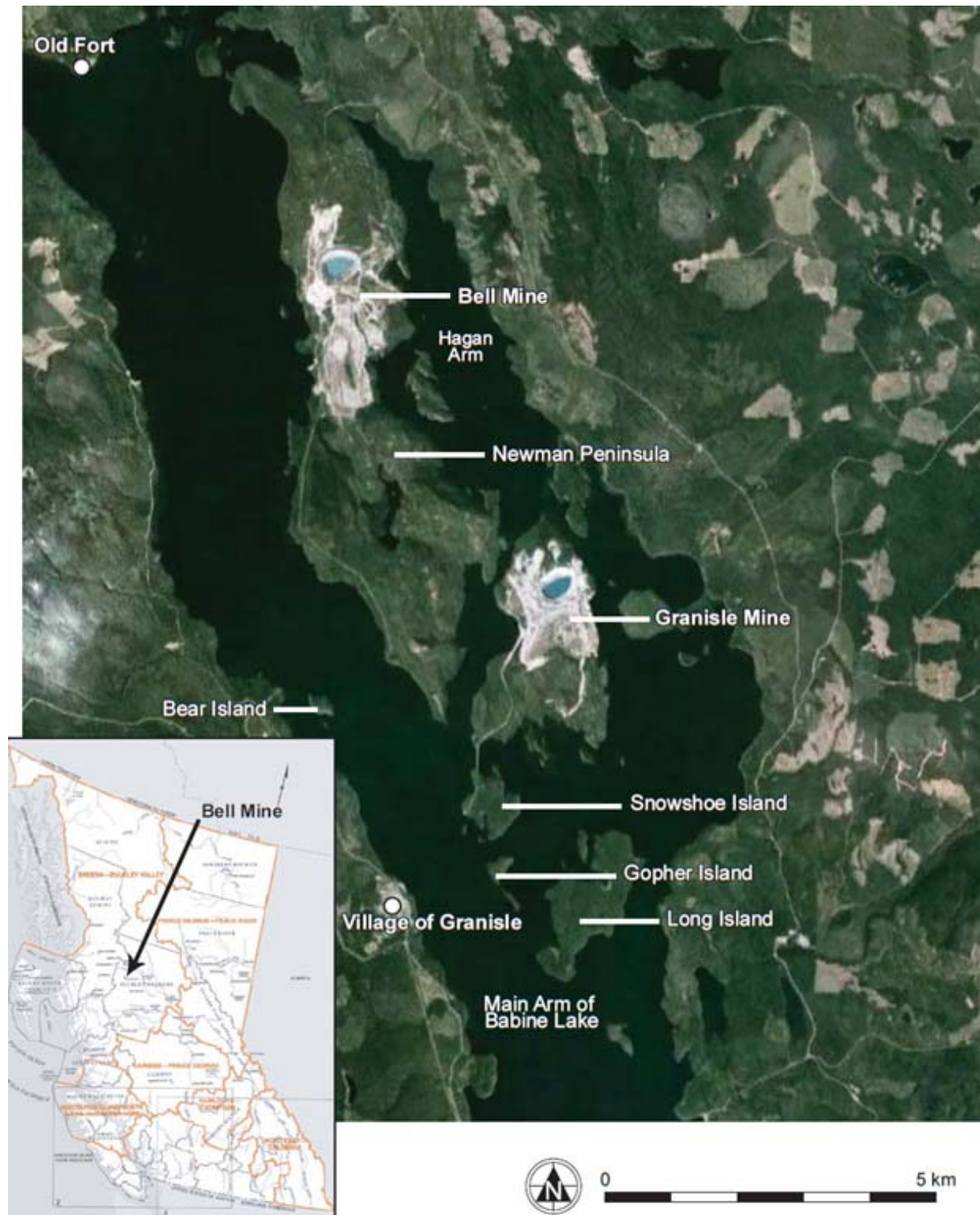


Figure 2.2 General Site Plan Bell Mine Site (source: EcoMetrix)



3.0 SCOPE OF THE 2014 ANNUAL INSPECTION

The 2014 DSI comprised:

- Review of the available information on the design and construction of the tailings and water/sludge retention dams prior to the site visit;
- Visual inspection of the tailings and collection pond dams;
- Discussions with the site personnel responsible for dam surveillance who conduct quarterly dam inspections;
- Review of activities since the 2013 DSI;
- Review of the monitoring data relevant to dam safety;
- Review of climate and water balance information; and
- Preparation of this DSI report.

The dams inspected included:

- The Main Tailings Impoundment Dams (Dams 1 to 6)
- The Tailings Pond Extension Dams (Dams 7 and 8)
- Collection Pond Dams

In general, the visual inspections of the dams involved making observations at dam crests, toes and slopes regarding structural integrity of the dams, spillways and associated facilities, including adjacent tailings beaches (where applicable).

This DSI report is intended to meet the requirements of the British Columbia Ministry of Energy, Mines and Natural Gas' Guidelines for Annual DSI reports, dated October 2012. The last DSI was carried out by MBS GeoConsulting Limited in 2013 as documented in the 2013 DSI report. The last dam safety review for the site was carried out in 2009 (AMEC 2010).

4.0 ACTIVITIES SINCE THE 2013 ANNUAL INSPECTION

No construction at the Bell Mine site dams or their appurtenances was carried out since the time of the 2013 DSI (July 2013). However, Glencore has commenced construction of a water treatment plant that is intended to treat water from the open pit which is now the primary receptor for seepage water from the collection ponds.

5.0 CLIMATE AND WATER BALANCE

5.1 Climate

The climate at the Bell Mine site is characterized by long and cold winters, with an average annual precipitation of approximately 550 mm, 60% of it as rainfall. Figures 5.1 to 5.4 show temperature and precipitation records, along with normal distribution of temperature and precipitation for the site throughout the year, based on data obtained from the Topley Landing (station ID: 1078209) and Smithers Airport (station ID: 1077499) weather stations sponsored by Environment Canada. Of these two stations, Topley Landing is the closest to the Bell Mine site, approximately 20 km to the south of the site.

Based on data collected at the Topley Landing Climate Station between 1971 and 2000 (Environment Canada), January is the coldest month with an average mean daily temperature of -8.5°C. July is the warmest month with an average mean daily temperature of +14.6°C. Lake evaporation for the site has been estimated at different stages through the life of the mine, and ranges between 380 mm/year and 560 mm/year (Altura, 2008).

Climate data for the Bell Mine site has traditionally been obtained from the Topley Landing climate station. Temperature and precipitation data from Topley Landing was collected only sporadically in 2013 (e.g. compiled data from Environment Canada websites covers only the months of January and between April and October), and no data was collected in 2014. Therefore, temperature and precipitation data from the Smithers Airport weather station, located approximately 64 km to the south-west of the mine site, was also used to assess the climate at the mine site over the period of January 2013 to June 2014. Based on a comparison of historical average annual data, the Topley Landing and Smithers Airport weather stations have similar temperature and precipitation distributions throughout the year, with Smithers Airport being slightly warmer (1°C higher average daily temperature over a year) and dryer (6% less annual precipitation) than Topley Landing.

The total precipitation recorded at the Smithers Airport station for 2013 (calendar year) was 370 mm, which was lower than the average annual precipitation estimated at 508 mm based on site precipitation records from 1981 to 2010. Although the total precipitation for 2013 was lower than the average precipitation, the months of May, August and December showed increased precipitation above the average by between 26 to 164%. Similarly, 2014 precipitation data (between January and June) was lower than the average annual precipitation. Overall results of comparing 2013 and 2014 weather records with average year data suggest that temperature and precipitation change has not been significant at the site from a dam safety perspective.

5.2 Water Balance

Overall, the water management at the Bell Mine site is consistent with the OMS Manual. Water balance is not a concern at the Bell Mine site given the current state of the Main Tailings Impoundment and the TEX. At the time of the site visit, tailings beaches were adequate at both of the Bell tailings impoundments. As reported in previous DSI Reports, the widths of those

beaches has not significantly changed over the last 15 years. Available freeboard does not appear to represent an issue for the Main and TEX Tailings Impoundments, as a very minor water pond of limited extent was observed at the Main Tailings Impoundment and the impoundment's freeboard was approximately 8 m. Figure 5.5 presents the historic tailings pond water levels for the tailings pond, at the Bell Mine site.

As noted above, a water treatment plant is under construction to address water accumulating in the open pit.

Figure 5.1 Average Monthly and Normal Distribution of Temperature for Topley Landing Station (January to December 2013)

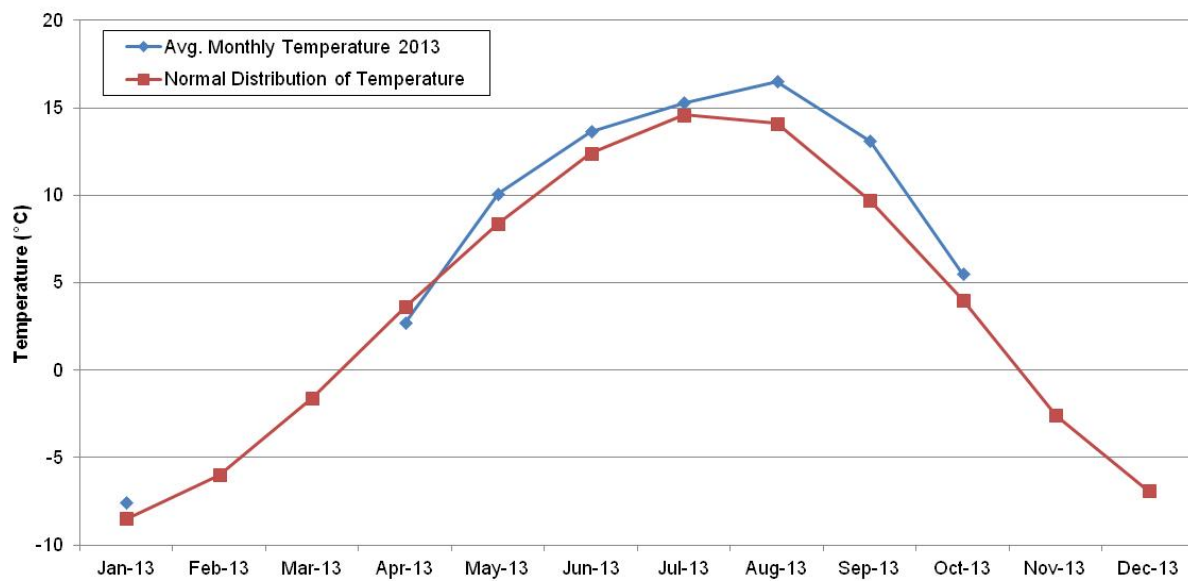


Figure 5.2 Average Monthly and Normal Distribution of Precipitation for Topley Landing Station (January to December 2013)

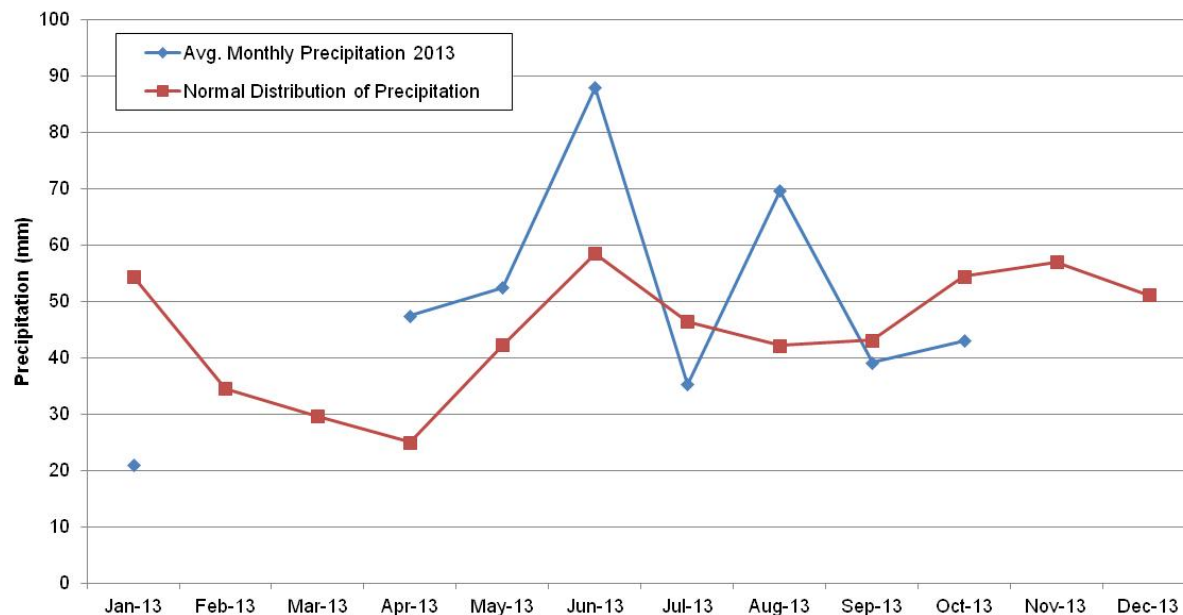


Figure 5.3 Average Monthly and Normal Distribution of Temperature for Smithers Airport Station (January 2013 to June 2014)

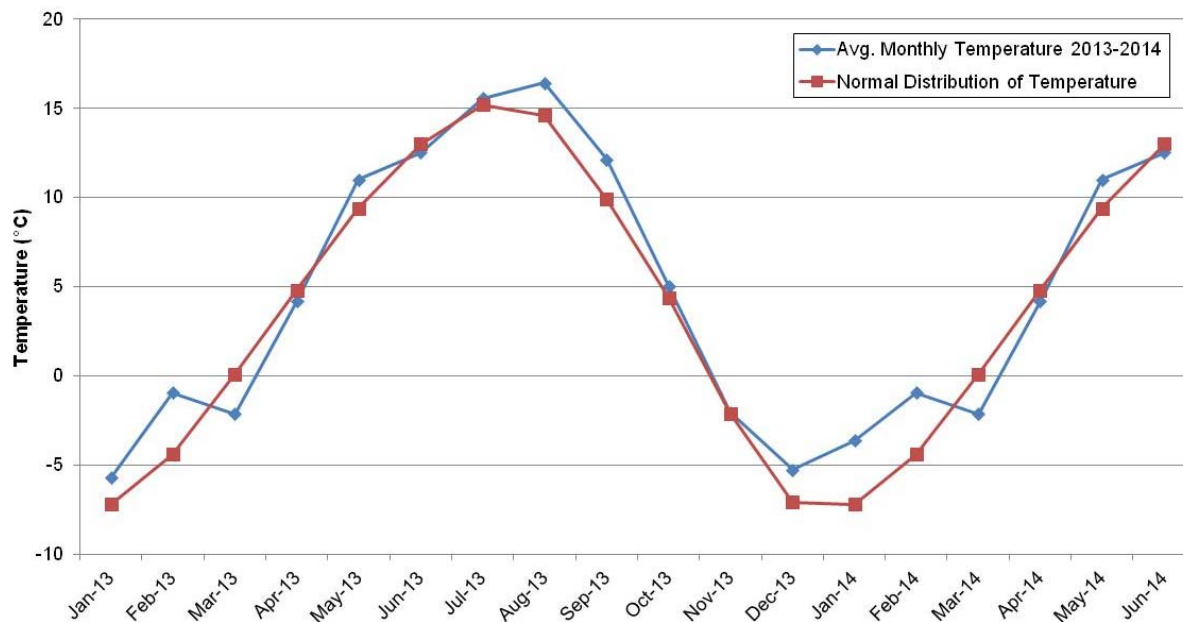


Figure 5.4 Average Monthly and Normal Distribution of Precipitation for Smithers Airport Station (January 2013 to June 2014)

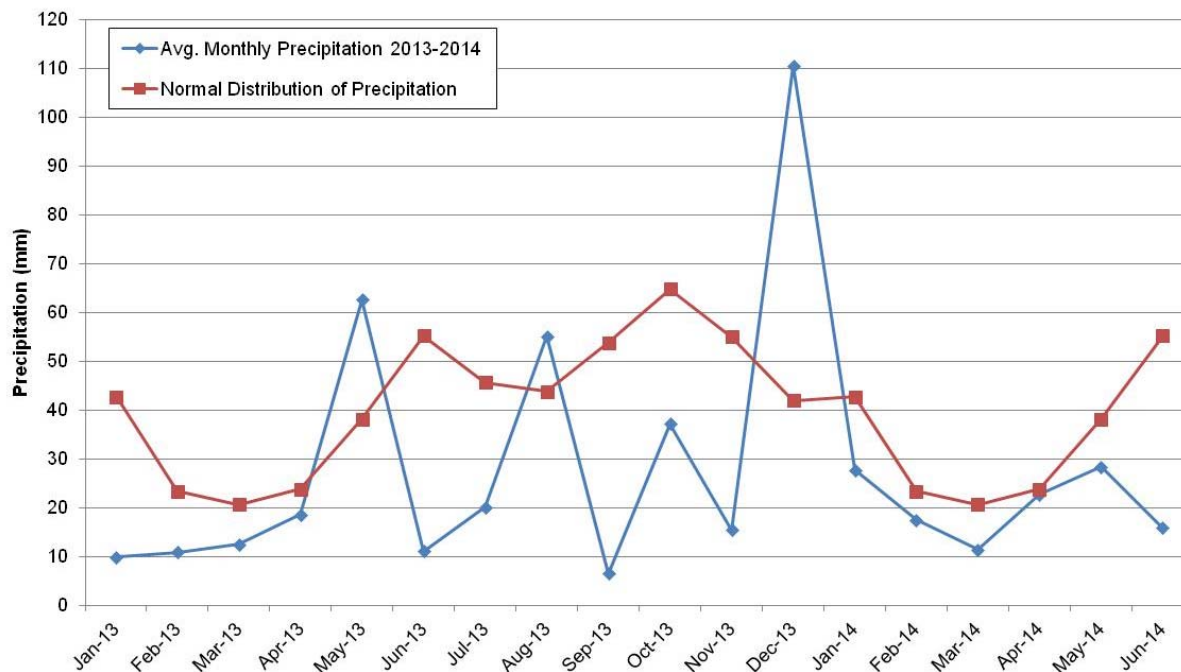
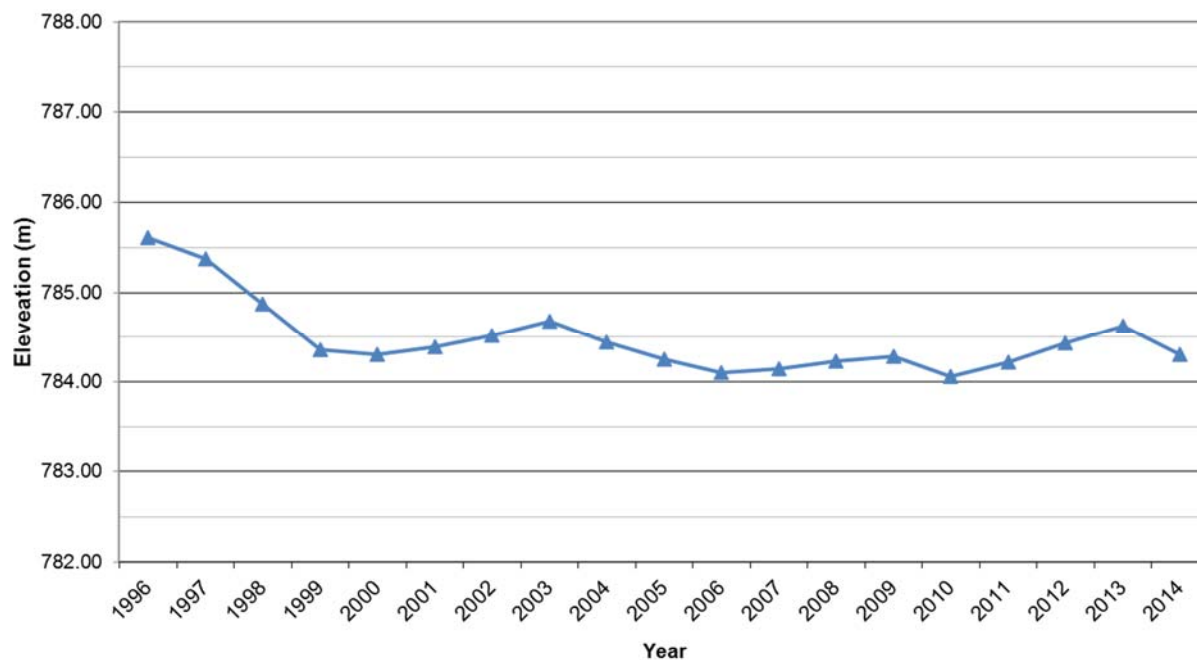


Figure 5.5 Historic Tailings Pond Water Levels for the Main Tailings Pond



6.0 INSTRUMENTATION MONITORING

There are six piezometers installed in the Bell tailings impoundments (see Figure 6.1). Water levels measured in these piezometers are presented in Figures 6.1 to 6.6. No significant changes in piezometric levels were noted that would indicate potential problems with the stability of the tailings dams.

The piezometric levels are generally steady. Immediately upstream of the tailings dams, the tailings are essentially fully drained ('semi-dry'). Piezometer T 2B is now reading dry. For the other standpipes, it is not clear that the readings that are being measured are reflective of the pore pressure conditions at those locations. The piezometric elevations that are measured are 1 to 5 m above the base of the standpipe. When undertaking future readings, Glencore should also locate the bottom of the pipe below the measured water level to determine if the water level that is being measured in the standpipe is actually reflective of the surrounding groundwater conditions and not as a result of the standpipe being infilled with soil which could give a false reading.

As noted in MBS 2013, Piezometers D3 and D4 are located in Dam 1, next to the stabilizing berm, in an area where strong ARD is generated in the dam rockfill shell. This might affect the performance of the piezometers. However, D3 is reading dry now.

The fluctuations noted in Piezometer W12 may be related to fluctuations in the seepage collection pond downstream of this piezometer (CP7-1).

Figure 6.1 Monitoring Well Locations (source: EcoMetrix)



- Routine Monitoring for Chemistry and Elevation
- Only Elevation Monitoring Required

Figure 6.2 Piezometer T 2B - Historic Water Levels (location: tailings)

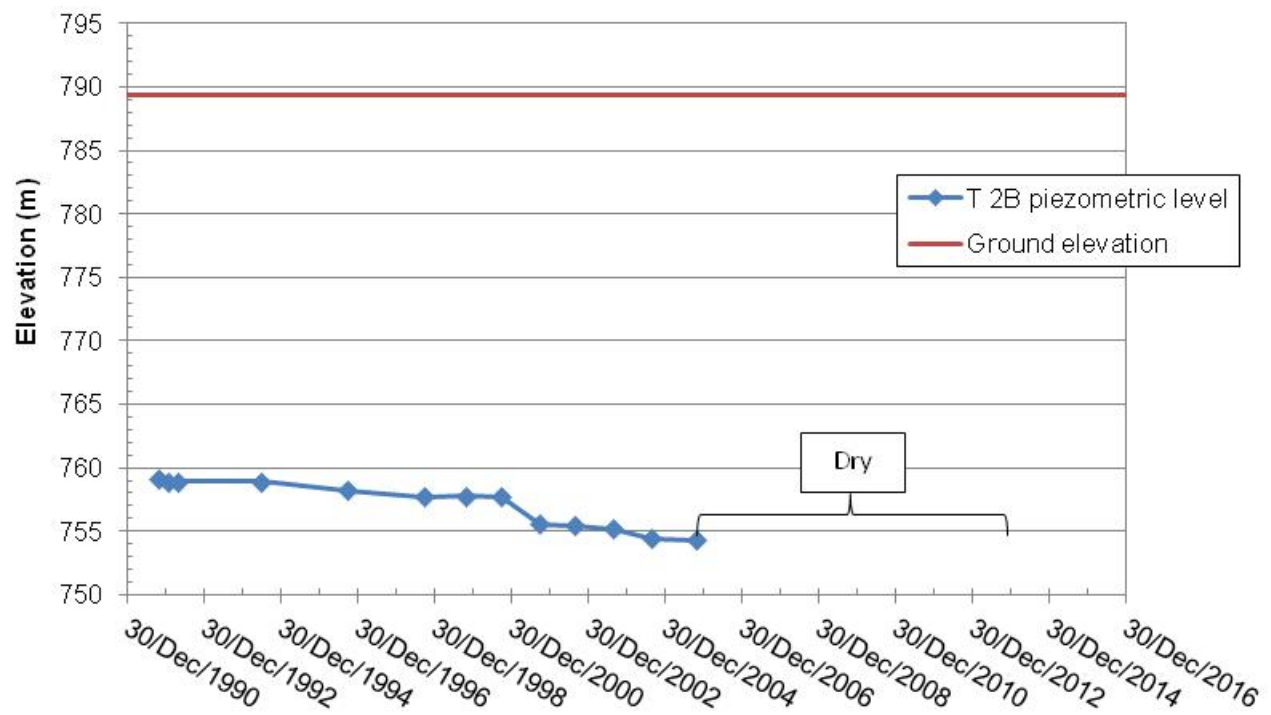


Figure 6.3 Piezometer T 2C - Historic Water Levels (location: tailings)

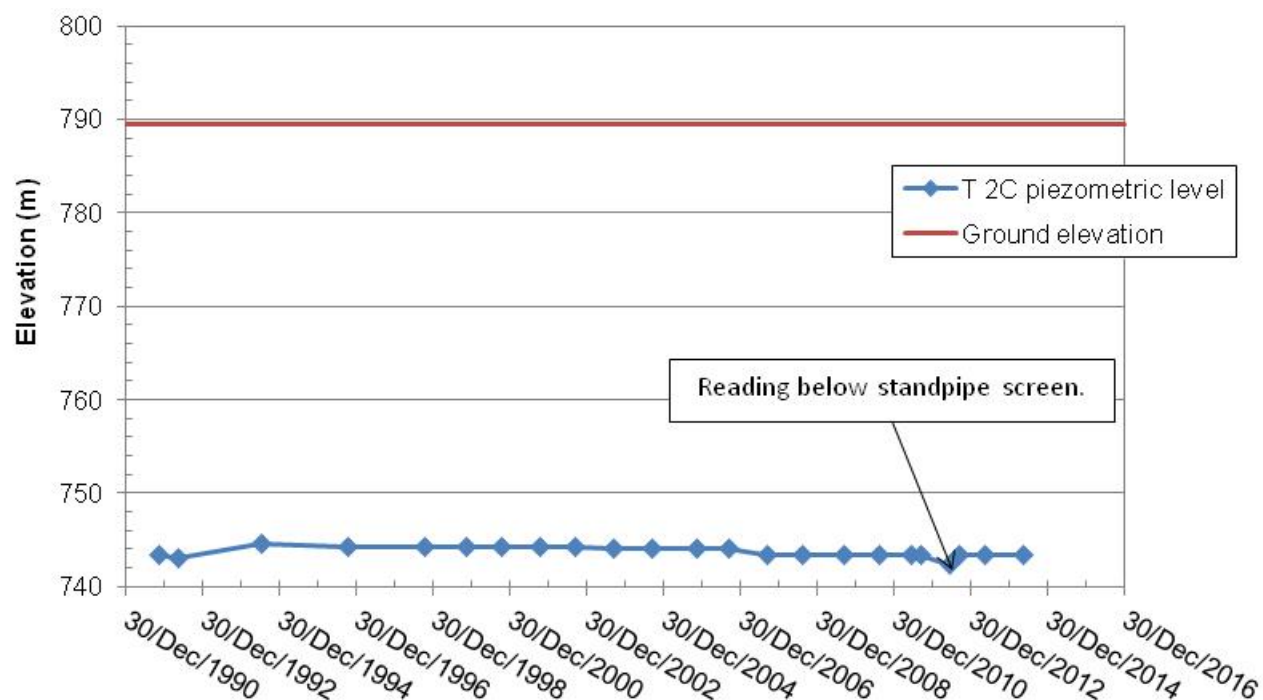


Figure 6.4 Piezometer D3 - Historic Water Levels (location: Dam 1)

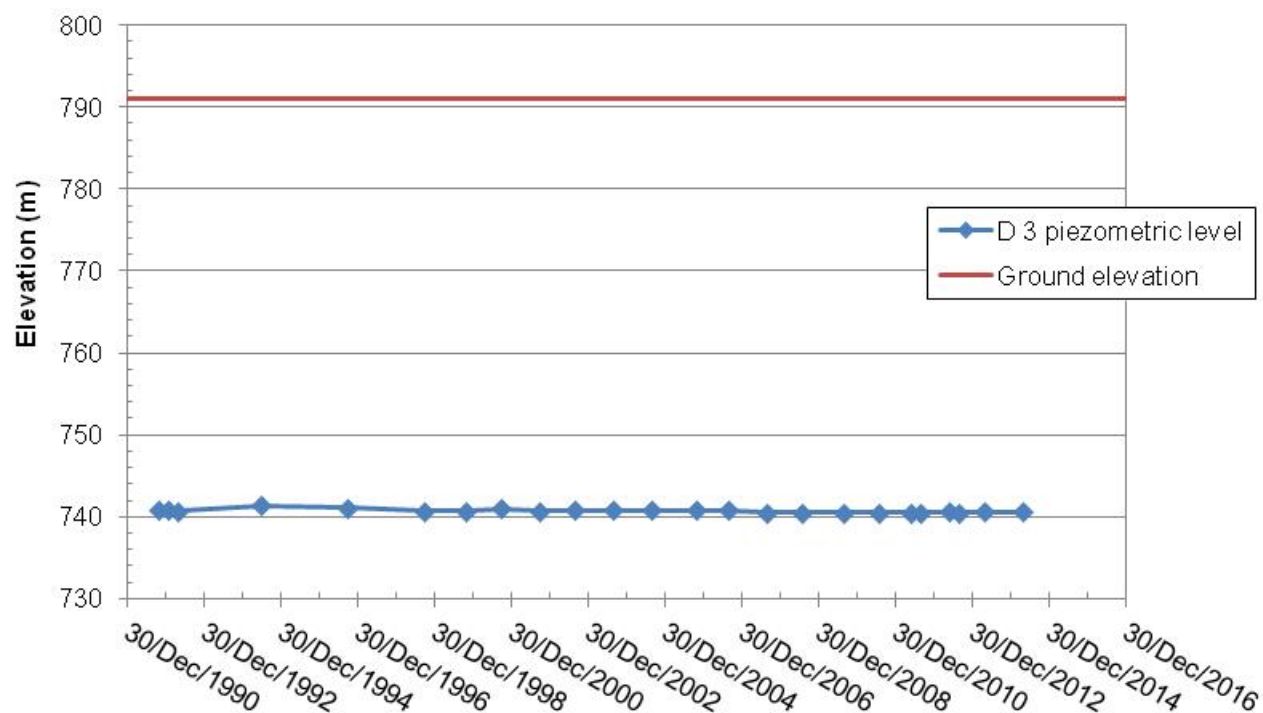


Figure 6.5 Piezometer D4 - Historic Water Levels (location: tailings)

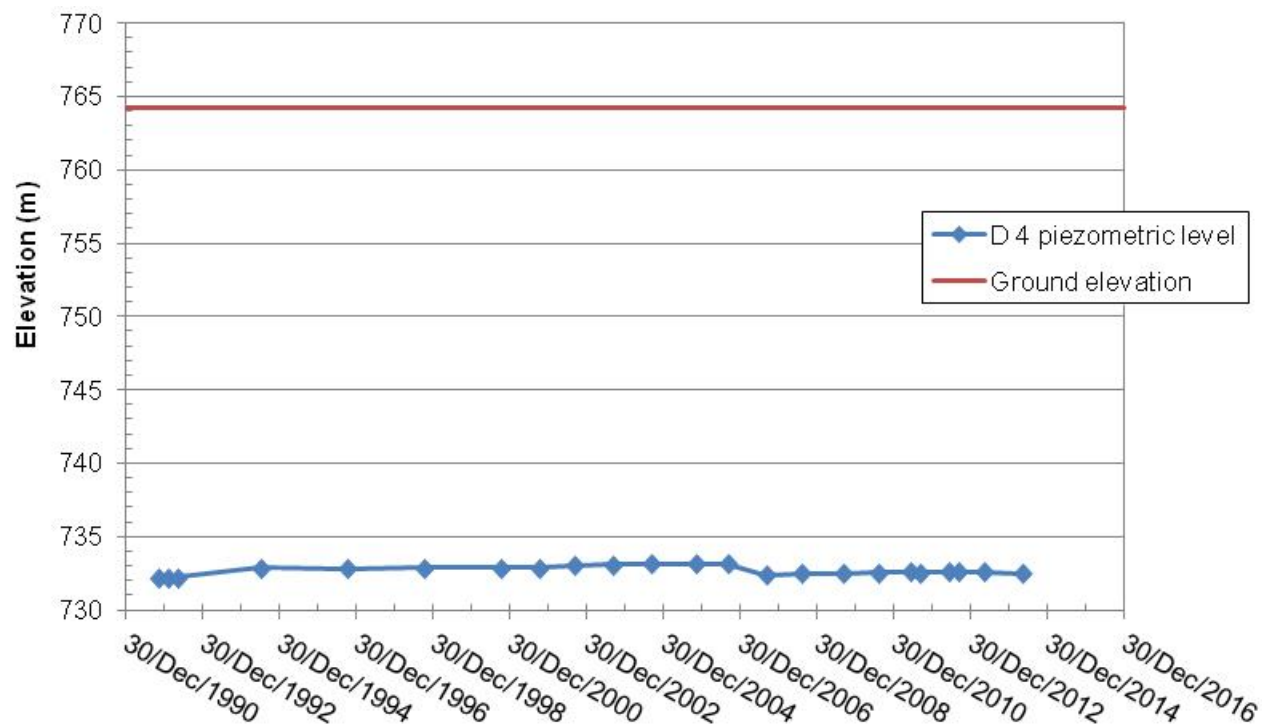


Figure 6.6 Piezometer D10 - Historic Water Levels (location: Dam 1)

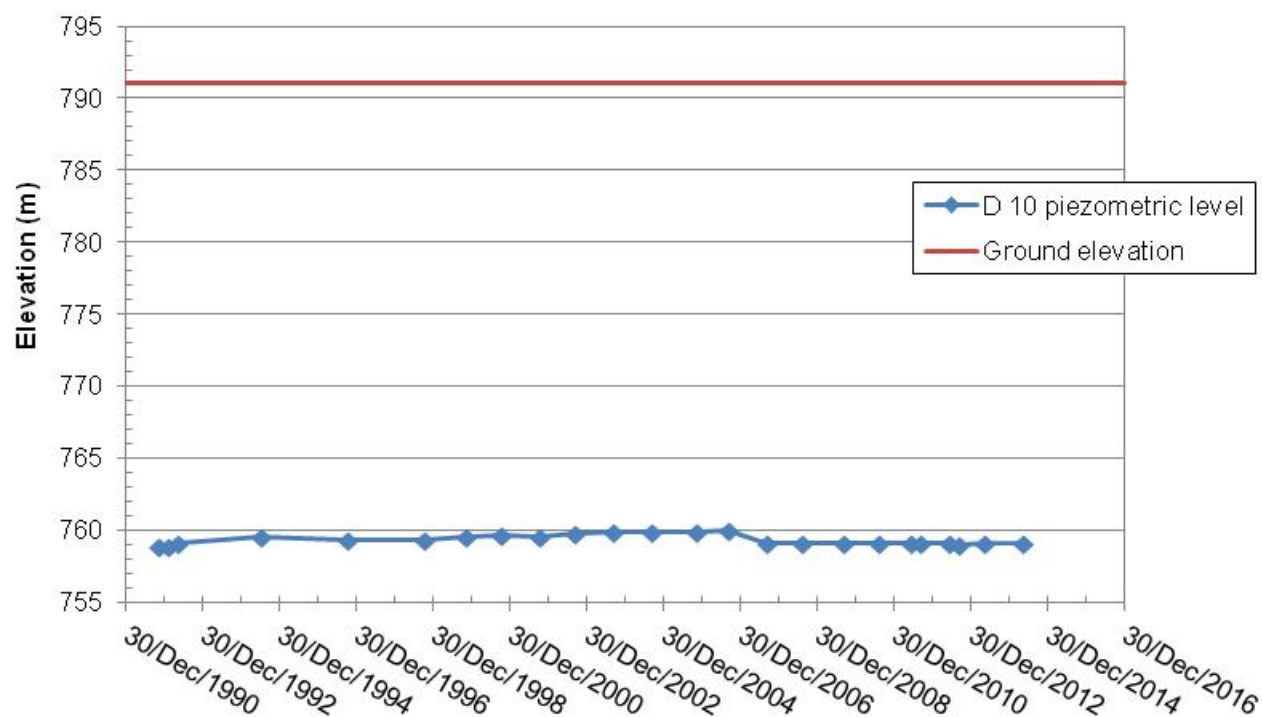
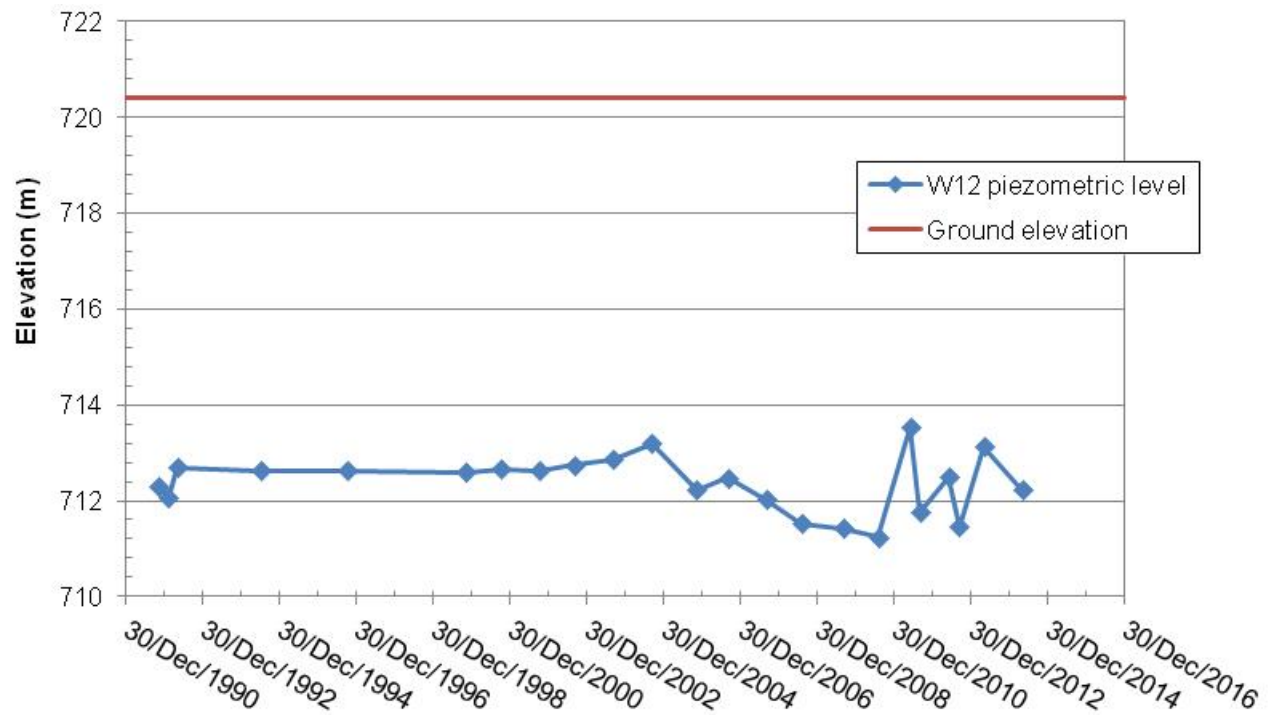


Figure 6.7 Piezometer W12 - Historic Water Levels (location: downstream of TEX)



Note: Monitoring well W12 was damaged after September 2007 but it was repaired and continues to be monitored.

7.0 RESULTS OF DAM SAFETY INSPECTIONS (DSI)

The site inspection/condition assessment was conducted for the Bell Dam site on 11 June 2014, for the Main Impoundment and TEX dams. The inspections were carried out by Andy Small, P.Eng., from AMEC and Messrs. Ken Tell and Sean O'Connell, from Glencore.

The visual inspection included, but was not limited to, observing the condition of the dams, deficiencies, and potential or immediate concerns. In general, the visual inspections involved making observations at dam crests, toes and slopes with regard to the structural integrity of the dams, vegetation establishment, spillways (when applicable) and associated facilities, including adjacent tailings beaches. No subsurface investigations, to examine the soil conditions for the dam, were conducted at the time of the site inspections. Photographs of the Bell Mine site and the Main Impoundment and TEX dams are presented in Appendix C. Photographs and checklists for the collection ponds are in Appendix D.

Overall the Main and TEX Impoundment dams appeared to be in satisfactory condition. A summary of the observations that were anomalous are presented in Table 7.1. Also indicated are whether the observations are new and if there is a concern with these observations. Checklists that were completed as part of the DSI are included in Appendices C and D.

Table 7.1 Summary of Anomalous 2014 DSI Observations

No.	2014 DSI Observations	Change from 2013	Concern?
Main Tailings Impoundment (Dam 1 to 6)			
1	The toe of Dam 1 toe is oversteepened about 200 m south of the stabilizing berm above CP1-3. Coarse rockfill is absent from this area however the area appeared to be stable at the time of the inspection.	No	No
2	A low point was noted on the crest of Dam 3 where water can pool and flow downward into the rockfill shell of the dam. Soft ground and two sinkholes were noted in the soil cover material over the rockfill.	New Observation	Possible
3	Pipes from CP1-3, CP1-5 and CP3-1 have been routed up the downstream slope of Dam 3 which represent a potential erosion hazard in the event of a pipe break. However, the downstream shells are constructed of heavy rockfill.	No	No
Tailings Pond Extension (Dam 7 and 8)			
4	Erosion was noted on the surface of the downstream slope of Dam 7 (first observed in 2012)	No	Possible
Collection Pond Dykes			
5	Depressions were noted in the upstream portions of the crests of the CP8 and CP5 dykes (first noted in 2012)	No	No

No.	2014 DSI Observations	Change from 2013	Concern?
6	At the downstream toe of CP5, there is a monitoring well that as water flowing out of the top of the well. This is well 17A and has been artesian since 2008. The monitoring well logs indicate that the well is installed in an aquifer that is likely connected to groundwater to the north of the pond. The water issuing from the well is not related to the water level in the seepage collection pond.	No	No
7	The emergency spillways in some of the CPs appear to have undersized erosion protection.	No	Possible
8	The old slump area on the downstream slope of the CP8 dyke appeared to be stable at the time of the inspection.	No	No
9	Vegetation overgrowth (tall grass, bushes and small trees) was noted on the collection pond dykes and in their spillways which impedes adequate visual inspection.	No	Yes

8.0 STATUS OF PREVIOUS RECOMMENDATIONS

Recommendations that were provided in the 2009 DSR and 2013 DSI for Bell Mine site are presented in Table 8.1. The table also indicates if each of the recommendations is still appropriate or not applicable and if action has been taken on the recommendations thus far.

Table 8.1 Summary of Previous Recommendations

PREVIOUS RECOMMENDATIONS	REFERENCE REPORT	2014 STATUS	
		Actions Taken	Validity
A review of the hydrology and operation procedure of CP4-1 with consideration of the inflow contribution from Black Spruce Swamp pump should be carried out to determine appropriate measures to avoid over spilling via the emergency spillway of CP4-1 pond.	2009 DSR	None	Appropriate
Surface erosion of a part of the d/s slope of Dam 7 requires frequent monitoring by the site personnel. This should be carried out on a monthly basis, and after each large runoff event. If by the spring 2014 the erosion further progresses, the dam slope should be repaired. It is also recommended that the site personnel prepare a construction plan, which identifies the contractor, equipment and materials that would be required when the repair of the dam slope is to be carried out.	2013 DSI	Continued to monitor, no change	Reassess need for repair in 2015
The inspections of the collection pond dams by the site personnel need be carried out carefully since the dense grass makes noticing potential dam deformations difficult or impossible. It is recommended that the vegetation, including tall grasses, be removed from the dykes and spillways at the Bell site collection ponds.	2013 DSI	Ongoing	Appropriate
Trees should be removed from the collection pond dams, including the trees growing close to dam toes.	2013 DSI	None	Appropriate
The inspections of the dams by the site personnel on a quarterly basis should continue. Taking photographs from the same locations is recommended.	2013 DSI	Ongoing	Appropriate

9.0 2014 DSI CONCLUSIONS AND RECOMMENDATIONS

The dams forming the Main and TEX Impoundments and the nine Collection ponds are considered to be in satisfactory condition. Recommendations for the Main Tailings Impoundment, TEX, and Collection Ponds are provided in Table 9.1.

In addition to continuing to implement the surveillance program as per the OMS Manual, the following additional recommendations are made for the continued safe operation of the dams forming the Main Impoundment, Tailings Pond Extension and Collection ponds.

Table 9.1 ***Summary of Recommendations for 2014 DSI – Main Impoundment, TEX and Collection Pond Dykes***

No.	2014 DSI Recommendations
1	Dig a 1 m ² hole with an excavator over the sinkholes at Dam 3. Grade the surface around the sinkholes toward the excavation to allow water to shed to the hole. Monitor for further sinkhole development.
2	When reading the piezometers, check the bottom depth below the measured water level to determine if the water level being measured is reflecting the actual conditions. If necessary, pump water into the standpipes and flush out sediment that may have accumulated in the standpipe.
3	Continue to monitor the downstream slope of Dam 7 for erosion.
4	Conduct an assessment of the damage that could occur to Dam 3 if one of the pipes running up the face of the dam from CP3-1 were to rupture. The rockfill shell will likely limit damage, but this should be checked.
5	Assess the spillway capacities (accounting for vegetation growth) and the ability of the spillway to withstand erosion.
6	Develop a tree and vegetation removal plan (prioritization of tree removal to be addressed in the plan).
7	Update OMS Manual to reflect the current Dam class for the dams forming the Main Tailings Impoundment and TEX, and the dykes forming the Collection Ponds (based on CDA's 2007 five level classification system).

10.0 LIMITATIONS AND CLOSING REMARKS

Recommendations presented herein are based on a geotechnical evaluation of the findings of the Site inspection, and the reports reviewed pertaining to the noted facilities. This report was prepared by Andy Small, P.Eng. and Pablo Urrutia, P.Eng.

This report is for the exclusive use of Glencore Canada Corporation, for specific application to the area within this report. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. AMEC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. It has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

Sincerely,

**AMEC Environment & Infrastructure,
a division of AMEC Americas Limited**

Prepared by:

**Original hard copies signed by
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REFERENCES

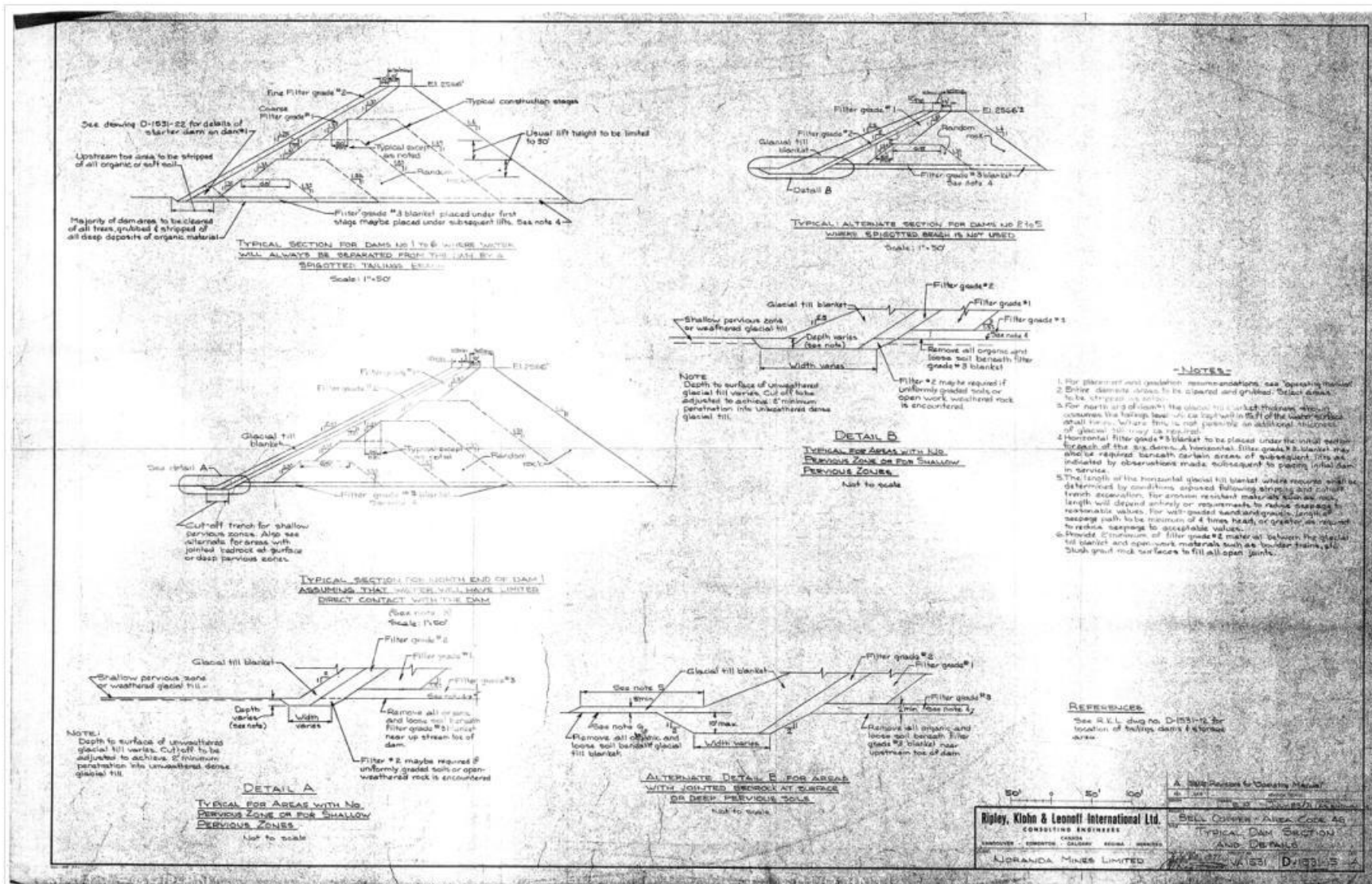
- Altura Environmental Consulting (Altura). 2008. Xstrata Copper Canada – Bell and Granisle Mines – Operation, Maintenance, and Surveillance (OMS) Manual – Rev 3, dated December 2008.
- AMEC Earth & Environmental Limited (AMEC). 2010. 2009 Dam Safety Review – Bell and Granisle Mine Sites, AMEC project File TC93915-2000, dated February 26, 2010.
- British Columbia Ministry of Energy and Mines (MEM). 2013. Annual Dam Safety Reports, dated August 2013.
- British Columbia Water Act* (2011). Dam Safety Regulations – Reg. 163/2011
- Canadian Dam Association (CDA). 2007. Dam Safety Guidelines.
- Glencore Canada Corporation. 2014. Dam Inspection Reports for Dams 1 to 8, dated March 2014.
- MBS GeoConsulting. (MBS) 2013. 2013 DSI Report – Bell and Granisle Mine Sites, Granisle, B.C., MBS GeoConsulting project No GC019, dated July 2013.

APPENDIX A

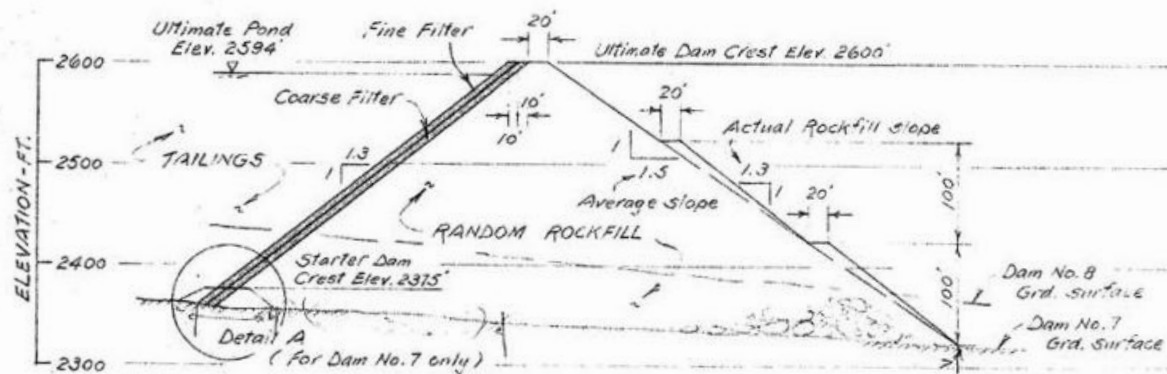
CROSS-SECTIONS OF DAMS AT BELL MINE SITE

NOTES

1. Dam 1 through 6 drawings attached in this appendix have been extracted from the report titled 'Tailings Dam Construction and Operating Manual' (Klohn Leonoff 1972).
2. Dam 7 and 8 drawings attached in this appendix have been extracted from the letter-report titled 'Bell Copper Tailings Storage Expansion' (Klohn Leonoff 1979).
3. The attached tailings dam drawings present the original design information. As the dams were constructed by the mine forces, no as-built drawings were prepared. Some changes to the dam configurations and dam construction materials used were likely introduced (e.g., tailings cycloned during the later years on the mine operation became part of the dam structures).

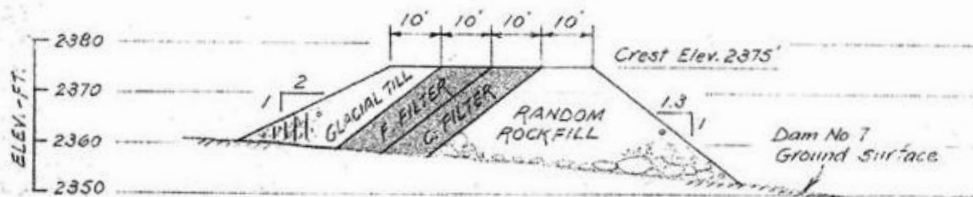






TYPICAL DAM SECTION FOR DAMS No. 7 & No. 8

Scale 1"=100'



DETAIL A - STARTER DAM FOR DAM No. 7

Scale 1"=20'

AS A MUTUAL PROTECTION TO OUR CLIENTS,
THE PUBLIC AND OURSELVES, ALL INFORMATION
AND DOCUMENTS ARE SUBMITTED FOR THE
CONFIDENTIALITY OF OUR CLIENTS.
OUR & SERVICE PROVIDER AND SUPPLIER
THAT FOR USE AND/OR PUBLICATION OF DATA,
STATEMENTS, EXCLUSIONS OR COMMENTS
PRIOR OR REISSUING OUR REPORTS AND
DRAWINGS IS RESERVED. FURTHER OUR
WRITTEN APPROVAL.

TO BE READ WITH KLOHN LEONOFF CONSULTANTS REPORT DATED Sept. 5, 1979

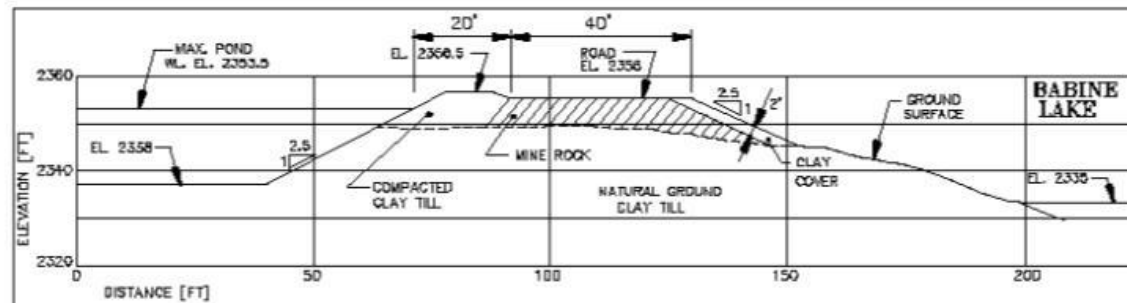
SCALE 1/4"=1'

KLOHN LEONOFF CONSULTANTS LTD.
CIVIL • GEOTECHNICAL • HYDRAULIC
VANCOUVER • CALGARY • WINNIPEG, CANADA

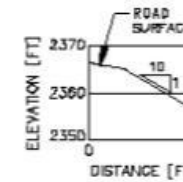
BELL COPPER TAILINGS
TYPICAL SECTION
DAMS No. 7 & No. 8

CLIENT: NORANDA MINES LIMITED

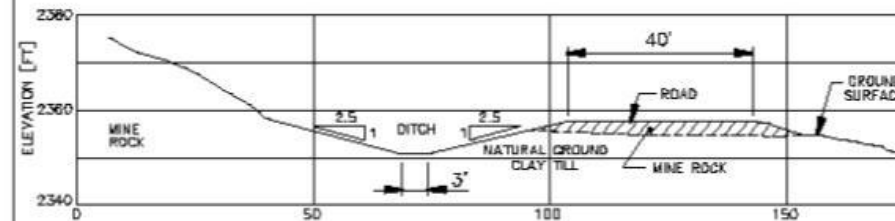
APPR: J.T. DWN: J.M. DATE: Sept. 5, 1979



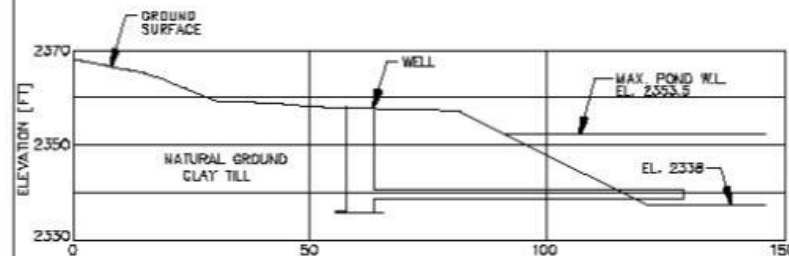
SECTION A-A



SECT
SPILL

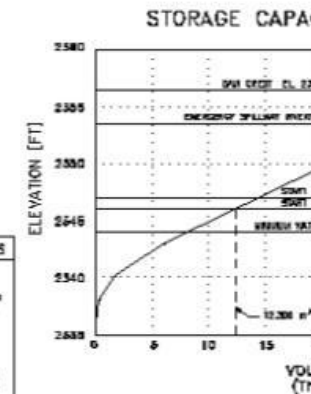


SECTION B-B

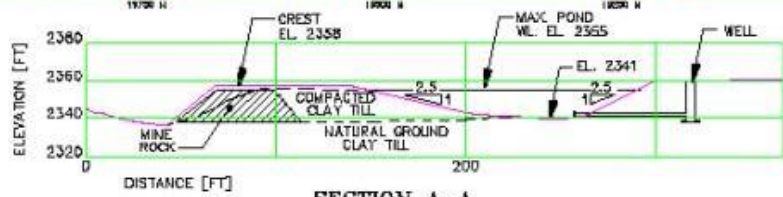
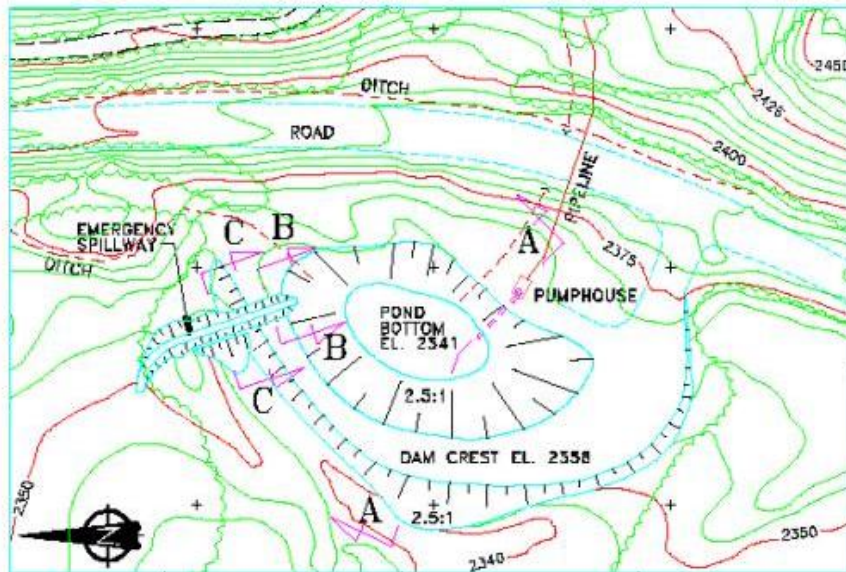


SECTION C-C

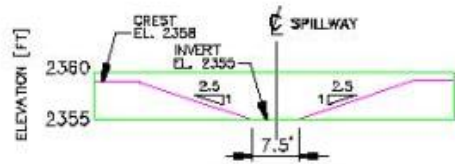
COLLECTION POND STATISTICS	
PHYSICAL DATA	
Waterhead	21.2 ft
Pond Volume	27,300 m ³
Pump Rate (2 Pumps)	3.8 m ³ /min
REQUIRED STORAGE	
Spill Wall & Rein	15,000 m ³
24 hr Ret	4,800 m ³
Pond Bottom	EL. 2348 ft
Max'm Pond Level	EL. 2353.5 ft
Dam Crest	EL. 2353.5 ft
PUMP SETTINGS	
Low Level Alarm	EL. 2345 ft
Start Pump #1	EL. 2345 ft
Start Pump #2	EL. 2345 ft
Alarm, High	EL. 2347.5 ft
Alarm, Low	EL. 2348.5 ft



Geocon	
DESIGNED BY: J. HOLLAND	CHECKED BY: R. HALLIDAY
DRAWN BY: A. GARDNER	APPROVED BY: J. HOLLAND
PROJ. NO: 15874	SHEET: 1 OF 1

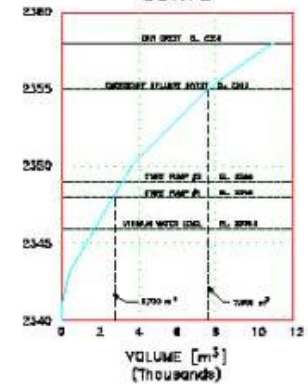


SECTION A-A

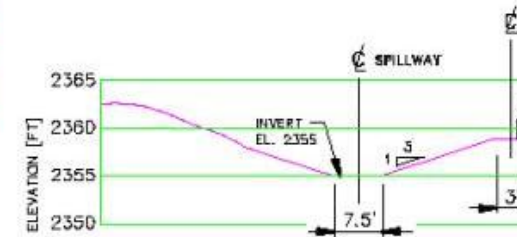


SECTION B-B

STORAGE CAPACITY CURVE



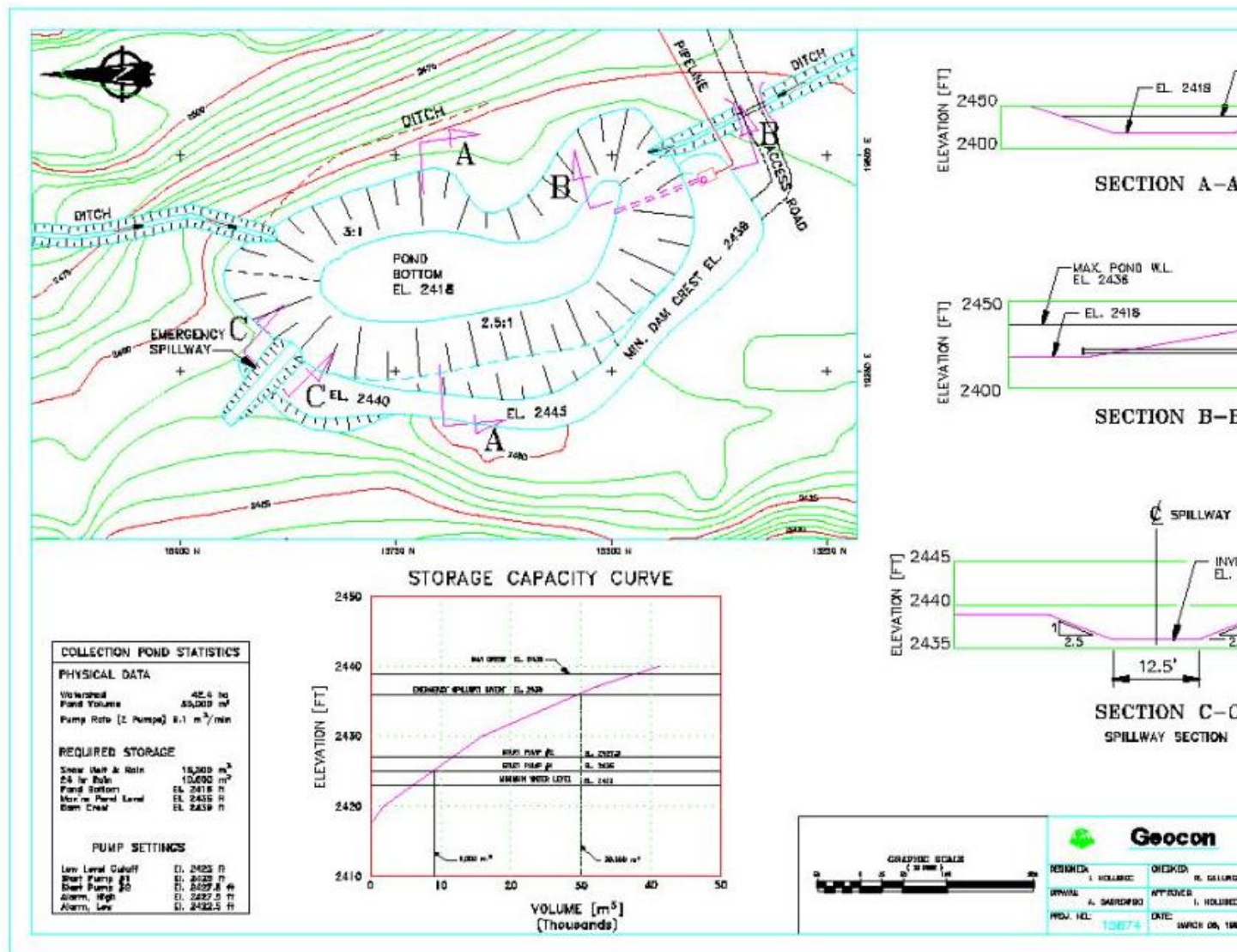
COLL	PHYS
Water	Pond V
Pump	I
REQUI	
Spur	W
24	W
Pond	B
Spur	M
Dam	C
Lee	Le
Spur	P
Spur	P
Spur	P

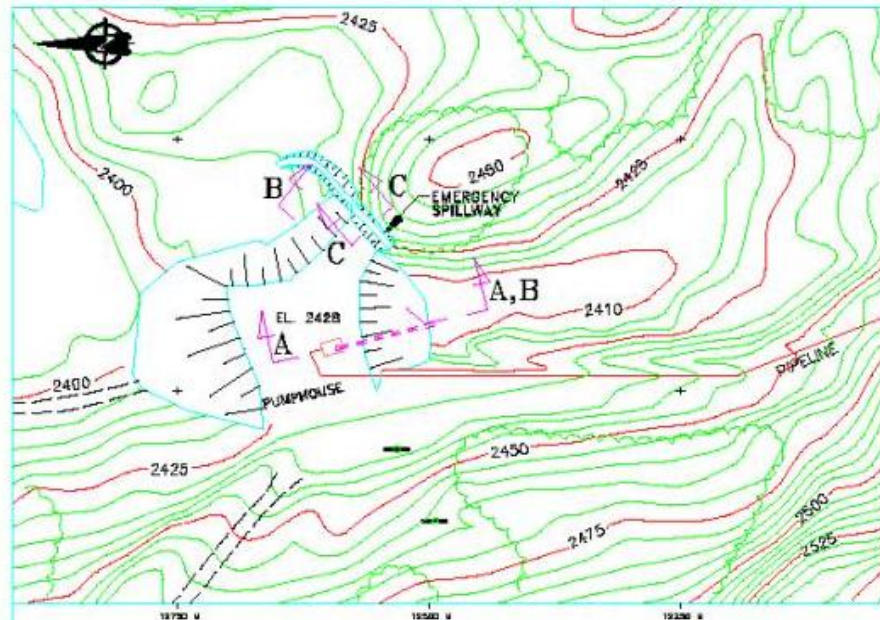


SECTION C-C
SPILLWAY SECTION

Geocon

DESIGNED BY: R. SCHWEN	CHECKED BY: R. COLLIER
DRAWN BY: A. MARRAS	APPROVED BY: J. HOLLAND
PROJECT NO.: 15874	SHEET: 1 OF 1





COLLECTION POND STATISTICS

PHYSICAL DATA

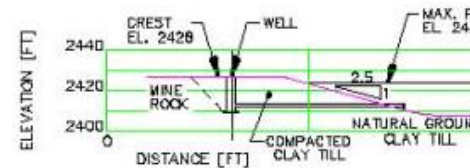
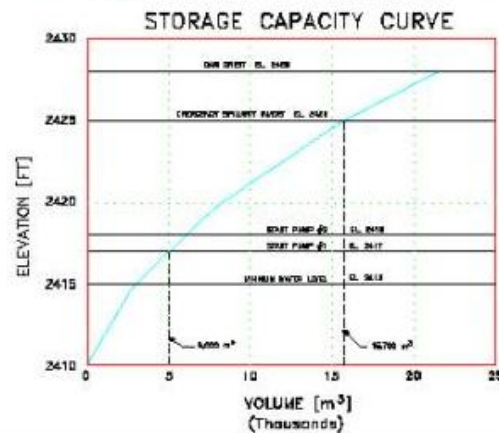
Waterhead 18.7 m
 Pond Volume 15,709 m³
 Pump Rate (2 Pumps) 3.8 m³/min

REQUIRED STORAGE

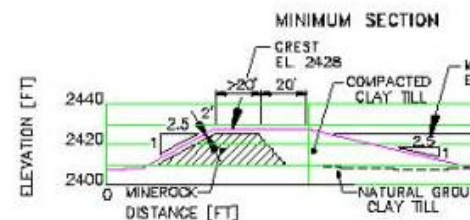
Storage Main & Main 15,709 m³
 Pond Bottom EL. 2427 ft
 Max m Pond Level EL. 2425 ft
 Dam Crest EL. 2428 ft

PUMP SETTINGS

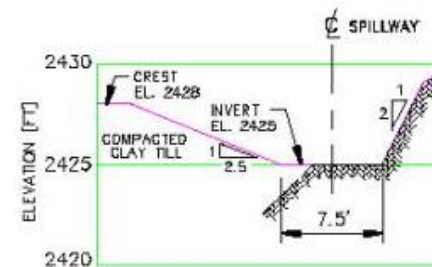
Low Level Outlet EL. 2419 ft
 Start Pump #1 EL. 2417 ft
 Start Pump #2 EL. 2416 ft
 Alarm, High EL. 2418 ft
 Alarm, Low EL. 2414 ft



SECTION A-A



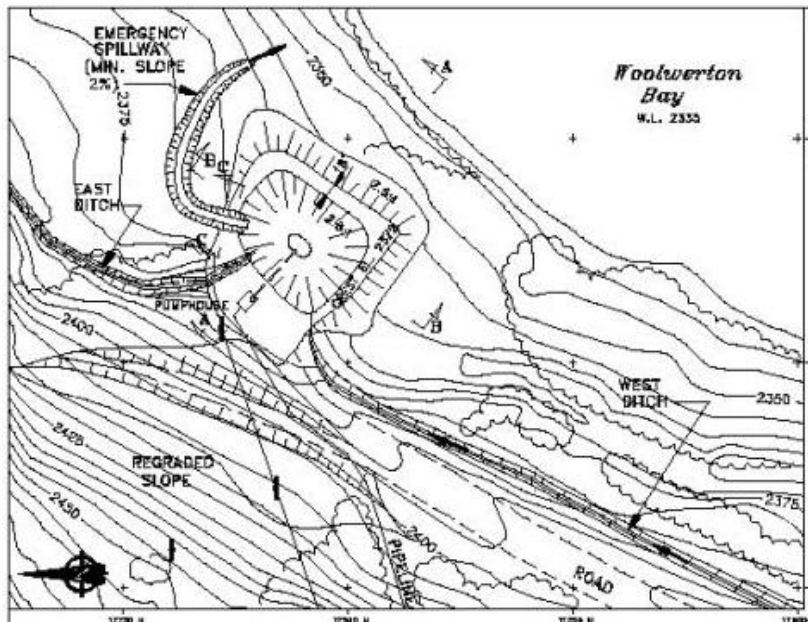
SECTION B-B



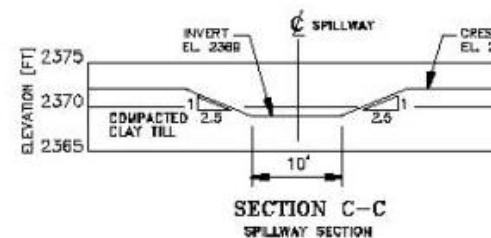
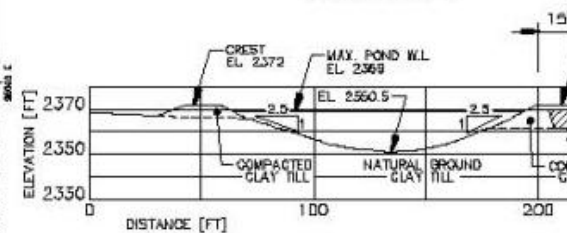
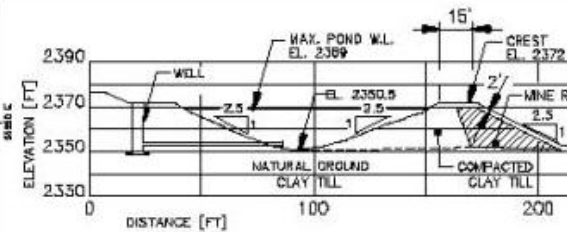
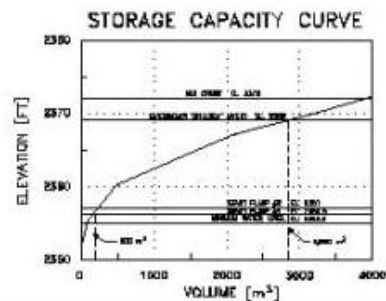
SECTION C-C
 SPILLWAY SECTION



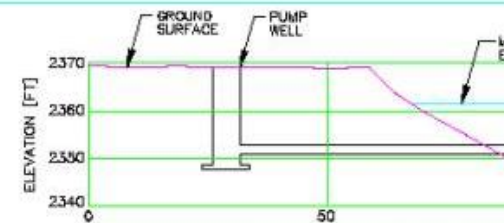
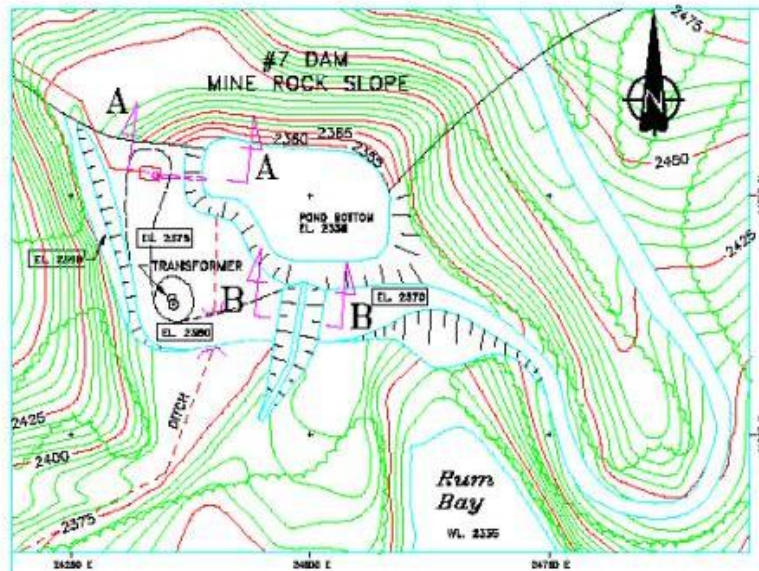
Geocon	
DESIGNED: A. SOMES	CHECKED: R. GALLUP
DRAWN: A. DARGAVSKO	APPROVED: I. HOLLIDAY
PROJ. NO.: 15874	DATE: MARCH 05, 2015



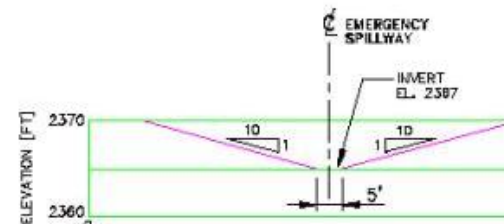
COLLECTION POND STATISTICS	
PHYSICAL DATA	
Watershed	12.7 ha
Pond Volume	2,500 m ³
Pump Rate (2 Pumps)	4.0 m ³ /min
REQUIRED STORAGE	
Storage Pond B (m)	7.5
Storage Pond C (m)	2.5
Storage Pond D (m)	2.5
Storage Pond E (m)	2.5
Storage Pond F (m)	2.5
Storage Pond G (m)	2.5
Storage Pond H (m)	2.5
Storage Pond I (m)	2.5
Storage Pond J (m)	2.5
Storage Pond K (m)	2.5
Storage Pond L (m)	2.5
PUMP SETTINGS	
Low Level Output	0.5505 m ³ /min
Start Pump #1	0.5505 m ³ /min
Start Pump #2	0.5505 m ³ /min
Alarm, High	0.5505 m ³ /min
Alarm, Low	0.5505 m ³ /min



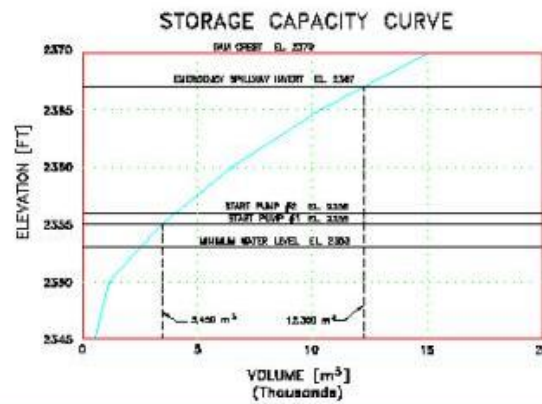
Geocon	
DESIGNED BY: J. HOLLAND	CHECKED BY: E. HOLLAND
DRAWN BY: A. GARDNER	APPROVED BY: J. HOLLAND
PROJECT NO: 15874	DATE: MARCH 01, 1993



SECTION A-A

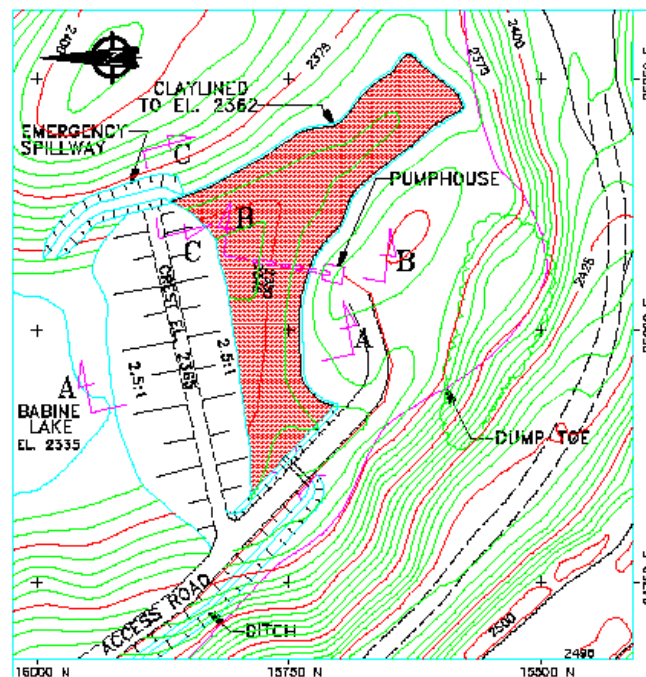


SECTION B-B



COLLECTION POND STATISTICS	
PHYSICAL DATA	
Worksheet	7.8 ha
Pond Volume	12,300 m ³
Pump Rate (2 Pumps)	3.8 m ³ /min
REQUIRED STORAGE	
Storm Water Ret.	M/A
24 hr Ret.	1,480 m ³
Pump Bottom	EL. 346.70 ft
Ret. to Pond Level	EL. 357.0 ft
Dam Crest	EL. 357.0 ft
PUMP SETTINGS	
Low Level Shutoff	EL. 334.5 ft
Start Pump #1	EL. 334.5 ft
Start Pump #2	EL. 334.8 ft
Alarm, High	EL. 335.8 ft
Alarm, Low	EL. 332.8 ft





COLLECTION POND STATISTICS

PHYSICAL DATA

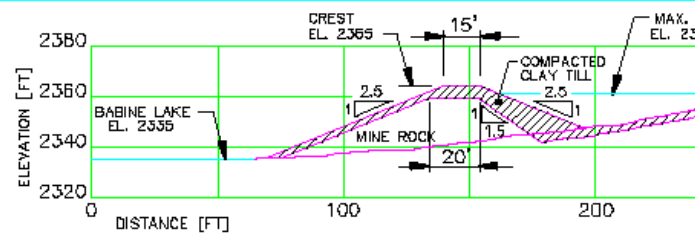
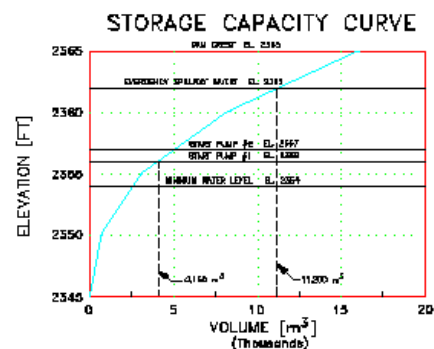
Watershed 55.9 ha
 Pond Volume 11,200 m³
 Pump Rate (2 Pumps) 8.6 m³/min

REQUIRED STORAGE

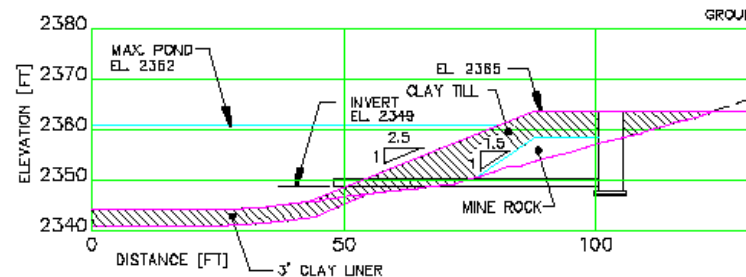
Snow Melt & Rain 1,400 m³
 24 hr Rain 8,320 m³
 Pond Bottom 2,646 m³
 Max'm Pond Level 2,383 ft
 Dam Crest 2,385 ft

PUMP SETTINGS

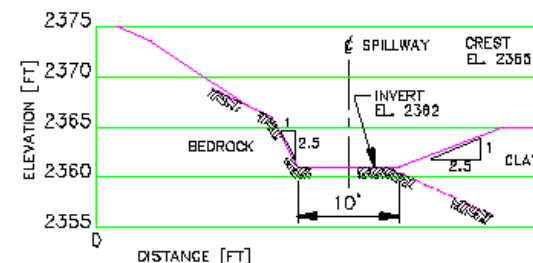
Low Level Cut-off EL 2336 ft
 Start Pump #1 EL 2336 ft
 Start Pump #2 EL 2337 ft
 Alarm High EL 2337.5 ft
 Alarm Low EL 2335.5 ft



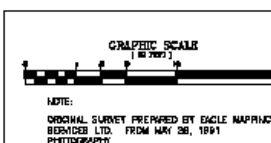
SECTION A-A



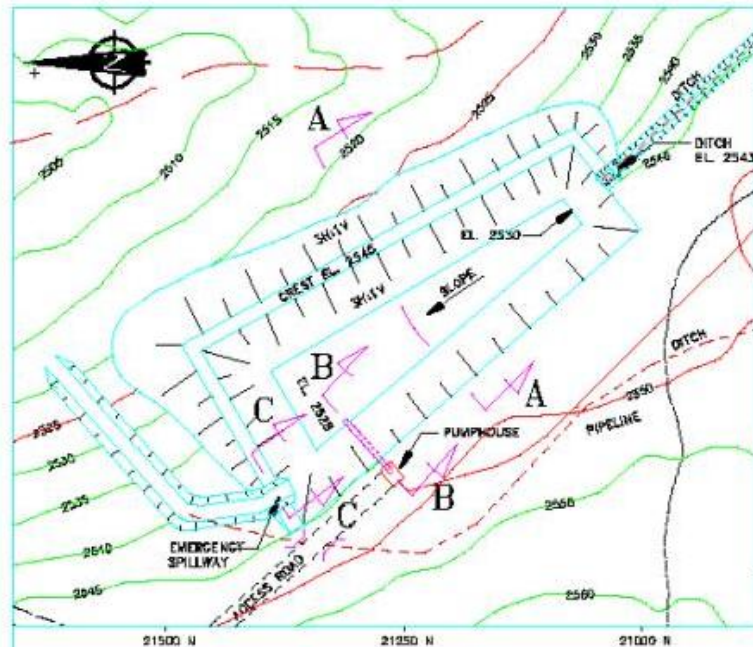
SECTION B-B



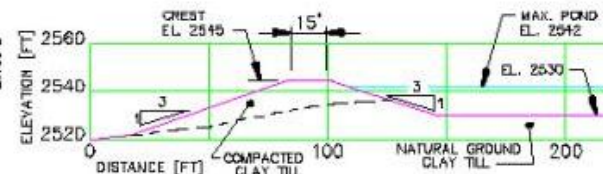
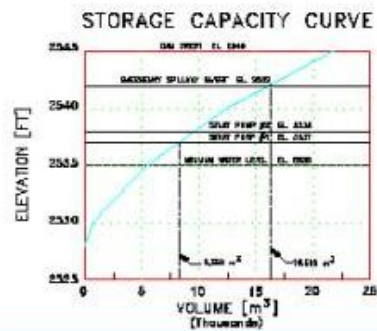
SECTION C-C
(LOOKING SOUTH)



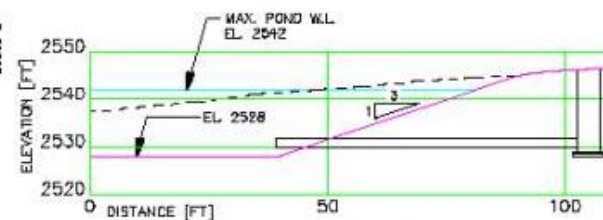
Geocon	
DESIGNED: P. COVER	CHECKED: R. COLLINGS
DRAWN: A. DABROWSKI	APPROVED: I. HOLLAND
PROJECT NO.: 15874	DATE: MARCH 06, 1991



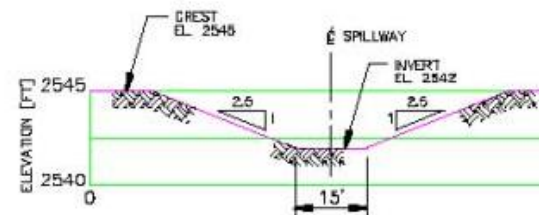
COLLECTION POND STATISTICS	
PHYSICAL DATA	
Waterland	25.0 ha
Pond Volume	18,320 m ³
Pump Rate (2 Pumps)	8.4 m ³ /min
REQUIRED STORAGE	
Storm Water & Rain	2,500 m ³
24 hr Rate	9,900 m ³
Pond Volume	18,320 m ³
Storm Pond Level	EL. 2543 ft
Dam Crest	EL. 2545 ft
PUMP SETTINGS	
Low Level Outfall	EL. 2535 ft
Start Pump #1	EL. 2537 ft
Start Pump #2	EL. 2539 ft
Alarm High	EL. 2540 ft
Alarm Low	EL. 2534 ft



SECTION A-A

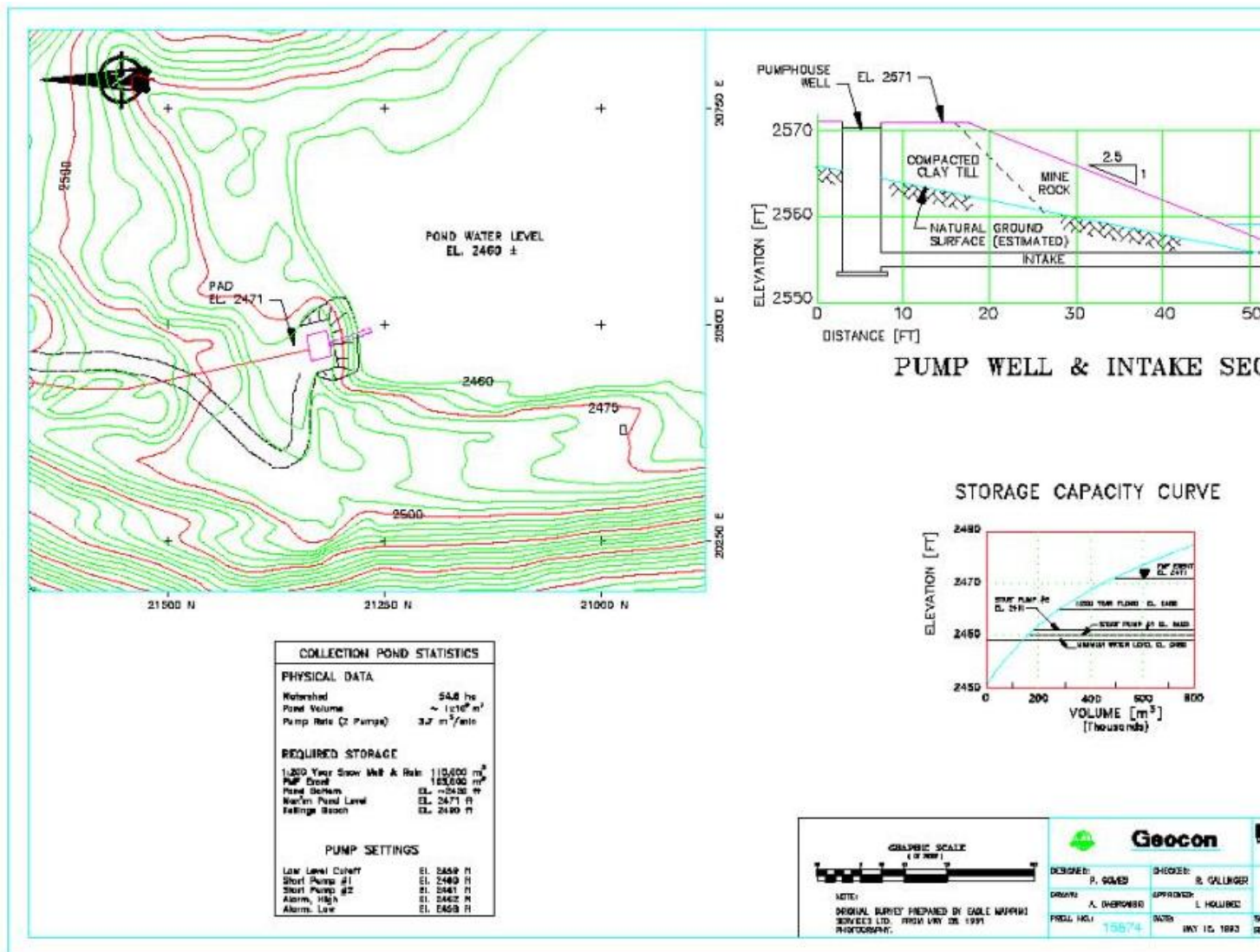


SECTION B-B



SECTION C-C





APPENDIX B

2014 PRECIPITATION DATA

TOPLEY LANDING MONTHLY PRECIPITATION DATA

SOURCE: Environment Canada webpage (<https://weather.gc.ca/>)
Station Name TOPLEY LANDING
Province BRITISH COLUMBIA
Latitude 54.82
Longitude -126.16
Elevation 722
Climate Identifier 1078209
WMO Identifier
TC Identifier

	Monthly Precip (mm)	Precip Normals (mm)
January 2013	21.0	54.4
February 2013	0.0	34.5
March 2013	0.0	29.6
April 2013	47.4	25.0
May 2013	52.4	42.2
June 2013	87.9	58.5
July 2013	35.3	46.4
August 2013	69.6	42.1
September 2013	39.1	43.1
October 2013	43.0	54.4
November 2013	0.0	57.0
December 2013	0.0	51.1

SMITHERS AIRPORT MONTHLY PRECIPITATION DATA

SOURCE: Environment Canada webpage (<https://weather.gc.ca/>)
Station Name SMITHERS
Province BRITISH COLUMBIA
Latitude 54.83
Longitude -127.18
Elevation 523
Climate Identifier 1077499
WMO Identifier 71950
TC Identifier YYD

	Monthly Precip (mm)	Precip Normals (mm)
January 2013	9.9	42.7
February 2013	10.8	23.4
March 2013	12.5	20.6
April 2013	18.6	23.8
May 2013	62.6	38.1
June 2013	11.1	55.2
July 2013	20.1	45.6
August 2013	55.1	43.8
September 2013	6.5	53.8
October 2013	37.2	64.8
November 2013	15.4	55.0
December 2013	110.6	41.9
January 2014	27.7	42.7
February 2014	17.5	23.4
March 2014	11.4	20.6
April 2014	22.7	23.8
May 2014	28.4	38.1
June 2014	15.8	55.2

APPENDIX C

TAILINGS DAMS - DAM SAFETY INSPECTION, BACKGROUND, CHECKLISTS AND PHOTOGRAPHS

Table C1
Background Information – Dam 1
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1970; by mine forces
Original dam engineered:	yes (Ripley, Klohn & Leonoff International Ltd.)
Type of dam:	highly pervious rockfill dam
Relation to tailings basin:	west side of the tailings impoundment
Associated tailings dams	Dams 2 to 6
Tailings basin watershed:	156 h
Typical dam section:	rockfill with u/s filter and cycloned sand
Approx. dam length / max. height:	1,525 m / 52 m (max) high
Tailings pond adjacent to dam:	no
Freeboard at time of DSI:	±8 m plus wide tailings beach
Minimum past freeboard:	unknown
Discharge structure(s):	none
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	piezometers
Design/as-built data available:	design reports available at the site
Dam classification (DSA 2007):	high
Preliminary dam classification:	n/a
Volume and type of solids stored:	±48,000,000 m ³ of tailings
Tailings disposal method:	cycloned around perimeter prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	large stabilizing berm at the deepest dam section
Surveillance program available:	yes
SCF/other facility inspected:	yes
Next DSR recommended:	in 2016

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Dam 1	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection				N/A. Slope covered by tailings.
1.2 Evidence of Wave or Other Erosion				N/A. Slope covered by tailings.
1.3 Unusual Accumulation of Debris/Logs				N/A. Slope covered by tailings.
1.4 Evidence of Sloughing/Sliding				N/A. Slope covered by tailings.
1.5 Evidence of Cracks				N/A. Slope covered by tailings.
1.6 Any Other Deformation				N/A. Slope covered by tailings.
1.7 Excessive Vegetation				N/A. Slope covered by tailings.
1.8 Other Unusual Conditions				N/A. Slope covered by tailings.
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding	X			The steep portion of Dam 1 toe is stable (no change)
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage (if any) Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				

Observed Features	Yes	No	Photo #	Comment / Note #
4.1 Seepages Observed		X		
4.2 Is Seepage (if any) Turbid				N/A
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed	X			Reports to CP1-5 and CP1-3 Ponds
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination	X			
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD	X			
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo C1-1: View of the upstream tailings beach, looking east from about one third of the way along the crest of Dam 1. (11 June 2014)



Photo C1-2: View of Dam 1 crest, about one quarter of the way along the dam, looking north from above CP1-5. (11 June 2014)



Photo C1-3: View of Dam 1 crest from same location as previous photo, looking south. (11 June 2014)



Photo C1-4: View of downstream slope of Dam 1, looking south from north end of the dam. Note the slope showing rockfill comprising dam shell. (11 June 2014)



Photo C1-5: View of downstream slope and toe of Dam 1, looking west from crest. Note former mill site in the background. (11 June 2014)



Photo C1-6: View of downstream slope and toe of Dam 1, looking south from north end of the dam.
Note CP1-5 in the background. (11 June 2014)



Photo C1-7: View of downstream slope and toe of Dam 1, looking west from crest, toward CP1-3. (11 June 2014)



Photo C1-8: View of downstream slope and toe of Dam 1, looking south from about midway along the dam crest.
Note good vegetation and CP1-3 in the background. (11 June 2014)



Photo C1-9: View of downstream slope and toe of Dam 1, looking south from the about two thirds along the dam, looking south of CP1-3. (11 June 2014)

APPENDIX D

COLLECTION PONDS – DAM SAFETY INSPECTION CHECKLISTS AND PHOTOGRAPHS

(Note that Background documents were not compiled for the collection ponds as they are relatively minor structures.)

Table C2
Background Information – Dam 2
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1978; by mine forces
Original dam engineered:	yes (Ripley, Klohn & Leonoff International Ltd.)
Type of dam:	highly pervious rockfill dam
Relation to tailings basin:	south side of tailings impoundment
Associated tailings dams	Dams 1, 3 to 6
Tailings basin watershed:	156 ha
Typical dam section:	rockfill with u/s filter and cycloned sand
Approx. dam length / max. height:	305 m / 15 m
Tailings pond adjacent to dam:	no
Freeboard at time of DSI:	±8 m
Minimum past freeboard:	unknown
Discharge structure(s):	none
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	none
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	48,000,000 m ³ of tailings
Tailings disposal method:	cycloned prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	none
Surveillance program available:	yes
SCF/other facility inspected:	seepage reports to CP 1-3 via a ditch
Next DSR recommended:	none required (review potential consequences of failure in DSIs)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Dam 2	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection				N/A. Slope covered by tailings.
1.2 Evidence of Wave or Other Erosion				N/A. Slope covered by tailings.
1.3 Unusual Accumulation of Debris/Logs				N/A. Slope covered by tailings.
1.4 Evidence of Sloughing/Sliding				N/A. Slope covered by tailings.
1.5 Evidence of Cracks				N/A. Slope covered by tailings.
1.6 Any Other Deformation				N/A. Slope covered by tailings.
1.7 Excessive Vegetation				N/A. Slope covered by tailings.
1.8 Other Unusual Conditions				N/A. Slope covered by tailings.
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid				N/A
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid				N/A
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X	C2-2	Much of the toe is submerged
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination	X			
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD		X		
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo C2-1: View of downstream slope of Dam 2, looking east from west end of the dam.
Note the slope is well vegetated. (11 June 2014)



Photo C2-2: View of downstream slope and toe of Dam 2, looking south from about mid-way along its length. Water ponded at toe is not part of the seepage collection system. (11 June 2014)

Table C3
Background Information – Dam 3
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1974; by mine forces
Original dam engineered:	yes (Ripley, Klohn & Leonoff International Ltd.)
Type of dam:	highly pervious rockfill dam
Relation to tailings basin:	southeast side of tailings impoundment
Associated tailings dams	Dams 1, 2 and 4 to 6
Tailings basin watershed:	156 ha
Typical dam section:	Rockfill with u/s filter and cycloned sand
Approx. dam length /max. height:	460 m / 21 m
Tailings pond adjacent to dam:	No
Freeboard at time of DSI:	±8 m
Minimum past freeboard:	unknown
Discharge structure(s):	none
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	1 piezometer at dam crest
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	±48,000,000 m ³ of tailings
Tailings disposal method:	cycloned prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	none
Surveillance program available:	yes
SCF/other facility inspected:	yes, CP3-1 (collected water pumped to tailings pond)
Next DSR recommended:	in 2016

Dam Surveillance Record

Dam Site:	Bell Mine Site		
Dam Structure:	Dam 3		
Inspection Carried Out By:	Andy Small		
Date:	11-Jun-14		
Inspection Type:	Walk-over ____X____	Fly-over _____	
Weather Conditions:	Sunny, 20 degrees		
Reviewed By:	Andy Small		

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection				N/A. Slope covered by tailings.
1.2 Evidence of Wave or Other Erosion				N/A. Slope covered by tailings.
1.3 Unusual Accumulation of Debris/Logs				N/A. Slope covered by tailings.
1.4 Evidence of Sloughing/Sliding				N/A. Slope covered by tailings.
1.5 Evidence of Cracks				N/A. Slope covered by tailings.
1.6 Any Other Deformation				N/A. Slope covered by tailings.
1.7 Excessive Vegetation				N/A. Slope covered by tailings.
1.8 Other Unusual Conditions				N/A. Slope covered by tailings.
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement	X		C3-4 to C3-6	Two sinkholes observed in this area.
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid				N/A
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions	X		C3-8	Pipes from CP3-1 passing upslope
4.0 Dam Abutments				

Observed Features	Yes	No	Photo #	Comment / Note #
4.1 Seepages Observed		X		
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed	X			
5.2 Is Seepage (if any) Turbid				N/A
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam	X			
6.3 Evidence of ARD	X			
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo C3-1: View of upstream beach at Dam 3. Looking west from south end of the dam. (11 June 2014)



Photo C3-2: View of south abutment with natural ground.
Note there is no evidence of adverse effects due to flow down the abutment. (11 June 2014)



Photo C3-3: View of Dam 3 south abutment.
Note CP3-1 is shown on the left. (11 June 2014)



Photo C3-4: View of the crest of Dam 3.

Note that a sinkhole was observed this area. About one third of the way along the dam from the south end. (11 June 2014)



Photo C3-5: Close up view of sinkhole on the downstream side of the crest. Note that this area is a topographic low where water can accumulate and flow downward into the rockfill shell of the dam. The sinkhole has formed in the soil cover material over the rockfill. (11 June 2014)



Photo C3-6: Close up view of another sinkhole in the vicinity of the one above. This one was created by pushing down with a foot, noting the soft ground, and then causing the surficial soil to fall into the hole. (11 June 2014)



Photo C3-7: View of downstream slope of Dam 3, about midway along the dam from the south, looking north east. (11 June 2014)

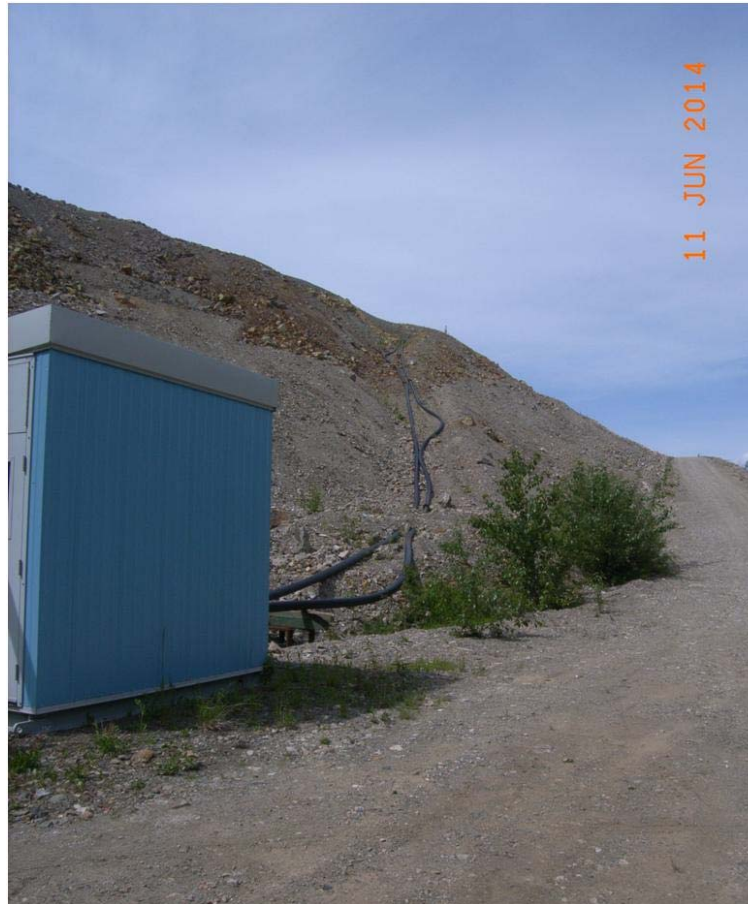


Photo C3-8: View of downstream slope of Dam 3, from CP3-1. Note pipes from CP3-1 passing up the slope of Dam 3 that can cause erosion if the pipes rupture. According to Glencore personnel, the volume of water that can be released during a rupture is limited and the downstream shell is built of rockfill, hence the potential for significant damage to the downstream slope is low.
(11 June 2014)



Photo C3-9: View of downstream slope of Dam 3, looking south. Note CP3-1 in the background. (11 June 2014)

Table C4
Background Information – Dam 4
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1980; by mine forces
Original dam engineered:	yes (Ripley, Klohn & Leonoff International Ltd.)
Type of dam:	highly pervious rockfill dam
Relation to tailings basin:	east side of tailings impoundment
Associated tailings dams	Dams 1 to 3, 5, and 6
Tailings basin watershed:	156 ha
Typical dam section:	Rockfill with u/s filter and cycloned sand
Approx. dam length / max. height:	305 m / 21 m
Tailings pond adjacent to dam:	no
Freeboard at time of DSI:	±8 m
Minimum past freeboard:	unknown
Discharge structure(s):	none
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	none
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	±48,000,000 m ³ of tailings
Tailings disposal method:	cycloned prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	none
Surveillance program available:	yes
SCF/other facility inspected:	seepage directed to the collection pond CP 7-1
Next DSR recommended:	2019

Dam Surveillance Record

Dam Site:	Bell Mine Site		
Dam Structure:	Dam 4		
Inspection Carried Out By:	Andy Small		
Date:	11-Jun-14		
Inspection Type:	Walk-over ____X____	Fly-over _____	
Weather Conditions:	Sunny, 20 degrees		
Reviewed By:	Andy Small		

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection				N/A. Slope covered by tailings.
1.2 Evidence of Wave or Other Erosion				N/A. Slope covered by tailings.
1.3 Unusual Accumulation of Debris/Logs				N/A. Slope covered by tailings.
1.4 Evidence of Sloughing/Sliding				N/A. Slope covered by tailings.
1.5 Evidence of Cracks				N/A. Slope covered by tailings.
1.6 Any Other Deformation				N/A. Slope covered by tailings.
1.7 Excessive Vegetation				N/A. Slope covered by tailings.
1.8 Other Unusual Conditions				N/A. Slope covered by tailings.
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid				N/A
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid				N/A
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD	X			
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo C4-1: View of upstream beach and pond upstream of the junction between Dams 3 and 4. Looking north-west from the junction between the two dams. The road on the right is along the crest of Dam 4. (June 11, 2014)



Photo C4-2: View of crest and downstream slope of Dam 4, looking north east from the south end of Dam 4. (June 11 2014)



Photo C4-3: View of downstream slope and toe of Dam 4, looking south from the north end of the dam. (June 11, 2014)

Table C5
Background Information – Dam 5
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1980; by mine forces
Original dam engineered:	yes (Ripley, Klohn & Leonoff International Ltd.)
Type of dam:	highly pervious rockfill dam
Relation to tailings basin:	east side of tailings impoundment
Associated tailings dams	Dams 1 to 4, and 6
Tailings basin watershed:	156 ha
Typical dam section:	Rockfill with u/s filter and cycloned sand
Approx. dam length / max. height:	70 m / 30 m
Tailings pond adjacent to dam:	no
Freeboard at time of DSI:	±8 m
Minimum past freeboard:	unknown
Discharge structure(s):	none
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	none
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	±48,000,000 m ³ of tailings
Tailings disposal method:	cycloned prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	none
Surveillance program available:	yes
SCF/other facility inspected:	n/a
Next DSR recommended:	none required (review potential consequences of failure in DSIs)

Dam Surveillance Record

Dam Site:	Bell Mine Site		
Dam Structure:	Dam 5		
Inspection Carried Out By:	Andy Small		
Date:	11-Jun-14		
Inspection Type:	Walk-over ____X____	Fly-over _____	
Weather Conditions:	Sunny, 20 degrees		
Reviewed By:	Andy Small		

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection				N/A. Slope covered by tailings.
1.2 Evidence of Wave or Other Erosion				N/A. Slope covered by tailings.
1.3 Unusual Accumulation of Debris/Logs				N/A. Slope covered by tailings.
1.4 Evidence of Sloughing/Sliding				N/A. Slope covered by tailings.
1.5 Evidence of Cracks				N/A. Slope covered by tailings.
1.6 Any Other Deformation				N/A. Slope covered by tailings.
1.7 Excessive Vegetation				N/A. Slope covered by tailings.
1.8 Other Unusual Conditions				N/A. Slope covered by tailings.
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid				N/A
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid				N/A
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD		X		
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo C5-1: View of downstream slope and toe of Dam 5, looking northeast from the downstream slope of Dam 5. Note tailings beyond the toe of Dam 5 as part of Tailings Pond Expansion area. (11 June 2014)



Photo C5-2: View of downstream slope and toe of Dam 5, looking north from the downstream slope of Dam 5. Note that the beach shown in the photo (on the right side) is just upstream of Dam 7. (11 June 2014)

Table C6
Background Information – Dam 6
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1972; by mine forces
Original dam engineered:	yes (Ripley, Klohn & Leonoff International Ltd.)
Type of dam:	highly pervious rockfill dam
Relation to tailings basin:	north side of tailings impoundment
Associated tailings dams	Dams 1 to 5
Tailings basin watershed:	156 ha
Typical dam section:	rockfill with u/s filter and cycloned sand
Approx. dam length / max. height:	460 m / 45 m
Tailings pond adjacent to dam:	no
Freeboard at time of DSI:	±8 m
Minimum past freeboard:	unknown
Discharge structure(s):	none
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no (mine permanently closed)
Dam instrumentation:	none
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	±48,000,000 m ³ of tailings
Tailings disposal method:	cycloned prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	none
Surveillance program available:	yes
SCF/other facility inspected:	n/a; seepage routed to CP2
Next DSR recommended:	none required (review potential consequences of failure in DSIs)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Dam 6	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection				N/A. Slope covered by tailings.
1.2 Evidence of Wave or Other Erosion				N/A. Slope covered by tailings.
1.3 Unusual Accumulation of Debris/Logs				N/A. Slope covered by tailings.
1.4 Evidence of Sloughing/Sliding				N/A. Slope covered by tailings.
1.5 Evidence of Cracks				N/A. Slope covered by tailings.
1.6 Any Other Deformation				N/A. Slope covered by tailings.
1.7 Excessive Vegetation				N/A. Slope covered by tailings.
1.8 Other Unusual Conditions				N/A. Slope covered by tailings.
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion				N/A. Slope buried by South Dump.
3.2 Evidence of Sloughing/Sliding				N/A. Slope buried by South Dump.
3.3 Evidence of Cracking				N/A. Slope buried by South Dump.
3.4 Any Other Deformation				N/A. Slope buried by South Dump.
3.5 Signs of Phreatic Surface/Seepage				N/A. Slope buried by South Dump.
3.6 Seepages Observed				N/A. Slope buried by South Dump.
3.7 Is Seepage Turbid				N/A. Slope buried by South Dump.
3.8 Non-Uniform Slope				N/A. Slope buried by South Dump.
3.9 Excessive Vegetation				N/A. Slope buried by South Dump.
3.10 Other Unusual Conditions				N/A. Slope buried by South Dump.
4.0 Dam Abutments				
4.1 Seepages Observed				N/A. Slope buried by South Dump.

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid				N/A. Slope buried by South Dump.
4.3 Evidence of Erosion				N/A. Slope buried by South Dump.
4.4 Evidence of Cracks				N/A. Slope buried by South Dump.
4.5 Other Deformation/Settlement				N/A. Slope buried by South Dump.
4.6 Evidence of Repairs				N/A. Slope buried by South Dump.
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions				N/A. Slope buried by South Dump.
5.0 Downstream Toe				
5.1 Seepages Observed				N/A. Slope buried by South Dump.
5.2 Is Seepage (if any) Turbid				N/A. Slope buried by South Dump.
5.3 Evidence of Soft Toe Condition				N/A. Slope buried by South Dump.
5.4 Evidence of Boils				N/A. Slope buried by South Dump.
5.5 Evidence of Contamination				N/A. Slope buried by South Dump.
5.6 Excessive Vegetation				N/A. Slope buried by South Dump.
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions				N/A. Slope buried by South Dump.
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD		X		
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		

Table C7
Background Information – Dam 7
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1989; by mine forces
Original dam engineered:	yes (Klohn Leonoff Ltd.)
Type of dam:	zoned embankment
Relation to tailings basin:	south side of tailings impoundment extension
Tailings basin watershed:	55 ha
Typical dam section:	rockfill with u/s filter and glacial till zone
Approx. dam length / max. height:	366 m / 55 m
Tailings pond adjacent to dam:	no
Freeboard at time of DSI:	unrecorded (no water against u/s toe of dam)
Minimum past freeboard:	unknown
Discharge structure(s):	TEX pumping station
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	1 piezometer d/s of dam
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	±1,000,000 m ³ of tailings
Tailings disposal method:	end-discharged prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	use of highly ARD producing rockfill
Surveillance program available:	yes
SCF/other facility inspected:	yes
Next DSR recommended:	In 2019

Dam Surveillance Record

Dam Site:	Bell Mine Site		
Dam Structure:	Dam 7		
Inspection Carried Out By:	Andy Small		
Date:	11-Jun-14		
Inspection Type:	Walk-over ____X____	Fly-over _____	
Weather Conditions:	Sunny, 20 degrees		
Reviewed By:	Andy Small		

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion	X		C7-2 and C7-3	Erosion has not changed significantly in recent years
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage	X			
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid				Cannot be observed.
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				

Observed Features	Yes	No	Photo #	Comment / Note #
4.1 Seepages Observed		X		
4.2 Is Seepage (if any) Turbid				N/A
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed	X			Contaminated water in CP 7-1.
5.2 Is Seepage (if any) Turbid				Cannot be observed.
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD		X		
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo C7-1: View of upstream beach and crest of Dam 7, looking east from Dam 5. The crest of Dam 7 is on the right. (11 June 2014)



Photo C7-2: View of downstream slope of Dam 7, on the left side of Collection Pond CP7-1, looking east from the west end of the CP7-1 pond. This was an area where there was a concern with respect to erosion on the downstream slope noted in the 2013 DSI. There was no significant change from 2013. (11 June 2014)



Photo C7-3: View of downstream slope of Dam 7, on the left side of Overview of Collection Pond CP7-1, looking north from south end of the CP7-1 pond. (11 June 2014)

Table C8
Background Information – Dam 8
Bell Mine

Purpose of dam:	tailings retention
Date of last DSR:	October 2009 (AMEC)
Initial dam construction date:	1989; by mine forces
Original dam engineered:	yes (Klohn Leonoff Ltd.)
Type of dam:	rockfill dam
Relation to tailings basin:	south side of tailings impoundment extension
Associated tailings dams	Dam 5 to the south of the TEX and Dam 7 to the east
Tailings basin watershed:	55 ha
Typical dam section:	Rockfill and cycloned sand (dam construction unfinished)
Approx. dam length / max. height:	305 m / 30 m
Tailings pond adjacent to dam:	yes
Freeboard at time of DSI:	very large (unrecorded)
Minimum past freeboard:	unknown
Discharge structure(s):	TEX pumping station
Emergency discharge structure:	none
Date of last raise of dam:	1990
Future dam raise planned:	no
Dam instrumentation:	none
Design/as-built data available:	design reports available at the site
Dam classification (CDA 2007):	low hazard
Preliminary dam classification:	n/a
Volume and type of solids stored:	±1,000,000 m ³ of tailings
Tailings disposal method:	Cycloned prior to cessation of mining
Tailings production rate:	17,500 tpd prior to cessation of mining
Special 'as-built' features:	no upstream filter
Surveillance program available:	yes
SCF/other facility inspected:	n/a
Next DSR recommended:	none required (review potential consequences of failure in DSIs)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Dam 8	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion				N/A
2.2 Evidence of Cracking				N/A
2.3 Other Deformation/Settlement				N/A
2.4 Concerns with Low Areas on the Crest				N/A
2.5 Other Unusual Conditions				N/A
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion				N/A. Buried under mine rock.
3.2 Evidence of Sloughing/Sliding				N/A. Buried under mine rock.
3.3 Evidence of Cracking				N/A. Buried under mine rock.
3.4 Any Other Deformation				N/A. Buried under mine rock.
3.5 Signs of Phreatic Surface/Seepage				N/A. Buried under mine rock.
3.6 Seepages Observed				N/A. Buried under mine rock.
3.7 Is Seepage Turbid				N/A. Buried under mine rock.
3.8 Non-Uniform Slope				N/A. Buried under mine rock.
3.9 Excessive Vegetation				N/A. Buried under mine rock.
3.10 Other Unusual Conditions				N/A. Buried under mine rock.
4.0 Dam Abutments				
4.1 Seepages Observed		X		N/A

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		N/A
4.3 Evidence of Erosion		X		N/A
4.4 Evidence of Cracks		X		N/A
4.5 Other Deformation/Settlement		X		N/A
4.6 Evidence of Repairs		X		N/A
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		N/A
5.0 Downstream Toe				
5.1 Seepages Observed		X		N/A. Buried under mine rock.
5.2 Is Seepage (if any) Turbid		X		N/A. Buried under mine rock.
5.3 Evidence of Soft Toe Condition		X		N/A. Buried under mine rock.
5.4 Evidence of Boils		X		N/A. Buried under mine rock.
5.5 Evidence of Contamination		X		N/A. Buried under mine rock.
5.6 Excessive Vegetation		X		N/A. Buried under mine rock.
5.7 Concern with Outlet of Decant Pipe		X		
5.7 Other Unusual Conditions		X		N/A. Buried under mine rock.
6.0 General				
6.1 Spillway at/next to this dam		X		
6.2 Pipelines at the dam		X		
6.3 Evidence of ARD		X		
6.4 Crest accessible by truck	X			
6.5 Public access to dam	X			
7.0 Other				
7.1 Other Unusual Site Conditions		X		

APPENDIX D

COLLECTION PONDS – DAM SAFETY INSPECTION CHECKLISTS AND PHOTOGRAPHS

(Note that Background documents were not compiled for the collection ponds as they are relatively minor structures.)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 1-3	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D1-1: Overview of Collection Pond CP1-3, looking north from south dam segment. (11 June 2014)



Photo D1-2: Overview of Collection Pond CP1-3, looking north and east from south west corner of the pond (11 June 2014)



Photo D1-3: View of CP1-3 crest, looking north from south end of the crest. (11 June 2014)



Photo D1-4: Close up view of CP1-3 downstream slope, looking north from south portion of the western segment of the dam.
Note the downstream slope is heavily vegetated. (11 June 2014)



Photo D1-5: View of downstream toe of CP1-3, east from Babine Lake to the toe. Note there is no evidence of concentrated seepage entering the lake. (11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 1-5	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X	D2-2	Erosion protection size appears small
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D2-1: Overview of Collection Pond CP1-5 and upstream slope, looking east from west side of pond. (11 June 2014)



Photo D2-2: View of CP1-5 spillway, looking north from crest of the dam. Note small and irregular size of the erosion protection.
(11 June 2014)



Photo D2-3: View of downstream end of spillway at CP1-5, looking north west from within the spillway. Note small size of the erosion protection (11 June 2014)



Photo D2-4: View of downstream slope and toe of CP1-5, looking north from crest of west segment. Note there are no signs of adverse seepage. (11 June 2014)



Photo D2-5: View of downstream slope and toe of CP1-5, west from the crest. Note there are no signs of adverse seepage. (11 June 2014)



Photo D2-6: View of downstream slope and toe of CP1-5, north from crest of west segment. Note there are no signs of adverse seepage. (11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 2	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments				
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 3-1	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments		X		
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D3-1: View of CP3-1 from crest of Dam 3, looking southeast. (11 June 2014)



Photo D3-2: View of CP3-1 pumphouse looking south, the pond is behind the pumphouse, the crest of the dam is left of the pumphouse, and the toe of Dam 3 is located to the right. (11 June 2014)



Photo D3-3: The wooden frame is around pipes that discharge water to the environment when the water is high enough to flow through them. . (11 June 2014)



Photo D3-4: Crest of dam looking south toward abutment.
(11 June 2014)



Photo D3-5: Downstream slope and toe, heavily vegetated.
(11 June 2014)



Photo D3-2: View of CP3-1 pumphouse looking south, the pond is behind the pumphouse, the crest of the dam is left of the pumphouse, and the toe of Dam 3 is located to the right. (11 June 2014)



Photo D3-3: The wooden frame is around pipes that discharge water to the environment when the water is high enough to flow through them. . (11 June 2014)



Photo D3-4: Crest of dam looking south toward abutment.
(11 June 2014)



Photo D3-5: Downstream slope and toe, heavily vegetated.
(11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 4-1	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments				
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D4-1: Overview of Collection Pond CP4 and upstream slope of dam on the left, looking northeast from west segment of the dam. (11 June 2014)



Photo D4-2: View of spillway at north end of CP4's dam, north-east from crest. (11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 5	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments				
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		No toe seepage observed, but a monitoring well is flowing as an artesian well.
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D5-1: Overview of Collection Pond CP5, looking south-east from west side of pond. (11 June 2014)



Photo D5-2: View of crest and downstream slope of CP5 Dam, south-east from east side of pond. (11 June 2014)



Photo D5-3: View of downstream toe of CP5 Dam, showing monitoring wells. Along east toe of the dam, looking southeast
Note that one of the wells has water flowing over the top of the well casing. (11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 7-1	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments				
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D6-1: Overview of Collection Pond CP7-1, looking east from west end of the pond. Note downstream slope of Dam 7 on the left. (11 June 2014)



Photo D6-2: View of upstream slope of CP7-1 Dam, looking east from right end of the south dam. (11 June 2014)



Photo D6-3: View of crest of CP7-1 Dam, showing pond on the left and downstream slope on the right. Looking east from right end of the dam. (11 June 2014)



Photo D6-4: Close up view of the crest of dam showing protective casing around standpipe monitoring well. The monitoring well is located on the downstream slope, mid-way along the dam. Looking east. Note that the protective casing and the standpipe were broken. (11 June 2014)



Photo D6-5: View of downstream slope and toe of CP7-1 Dam, looking south east from the crest of the dam. (11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP 8	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments				
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D7-1: Overview of Collection Pond CP8, northeast from west side of pond. (11 June 2014)



Photo D7-2: View of upstream slope of CP8 Dam, southeast from north-west corner. (11 June 2014)



Photo D7-3: View of crest of CP8 Dam, looking east from west end of the north dam. Note spillway in the foreground and low area of the crest in the background. (11 June 2014)



Photo D7-4: View of CP8 spillway, looking north from the crest along the spillway located mid-way along the north dam. Note lack of erosion protection in the spillway. (11 June 2014)



Photo D7-5: View of downstream slope of CP8 Dam, looking east from west end of north dam, note heavy vegetation (11 June 2014)

Dam Surveillance Record

Dam Site:	Bell Mine Site	
Dam Structure:	Collection Pond CP D7	
Inspection Carried Out By:	Andy Small	
Date:	11-Jun-14	
Inspection Type:	Walk-over <input checked="" type="checkbox"/>	Fly-over <input type="checkbox"/>
Weather Conditions:	Sunny, 20 degrees	
Reviewed By:	Andy Small	

Observed Features	Yes	No	Photo #	Comment / Note #
1.0 Upstream Dam Slope				
1.1 Concern with Water Level or with previous high water levels since the last inspection		X		
1.2 Evidence of Wave or Other Erosion		X		
1.3 Unusual Accumulation of Debris/Logs		X		
1.4 Evidence of Sloughing/Sliding		X		
1.5 Evidence of Cracks		X		
1.6 Any Other Deformation		X		
1.7 Excessive Vegetation		X		
1.8 Other Unusual Conditions		X		
2.0 Dam Crest				
2.1 Evidence of Shoulder Erosion		X		
2.2 Evidence of Cracking		X		
2.3 Other Deformation/Settlement		X		
2.4 Concerns with Low Areas on the Crest		X		
2.5 Other Unusual Conditions		X		
3.0 Downstream Dam Slope				
3.1 Evidence of Erosion		X		
3.2 Evidence of Sloughing/Sliding		X		
3.3 Evidence of Cracking		X		
3.4 Any Other Deformation		X		
3.5 Signs of Phreatic Surface/Seepage		X		
3.6 Seepages Observed		X		
3.7 Is Seepage Turbid		X		
3.8 Non-Uniform Slope		X		
3.9 Excessive Vegetation		X		
3.10 Other Unusual Conditions		X		
4.0 Dam Abutments				
4.1 Seepages Observed		X		

Observed Features	Yes	No	Photo #	Comment / Note #
4.2 Is Seepage (if any) Turbid		X		
4.3 Evidence of Erosion		X		
4.4 Evidence of Cracks		X		
4.5 Other Deformation/Settlement		X		
4.6 Evidence of Repairs		X		
4.7 Concerns with Low areas at the Abutments				
4.8 Other Unusual Conditions		X		
5.0 Downstream Toe				
5.1 Seepages Observed		X		
5.2 Is Seepage (if any) Turbid		X		
5.3 Evidence of Soft Toe Condition		X		
5.4 Evidence of Boils		X		
5.5 Evidence of Contamination		X		
5.6 Excessive Vegetation		X		
5.7 Concern with Outlet of Decant Pipe				
5.7 Other Unusual Conditions		X		
6.0 Spillway				
6.1 Emergency Spillway Showing Signs of Erosion or Obstructions.		X		
6.2 Unusual Intensity of Flow in Spillway		X		No flow in spillway
6.3 Water Samples Collected. Physical Measurements Made.		X		
7.0 Other				
7.1 Other Unusual Site Conditions		X		



Photo D8-1: Overview of Collection Pond CPD-7, looking north from south east corner of the pond. The CPD-7 dam is located on the west side of the pond (11 June 2014)



Photo D8-2: View of CPD-7 Dam spillway, located at north end of the dam, looking north. (11 June 2014)



Photo D8-3: View of downstream slope of CPD-7 Dam, looking north along dam, from south (left) end. (11 June 2014)



Photo D8-4: View of pond downstream of CPD-7 Dam, west from the dam, showing the downstream environment. (11 June 2014)