TETRA TECH EBA

November 28, 2014

ISSUED FOR USE
FILE: W14103527-01

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Via Email: ryan.kalt@athabascanuclear.com

Attention: Mr. Ryan Kalt, Chairman and CEO

Subject: Report on Dam Safety Inspection
Tailings Storage Facilities – Yellowjacket Gold Mine
near Atlin, BC

1.0 EXECUTIVE SUMMARY

The Yellowjacket Gold Mine is located about nine kilometres east of Atlin, BC along Pine Creek, and is accessed from an all-season gravel road. It was last operated in 2009 by Yellow Jacket Resources Ltd., and has been in care and maintenance since then. Although some old photos and site plans were provided, no previous Dam Safety Inspections (DSI) were available for review prior to Tetra Tech EBA's DSI completed on November 14, 2014.

The failure consequence category of the three tailings storage facilities at this site has not been previously been assessed to our knowledge, but is considered as LOW, per the Canadian Dam Association (CDA) Guidelines (2007, rev. 2013). Should a failure or breach of any of the tailings storage facilities occur, there is no population at risk, minimal short term and no long term losses, and low economic losses. The tailings on site were also produced through a gravity separation process, with no chemicals added. No Dam Safety Reviews (DSR) were provided for Tetra Tech EBA review but a DSR is not required for a low consequence dam, per CDA Guidelines.

The three tailings storage facilities were all noted to be stable during the inspection, they were dry, had stable interior and exterior sideslopes, and adequate crest width. They are also relatively small structures, the largest of which is estimated at about 35 m by 75 m. There was no instrumentation installed in any of the structures. The site was snow covered at the time of the inspection, but it was not sufficiently deep to hinder observations. A worst case precipitation event was calculated (a winter of snow accumulation converted to rain, concurrent with the extreme daily precipitation) and all of the ponds have more than sufficient capacity to contain this event with no discharge. There were no other sources of water observed that would impact the facilities. No evidence of wind-blown tailings on snow-free sideslopes was observed.

As the facilities are considered stable in their present condition, no recommendations for future work are presented or required as a result of this DSI.

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2.0 BACKGROUND

The mine site is located approximately nine kilometres from Atlin, BC as shown on Figure 1. There are three tailings storage facilities (labelled in this report as TSF 1, TSF 2 and TSF 3) at the site, with slurry tailings contained within generally rectangular earthfill embankments. Figure 1 also shows the locations of these facilities on the property.

TSF 1 and TSF 2 are believed to contain tailings from 2008 and earlier, while TSF 3 contains the most recent tailings from 2009. TSF 3 also appears to have been used as a settling pond for water pumped out of the open pit, as there was a 300 mm diameter white PVC pipeline from the pit to this location, and evidence of high water marks on the interior sideslopes of the facility.

The only source of water inflow to the TSF structures is rainfall and snowmelt, and although Pine Creek flows through the property, it had been previously diverted from its original channel through the open pit, and is presently not near the tailings facilities.

No construction records could be located; and the Engineer of Record is unknown.

The site is presently in care and maintenance, there is no regular monitoring being completed. There are no instrumentation installations. There is also no surface water entering or leaving any of the tailings storage facilities.

3.0 WORK COMPLETED

Richard Trimble and Carl Schulze (All Terrane Mineral Exploration Services) visited the site on November 14, 2014, with assistance from a local resident (Lloyd Brown) who guided us to the property, opened the security gate, and provided some background information.

4.0 OBSERVATIONS

4.1 TSF 1 and TSF 2

There was no ponded water in either of TSF 1 or TSF 2. Lloyd Brown estimated that there was about 1.5 m to 2.0 m of tailings in TSF 2, and an unknown (but significantly smaller) volume in TSF 1. Interior and exterior sideslopes were stable at about 1.5:1 (horizontal to vertical).

Photo 1: View of TSF 1 from berm of TSF 2 with Pine Creek in background (November 14/14)

Photo 2: View of TSF 2 looking towards open pit in background behind berm (November 14/14)

There was at least 2.5 m of freeboard in TSF 1 and 1.5 m in TSF 2; the toes of the berms were away from and armoured against erosion protection from Pine Creek; there was no inflow of water to either TSF 1 or TSF 2 (other than rainfall and snowmelt); and there were no outlets or overflow spillways from either pond.

4.2 TSF 3

This pond was noted to be dry and stable at the time of the inspection. There were two small piles of tailings noted at the north end of the structure, and some tailings on the base. The main use of this facility appears to have been for the temporary storage of water pumped from the open pit, providing time for solids to settle out before decanting back to Pine Creek through a 300 mm steel pipe.

The narrowest crest width observed was about 3 m, with the average closer to 6 m. The majority of the retaining berm appeared to be constructed of glacial till on a granular (gravel and cobbles) base. Interior and exterior sideslopes averaged approximately 1.5:1. A photo taken shortly after construction was provided (see Photo 4) confirming that the base of the facility is lined with till.

There was a small (~300 mm diameter) steel pipe outlet set at a freeboard of about 1.5 m in TSF 3, discharging through a wooden box control structure on the other side of the berm.

This pond is significantly (~6 m) higher than Pine Creek and located well back from the Pine Creek channel.

Photo 3: View of TSF 3 showing tailings piles at far end and on base of pond, as well as the 300 mm steel pipe decant at bottom of photo (November 14/14)

Photo 4: View of TSF 3 shortly after construction showing black tailings line, white water line, and base lined with glacial till (unknown date – photo provided by others)

5.0 REVIEW OF CLIMATE DATA

The Environment Canada website was used to provide the following summaries of temperature and precipitation information for the Atlin BC Airport, about 5 km west of the mine site.

1981 to 2010 Canadian Climate Normals station data

Temperature														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Daily Average (°C)	-12.8	-10.7	-5.5	1.3	6.9	11.3	13.4	12.4	8.1	2.6	-5.5	-8.1	1.1	A
Standard Deviation	6.6	4.3	3.0	1.9	1.2	1.1	0.9	1.2	1.3	1.5	4.2	4.2	2.8	A
Daily Maximum (°C)	-9.1	-6.1	-0.3	6.7	12.5	17.2	19.0	17.5	12.3	5.7	-2.5	-5.0	5.7	A
Daily Minimum (°C)	-16.5	-15.3	-10.7	-4.1	1.3	5.3	7.8	7.3	3.8	-0.6	-8.4	-11.2	-3.4	A
Extreme Maximum (°C)	7.2	10.6	13.0	20.0	26.7	**31.0**	30.0	30.0	26.7	19.5	13.3	10.0		
Date (yyyy/dd)	1926/07	1968/27	1994/29	1995/27	1936/31	**2004/19**	1927/17	1999/05	1938/02	1993/01	1926/03	1999/22		
Extreme Minimum (°C)	-47.8	-47.2	-39.4	-31.1	-10.0	-3.9	-1.1	-2.2	-11.1	-26.7	-33.3	**-50.0**		
Date (yyyy/dd)	1925/31	1917/03	1919/01	1920/02	2002/05	1911/01	1937/03	1910/21	1972/24	1935/27	1909/30	**1917/26**		

The climate data confirms that permafrost would not be expected at this location.

1981 to 2010 Canadian Climate Normals station data

Precipitation														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Rainfall (mm)	1.4	1.3	0.5	3.0	17.2	29.7	32.8	34.2	40.7	27.9	9.1	3.2	200.8	A
Snowfall (cm)	44	24	17	6	1	0	0	0	1	10	27	33	164	A
Precipitation (mm)	45.6	25.4	17.4	9.4	18.2	29.7	32.8	34.2	42.0	37.4	36.1	36.4	364.7	A
Extreme Daily Rainfall (mm)	21.8	15.0	2.2	8.6	21.8	27.0	37.3	33.0	42.0	43.2	**50.0**	17.5		
Date (yyyy/dd)	1934/07	1938/24	1995/31	1995/03	1910/26	2006/03	1930/15	1981/27	1993/22	1945/13	**1988/29**	1937/19		
Extreme Daily Snowfall (cm)	**38**	24	28	15	10	6	0	6	22	25	25	32		
Date (yyyy/dd)	**1928/16**	1933/04	1909/11	1930/14	1985/04	1910/11	1906/01	1922/31	1974/30	1944/26	1930/22	1927/01		
Extreme Daily Precipitation (mm)	38.1	24.1	27.9	15.2	24.4	27.0	37.3	33.0	46.0	43.2	**54.0**	31.8		
Date (yyyy/dd)	1928/16	1933/04	1909/11	1930/14	1910/26	2006/03	1930/15	1981/27	1993/22	1945/13	**1988/29**	1927/01		
Extreme Snow Depth (cm)	61	**380**	57	53	12	0	0	0	7	15	38	73		
Date (yyyy/dd)	1992/27	**1984/06**	1985/03	1996/01	1986/01	1981/01	1981/01	1980/01	1986/25	1991/31	1991/12	1991/09		

The precipitation data is of most use in this study, and indicates an extreme daily precipitation of 54 mm, and a cumulative annual winter snow depth (September to April) of 310 mm over the past 40 years. Assuming that all of the snow melts at once, and the worst recorded rainfall event occurs, the total precipitation would be 364 mm.

All three tailings storage facilities, in their present configuration, are easily able to accommodate this volume of precipitation with no discharge.

6.0 RECOMMENDATIONS AND CONCLUSIONS

There were no stability issues observed during the Dam Safety Inspection, and no recommendations for either maintenance or improvement are presented. The snow cover somewhat hindered the observations, but in view of the observed stability, it is our opinion that a follow-up inspection under snow-free conditions is not necessary.

7.0 CLOSURE

This report and its contents are intended for the sole use of the Athabasca Nuclear Corporation and their agents. Tetra Tech EBA Inc. does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Athabasca Nuclear Corporation or for any location other than the site described herein. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in the attached General Conditions.

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech EBA Inc.

Prepared by:
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APPENDIX A
TETRA TECH EBA'S GENERAL CONDITIONS

GENERAL CONDITIONS

GEOTECHNICAL REPORT

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

1.0 USE OF REPORT AND OWNERSHIP

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

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

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

2.0 ALTERNATE REPORT FORMAT

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

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

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

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

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

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

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

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

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

5.0 LOGS OF TESTHOLES

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

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

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

7.0 PROTECTION OF EXPOSED GROUND

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

8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

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

9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

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

10.0 OBSERVATIONS DURING CONSTRUCTION

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

11.0 DRAINAGE SYSTEMS

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

12.0 BEARING CAPACITY

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

13.0 SAMPLES

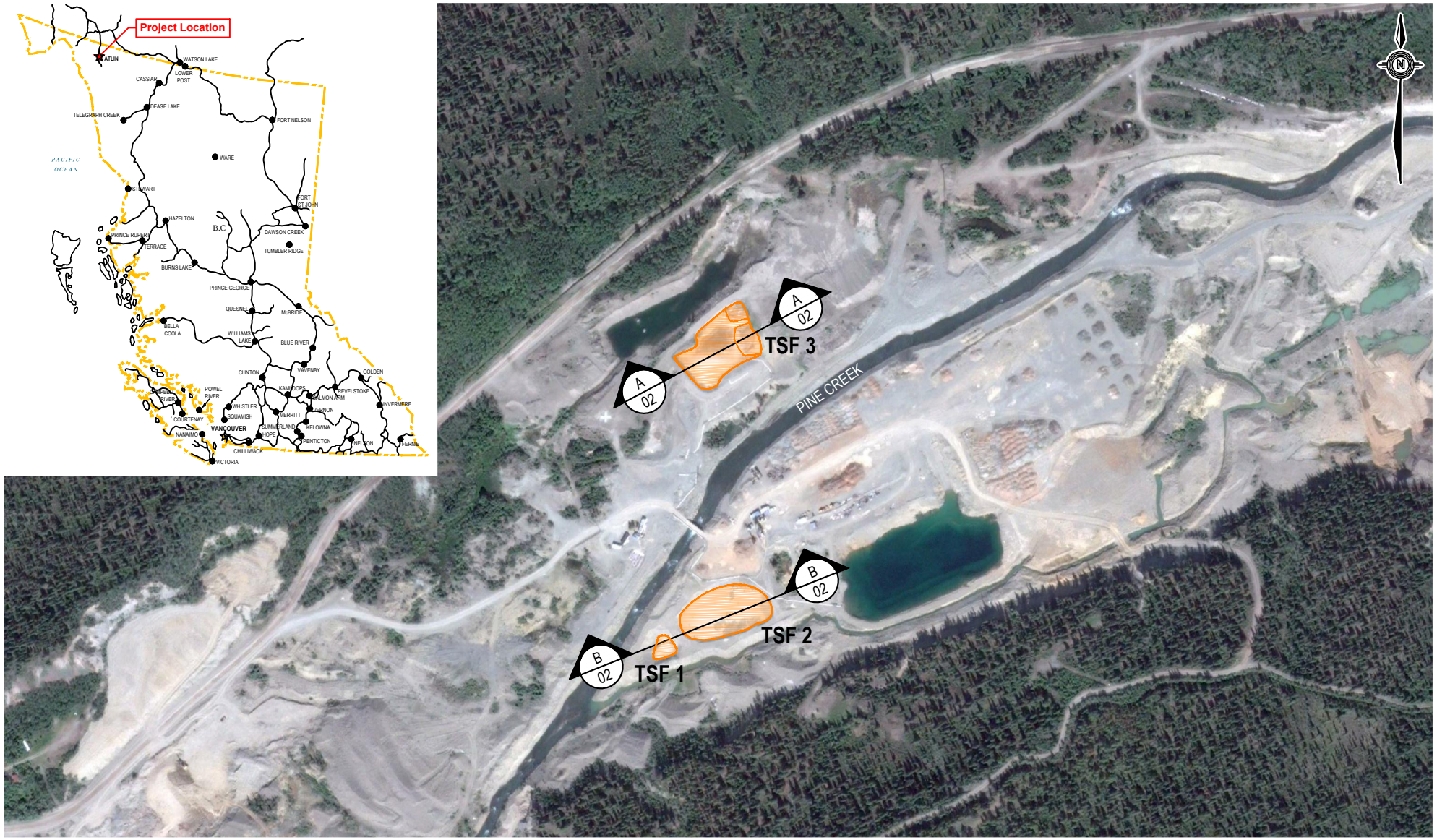
EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

14.0 INFORMATION PROVIDED TO EBA BY OTHERS

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

APPENDIX B
FIGURES 1 AND 2

(Site Plan and Sections through the Tailings Storage Facilities)



LEGEND

TSF - TAILINGS STORAGE FACILITY

0 250m

Scale: 1:5,000 @ 8.5"x11"

CLIENT

ATHABASCA NUCLEAR CORPORATION

YELLOWJACKET MINE DAM SAFETY INSPECTION
ATLIN, BRITISH COLUMBIA

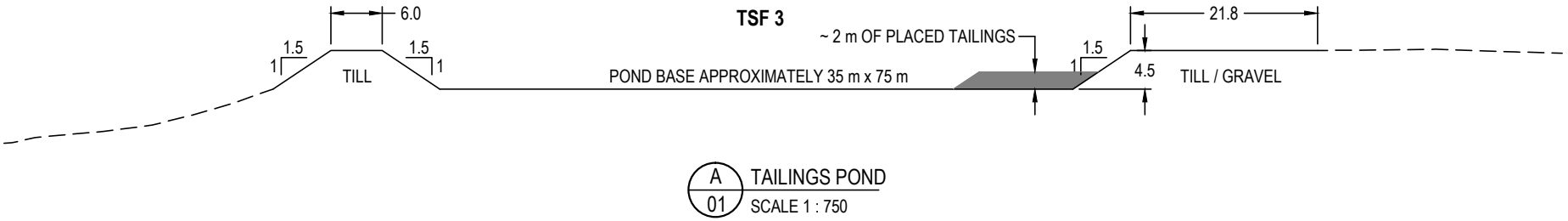
SITE PLAN

TETRA TECH EBA

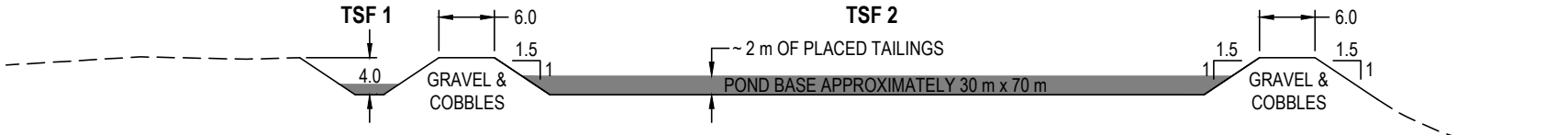
PROJECT NO.	DWN	CKD	REV
W14103527-01	CB	JRT	0

OFFICE	DATE
EBA-WHSE	November 24, 2014

Figure 1



A/01 TAILINGS POND
SCALE 1 : 750



B/01 OLD TAILINGS
SCALE 1 : 750

NOTE
- CROSS-SECTION DATA ESTIMATED FROM FIELD MEASUREMENTS

0 25m
Scale: 1:750 @ 8.5"x11"

CLIENT
ATHABASCA NUCLEAR CORPORATION

YELLOWJACKET MINE DAM SAFETY INSPECTION
ATLIN, BRITISH COLUMBIA

TYPICAL CROSS-SECTIONS
A - A' AND B - B'

TETRA TECH EBA

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Figure 2