Environment

Government of Yukon

Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

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Project Number:

60217901 (402.2.5)

Date:

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March 22, 2012

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Dear Ms. Perron:

Project No: **60217901 (402.2.5)**
Regarding: **Former Clinton Creek Asbestos Mine**
Long Term Performance Monitoring - 2011

AECOM Canada Ltd. (AECOM) is pleased to submit our report on the above referenced project. If we can be of further assistance, please contact the undersigned directly.

Sincerely,
AECOM Canada Ltd.

Tom Wingrove, P.Eng.
Executive Vice-President
North America, Environment

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cc: G. Robinson

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1. Introduction

This report provides the results of the 2011 performance monitoring at the former Clinton Creek Asbestos Mine. The purpose of the monitoring program is to obtain information on the performance of physical mine site features including the Clinton Creek waste rock dump, the Clinton Creek channel (including the gabion drop structures), the Wolverine Creek channel and the tailings pile. The monitoring program provides data which is compared with trigger levels and an action plan for maintenance or remedial stabilization work developed to maintain the long term stability of these features. The terms of reference for this work are outlined in our letter proposal to Mr. Brett Hartshorne of the Government of Yukon (GY), Energy, Mines and Resources dated May 25, 2011

Two performance monitoring events were completed in 2010. The first monitoring event was the routine biennial event which was completed in July 2010. A significant precipitation event in the Clinton Creek watershed occurred sometime in the month of August 2010 which resulted in some landslides along the mine access road and high flows in the Clinton Creek channel. These high flows caused significant damage to Drop Structure #4 and erosion of the creek channel downstream of the drop structures. A second complete round of performance monitoring was conducted in September 2010 to capture the effects of this event. The 2011 monitoring was recommended and completed to help evaluate the longer term effects that the 2010 precipitation event may have on the mine site features.

1.1 Background

Hazards associated with continued degradation of the Clinton Creek channel through the waste rock dump and the Wolverine Creek channel through the tailings piles have been previously identified (UMA 2000). Of particular concern are potential risks to human life and property downstream of the mine associated with a sudden breach of the channel blockages. In areas with significant relief, such as the Clinton Creek valley, flooding from failures of channel blockages can be especially dangerous and may be unrelated to precipitation events that would normally be expected to produce flooding conditions.

With respect to the potential for a breach of channel blockages, the most immediate concern was considered to be at the outlet from Hudgeon Lake. Profiles of the creek channel through the waste rock from 1986, 1999 and 2001, showed that progressive channel degradation (i.e. erosion / down-cutting) was occurring along the first 500 m of channel downstream of the outlet. As degradation continued, the toe of the waste rock pile was being undercut and localized slope instabilities were developing. By 2001, conditions had developed to a point where it was feared that normal flow and/or an overtopping event could trigger a breach of the waste rock at the Hudgeon Lake outlet. The consequences of a breach and rapid draining of Hudgeon Lake are discussed in UMA's Risk Assessment Report (UMA 2000). To address this concern, channel stabilization works consisting of four gabion drop structures were constructed at the Hudgeon Lake outlet between 2002 and 2004.

Measures to stabilize the Wolverine Creek tailings pile have also been investigated (UMA 2003). The requirement for these remedial measures was based on the premise that the tailings were moving at rates comparable to those observed at mine closure. Recent surveys however, indicate that the movements are significantly less than previously assumed and some mounding of the tailings in the valley bottom is occurring. A better understanding of the overall behaviour of the tailings piles is necessary to determine the most appropriate strategy to deal with previously identified hazards. In this regard, implementation of stabilization measures has been deferred until this information becomes available and the need for remedial work is confirmed. Of particular concern with respect to tailings pile stability is the potential for channel degradation where Wolverine Creek passes over the toe of the tailings. In this regard, maintaining the integrity of the rock-lined channel downstream of the tailings is considered essential to reduce the likelihood of mass tailings movements.

2. Performance Monitoring

The monitoring work consists of surveying the movement monitors located on the Clinton Creek Waste Rock Dump, at the Drop Structures and on the Wolverine Creek Tailings Pile, surveying channel profiles of Clinton Creek and Wolverine Creek and surveying cross-sections at two locations on each drop structure. The locations of these mine features are illustrated on Drawing 01, a plan view of the former mine site. Horizontal measurements across each drop structure are also collected. The first biennial long term performance monitoring event was completed in 2006 (UMA 2007) with some follow-up work in 2007 and the second biennial event was completed in 2008 (AECOM 2009).

The third biennial monitoring event was completed in July 2010. Shortly after this event a significant precipitation event(s) occurred in the Clinton Creek watershed resulting in high flows on Clinton Creek and some significant changes to the Clinton Creek channel. Due to the changes observed a second round of monitoring was completed in September 2010 (AECOM 2011a). The September 2010 monitoring was completed to capture the effects of this event, aid in understanding the extent of the damage to the creek and how a large event may impact the other features of the site such as movement of the waste rock dump and tailings piles. A follow up monitoring event in 2011 was recommended to provide insight into how the 2010 precipitation event may impact the performance of the mine site features over a longer time period.

Underhill Geomatics Ltd. (UGL) from Whitehorse, YK completed the survey work under Contract with the Government of Yukon. The survey was completed on August 11, 2011 by UGL using Global Positioning Survey (GPS) referenced to the UTM NAD 83 (Zone 7) co-ordinate system. The horizontal accuracy of the GPS survey is within 2 to 3 cm, which is acceptable given the magnitude of movements expected and given the potential error in positioning the survey rod at the exact same location for each monitoring event. The monitoring instructions and protocol provided to UGL by AECOM are provided in Appendix A along with the resulting survey information provided by UGL. The horizontal measurements of the drop structures were completed by AECOM in May 2011 during a site inspection.

2.1 Clinton Creek Waste Rock Dump

2.1.1 Movement Monitors

Monitoring of the waste rock dump was re-instated in 1999 with subsequent monitoring events in 2001, 2003 and 2004. In 2003, the monitoring program was expanded from seven to forty-two monitoring points (UMA 2004).

The locations of the waste rock movement monitors shown on Drawing 02 have been categorized according to location on the waste rock dump. The lower slope monitors are located below elevation 420 m, the mid-slope monitors are located between elevation 420 m and 450 m and the upper slope monitors are located above elevation 450 m. The Porcupine Pit slope monitor points are not included in these categories since they provide data on the east pit wall movements and not waste rock movements (with the exception of monitors #1493 and #1839).

A detailed summary of the waste rock movement monitoring for the upper, mid and lower slope areas and the open pit area is provided on Tables B-1 to B-4 in Appendix B. These tables include the total and incremental horizontal and vertical movements of each monitor along with annual rates of movement. The direction and magnitude of movement for each monitor since the baseline reading is graphically illustrated on Drawing 02 for the August 2011 survey. The annual horizontal rates of movement are summarized below in Table 2.1. The horizontal rates of movement from the September 2010 to August 2011 period range from nil up to 0.08 m/yr, values which are similar or slightly higher than the rates calculated from the July 2010 survey.

Table 2.1: Summary of Annual Horizontal Movement Rates

CLINTON CREEK WASTE ROCK DUMP									
Dump Area		Annual Horizontal Movement Rates (m/yr)					Rate Change (m/yr)		
		Monitoring Period							
		2004 to 2006	2006 to 2008	2008 to July 2010	July to Sept 2010	Sept 2010 to Aug 2011	2008 to Jul 2010	Jul to Sept 2010	Sept 2010 to Aug 2011
Upper	Avg.	0.02	0.02	0.02	0.20	0.05	0.00	0.18	-0.15
(5 monitors)	Max.	0.03	0.03	0.04	0.35	0.07	0.01	0.31	-0.28
	Min.	0.01	0.01	0.01	0.07	0.02	0.00	0.06	-0.05
Mid	Avg.	0.03	0.03	0.02	0.10	0.03	-0.01	0.08	-0.07
(13 monitors)	Max.	0.07	0.05	0.06	0.29	0.06	0.01	0.23	-0.23
	Min.	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Lower	Avg.	0.02	0.02	0.02	0.16	0.03	0.00	0.14	-0.13
(see Note 1)	Max.	0.07	0.06	0.08	0.28	0.08	0.02	0.20	-0.20
	Min.	0.01	0.00	0.00	0.03	0.00	0.00	0.03	-0.03

Note 1: Lower Dump Area: 18 Monitors active to July 2010. 8 monitors were lost in August 2010.

Upper Slope Monitors

There are five monitors located in the upper slope area. The movement vectors and magnitudes shown on Drawing 02 suggest that this area of the waste rock dump is moving in a northerly direction (i.e. down the underlying valley slope). The rates of movement for the September 2010 to August 2011 period range from 0.02 to 0.07 m/yr with an average of 0.05 m/yr. These rates are greatly reduced from the July 2010 to September 2010 period and slightly higher than the rates previous to July 2010. The higher rates are likely associated with the August 2010 precipitation event. The ground surface elevation at all monitor locations is decreasing with time. The ground elevation has decreased, on average, by about 0.15 m since 2001. The results are summarized in Table B-1 of Appendix B.

Mid Slope Monitors

There are 13 monitors located in the mid slope area of the waste rock pile, which covers the underlying south valley slope toe and the original valley bottom. The vectors suggest that the waste rock dump in this area is generally moving in a northerly direction across the former valley. However, the three monitors closest to Hudgeon Lake (#0229, #1831 and #22A) are moving in a north westerly direction towards the lake. This radial spreading has been previously reported and is not unexpected. However, there are two monitors in the center of the mid-slope area (Monitors #4 and #68) that do not follow this pattern. The direction of movement of these two monitors is thought to be influenced by local topography and not representative of the global movement of the mid slope area of the waste rock dump. The ground surface elevation at all monitor locations is decreasing with time. The ground elevation has generally decreased, on average, by about 0.4 m since 2001.

Based on the July 2010 survey no significant changes in the horizontal movement rates were detected. The annual movement rates calculated based on the incremental movements for the 2 month period from July to September 2010 showed significantly higher rates. The movement rates calculated for the September 2010 to August 2011 period are similar to the rates from July 2010. The monitoring results are summarized in Table B-2 of Appendix B.

Lower Slope Monitors

In July 2010 there were 19 active monitors located in the lower slope area of the waste rock pile, which is likely located along the toe and/or side slope of the original north valley slope. Monitor XS-G was destroyed during the creek stabilization work in 2003. Eight monitors have been lost since July 2010 due to the effects of the precipitation event that occurred in August 2010 (Monitors not found or lost include: 80-14, 84-1, 217, 218, 220, 228, XS-A, and XS-E).

The rates of movement for the 19 monitors active during the 2008 to July 2010 period range from nil up to 0.08 m/yr with an average of 0.02 m/yr. The rate change for this same period indicates that there was no significant change in the movement rates from the previous survey. The annual movement rates calculated based on the incremental movements for the 2 month period from July to September 2010 were significantly higher. The rates for the most recent monitoring period (September 2010 to August 2011) are similar to those from the July 2010 monitoring event. The results are summarized in Table B-3 of Appendix B.

Based on the monitoring results to the end of August 2011, it appears that waste rock in the area south of the stabilized creek channel (i.e. Monitors #1833 and P2) is moving in a northerly direction across the stabilized portion of the creek at rates of about 0.04 to 0.07 m/yr. The exceptions are Monitors #0228 and #0226 which are moving north westerly and north easterly, respectively. Monitor #0228 (not found in 2011) was moving towards the lake similar to Monitors #0229, 1831 and 22A. Monitor #0226 is located at the top of a slope on the waste rock pile and is generally moving in a direction perpendicular to the slope and towards Clinton Creek. The remaining monitors

east of the stabilized channel section are moving in a variety of directions at rates of about 0.01 to 0.02 m/yr. In this same area the ground surface elevation at all monitor locations has been increasing with time. The ground elevation has generally increased by about 0.08 m since 2001. The variety of movement directions is unexpected and may be a result of passive resistance developing along the leading edge of the waste rock as it is pushed up the north valley slope by the waste rock behind.

Open Pit Area Monitors

There are six monitors in the area of the Porcupine Pit. Four monitors (#'s 1830, 1832, 1837 and 1838) are located on the east wall of the open pit, one on the north side of the pit (#1839) and one near the former crusher building (#1493). The movement data for the four monitors on the east wall of the pit do not indicate any signs of significant horizontal or vertical movements. The south west and south east corners of the Porcupine Pit are relatively unstable based upon previous visual inspections.

The movement data for Monitor #1839 located at the north side of the pit suggest that this monitor is moving down the original valley slope away from the open pit. The monitoring results from 2001 to August 2011 show that this monitor settled about 0.43 m and moved horizontally by 0.07 m. The rates of movement have decreased since September 2010 and are similar to those measured before the August 2010 precipitation event.

The movement data for Monitor #1493, located north of the open pit near the former crusher building, show that this monitor is moving in a northerly direction at a rates of about 0.1 m /yr or less. This area of the waste rock is not impacting Clinton Creek. The monitoring results from 2001 to August 2011 show that this monitor settled about 0.34 m and moved horizontally by 0.67 m. The horizontal rate of movement increased since September 2010 while the vertical rate decreased since September 2010. The monitoring data for the open pit monitors is included in Table B-4, Appendix B.

2.1.2 Summary

The waste rock dump continues to undergo creep movements ranging from nil up to 0.08 m per year. In general, the movements measured for the period from September 2010 to August 2011 are the same or slightly higher than the previous monitoring period (2008 to July 2010). The higher rates of movement measured after the precipitation event in 2010 (i.e. monitoring period from July 2010 to September 2010) were not sustained.

In general, the monitoring data suggest the western area of the waste rock dump nearest to Hudgeon Lake is moving in a westerly direction towards the lake and the main mass of the waste rock dump is moving in a northerly direction across Clinton Creek. East of the stabilized creek channel, the monitors at the top of the south bank of the creek channel are moving in a variety of directions.

With the exception of Monitor U1493, the monitors around the open pit do not appear to be developing any movement trends. Monitor U1493 is moving in a northerly direction however, this area of the waste rock pile is not impacting the creek channel at this time.

The waste rock continues to close in on the stabilized section of the creek channel at a rate of about 0.05 m/yr and it is expected that the integrity of the gabion drop structures will eventually be compromised unless stabilization measures for the waste rock dump are implemented. Alternatively, the gabion structures can be replaced or repaired as required in the future to restore their functionality. The waste rock movements downstream of the stabilized channel section do not appear to be of consequence to the stabilized section of the channel.

2.2 Gabion Drop Structures

Starting in 2004, the monitoring program for the drop structures was limited to taking horizontal measurements across each gabion drop structure at two locations (Drawing C-1, Appendix C) to determine if the gabions are deforming laterally. To provide a better understanding of the deformations of the gabion drop structures in relation to the waste rock movements, and the impact on functionality of the structures, additional survey requirements were recommended for long term performance monitoring (UMA 2006b). These include four movement monitors located near the four corners of each drop structure and surveying two cross sections of each drop structure between each pair of movement monitors.

During the 2009 spring freshet the drop structures sustained some damage due to concentrated flows which were repaired in the fall of 2009 (AECOM 2010). Drop Structure #4 had the worst damage which required the lower tier to be re-built. The drop structures were not damaged during the 2010 spring freshet. However, the precipitation event in August 2010, and the associated creek flows, resulted in the bottom end of Drop Structure 4 being undermined. The extent of the damage to the drop structures could not be fully determined in the fall of 2010 due to the flow level across the drop structures. Creek flows and weather conditions prevented any repairs from being made in 2010. The repairs completed in 2011 are documented in the construction activity report (AECOM 2011b).

2.2.1 Horizontal Measurements

The horizontal measurements to date for Drop Structures 1, 2, 3 and 4 are summarized in Tables C-1 to C-5 (Appendix C). The measurement locations were tagged with permanent markers in September 2006 to improve the repeatability of the measurement locations. To May 2011, from 0.19 to 0.60 m of lateral movement (i.e. closure of the drop structure) has been measured with the largest movements occurring at Drop Structure #3. The average annual rates of movement calculated from the May 2011 measurements range from -0.21 to -0.12 m per year and are two to three times the rates determined from the July 2010 measurements. These rates are similar to the waste rock movement rates for the July 2010 to September 2010 period. The horizontal drop structure measurements were not taken after the August 2010 precipitation event so the calculated rates of movement may not represent the behaviour of the drop structures since September 2010.

2.2.2 Movement Monitors

Sixteen movement monitors (#1450 to 1465) were installed near the corners of the four drop structures in July 2006 by Underhill Geomatics Ltd. (UGL) to provide additional data on horizontal deformations (closure). The locations of these monitors are illustrated on Drawings 03 to 07 and a summary of the distance between each pair of monitors is provided on Table C-6 (Appendix C).

Between September 2010 and August 2011, the horizontal distance between the pairs of movement monitors decreased on average by 0.05 m. The monitors at Drop Structure 3 showed a slight increase in distance between the two monitors. The average annual rate of movement between each pair of monitors is slightly higher than the results from July 2010 and slightly less than the September 2010 results. The average movement rates compare fairly well with the horizontal drop structure measurements and the waste rock movements. The results indicate that the total decrease in horizontal distance measured to date ranges from 0.06 to 0.36 m with the largest total movements measured at the bottom end of DS#4 which was undermined in August 2010.

Two of the monitor pins (#1453 and #1460) have been lost and need to be replaced during the next monitoring event.

2.2.3 Surveyed Cross-Sections

Two cross-sections were surveyed across each drop structure between each pair of movement monitors in July 2006 by UGL as part of the long term performance monitoring program (UMA 2006b). The locations of these sections are illustrated on Drawings 04 to 07. The plan view and end view sections provided on the left hand side of these Drawings represent the drop structure geometry based on the nominal dimensions of the baskets and 3H:1V side slopes. The sections on the right hand side of the drawings represent the surveyed geometry which differsslightly from the plan view and end view sections. The results of the baseline survey in June 2006 suggest that at that time (2006) some deformation had already occurred.

Drop Structure 1:

A number of gabion baskets were added at the top of DS#1 in 2007 to address a deficiency in the amount of freeboard. These additional baskets are illustrated on Drawing 04. Cross Sections 1 and 2 show that the design flow depth (2.01 m) at the top of the drop structure (Section 1) is contained within the upper level of the gabion drop structure now that the additional gabion baskets have been added. On Cross Section 2, the dip in the side slope on the right hand side occurred during the first spring freshet after the structure was completed. Based on the surveyed cross-sections, the drop structure does not appear to have undergone additional settlement since the baseline survey in 2006.

A top of bank survey was completed in 2007 to confirm that at least 0.2 m of freeboard is available above the maximum expected lake level of 411.21 m (UMA 2007). There is at least 0.2 m of freeboard along both sides of the channel with the exception of one location on the south side of the outlet channel where the top of bank elevation is 0.07 m below the minimum freeboard elevation of 411.41 m. It is expected that this is a localized area near the top of the channel which is surrounded by higher ground a short distance away.

Drop Structures 2, 3 and 4:

The most noticeable differences are between the July 2010 and September 2010 surveys. The differences from September 2010 to August 2011 are relatively minor, except at DS#4. The sections surveyed at the top end of each structure (i.e. Sections 3, 5 and 7 on Drawings 05, 06 and 07, respectively) show only minor amounts of change. The sections taken at the downstream end of DS# 2 and #3 (i.e. Sections 4, 6 and 8 on Drawings 05, 06 and 07, respectively) show only minor change since September 2010. The difference from the July 2010 survey is related to the loss of gabion material from the baskets during high flows that occurred in August 2010. Repairs were undertaken in 2011 to repair this damage (AECOM 2011b). The significant changes visible at the downstream end of DS#4 (i.e. Section 8 on Drawing 07) illustrate the effects of the additional erosion that occurred after September 2010

2.2.4 Summary

The changes in the horizontal measurements taken at the gabion drop structures are at least partially a result of continued waste rock movements. The damage that occurred during the August 2010 precipitation event is reflected in the September 2010 and August 2011 cross-sections. In general, the side slope angle has not been impacted by the movements and is still well below the trigger level of 2H:1V sideslopes and the 2.01 m flow depth is still within the channel cross section. In 2011, a repair program was completed to repair the damage to Drop Structures #1 to #3 (AECOM 2011b). No repairs were made to DS#4 due to the difficulty in obtaining safe access for men and equipment to make repairs at this locationAs documented in the Construction Activity report, three rows of gabion baskets were added to the downstream end of tier 1 of DS 3.

2.3 Clinton Creek Channel

Since 1983, The Clinton Creek Channel profile has been surveyed on seven different occasions. For purposes of comparing conditions before and after channel stabilization works, the profile from 2001 is shown as a dashed line on Drawing 08 with the 2004, 2006, 2007, 2008, 2010 and 2011 surveys. The 2004 survey has been selected as the baseline to evaluate channel degradation (down-cutting) and determine when remedial measures are required. The creek profile shown on Drawing 08 has been sub-divided on to three larger scale drawings (Drawings 09, 10 and 11) to aid in evaluating changes in the channel profile. Offset lines are shown on these drawings to indicate the depth of channel degradation that would trigger the action items identified in the Long Term Performance Monitoring Report (UMA 2006b).
The July 2010 surveys shows that there were no significant changes in the creek profile from the 2008 survey and none of the trigger levels were reached. However, the August 2010 event resulted in significant channel erosion and re-alignment of the creek. At the downstream end of DS#4 (Station 0+175 m) the creek bed was eroded to a depth of 5 m reducing to 3.5 m at Station 0+200m and 2 m at Station 0+225 m. Between Stations 0+225 m and 0+320 m the creek profile is about 2 m lower and from Station 0+320 m to 0+390 m the creek profile is about 1 m lower. From Station 0+400 m to 0+600 m the creek profile did not change significantly. Downstream of Station 0+600 m deposition occurred resulting in the creek profile being 0.8 to 1.3 m higher than in July 2010. The re-alignment of the creek channel (Drawing 03) was significant between Stations 0+375 m and 0+450 m where it was shifted about 20 m south into the waste rock pile and also downstream of Station 0+675 m where the creek is now located up to 80 m south of the previous alignment. The trigger levels for action were exceeded between Stations 0+175 m and 0+320 m. Between Stations 0+320 m and 0+375m the trigger level was reached.

Downstream of the gabion drop structures no significant changes were measured between the September 2010 and August 2011 creek profile surveys. The channel profile between the drop structures shows some erosion and deposition that occurred during the August 2010 precipitation event. The repairs undertaken in the fall of 2011 should have addressed these features.

2.3.1 Summary

The August 2011 survey shows that no significant changes to the creek alignment and profile have occurred since the September 2010 survey. The September 2010 survey results show that the creek alignment and profile were significantly altered during the August 2010 event and that trigger levels were exceeded or reached over a 200 m length of the channel starting at DS#4. Creek flows and weather conditions affected the ability of a local Contractor to perform repairs before freeze-up in October 2010 The channel erosion trigger levels have been exceeded in some stretches of the creek. A decision to address these conditions has been delayed due to recent work undertaken to determine if any long term mine closure works are to be contemplated for this site. If not, the exceeded trigger levels need to be addressed.

2.4 Wolverine Creek Tailings Pile

Fifty-two movement monitors were surveyed in August 2011 by UGL. In 2010, two monitoring events were undertaken, the first in July 2010 as part of the biennial monitoring program and the second in September 2010 to evaluate if the precipitation event in August 2010 had an impact on the movement of the tailings pile (AECOM 2011a). The monitoring results are provided in Appendix D and the locations of the movement monitors are shown on Drawing 12.

The monitors on the South and North lobes of the tailings pile have been grouped according to their location on the upper, mid and lower slope areas. The monitors on the upper slope are located above elevation 530 m, the mid slope monitors are located between elevation 425 and 530 m and the lower slope monitors are located below

elevation 425 m. The vectors for each monitoring point on Drawing 12 indicate the total horizontal movement and direction from the baseline survey (typically 2003) to August 2011.) The measured horizontal movement for the current monitoring period from September 2010 to August 2011 is printed beside each monitor point label. The measured movements for each monitoring period have been converted to annual movement rates and are summarized in Tables 2.2 and 2.3 for the South and North lobes, respectively. A summary of the movements and movement rates for each monitor is provided in Appendix D (Tables D1 to D3).

2.4.1 South Lobe

Monitoring Period: September 2010 to August 2011

The average horizontal movement rates for the upper, mid and lower slope areas of the South Lobe for the last monitoring period are 0.05, 0.42 and 0.24 m/yr, respectively, as shown in Table 2.2. These average annual movement rates are slightly higher than the rates measured from the July 2010 monitoring event but are lower than the rates measured in September 2010 (i.e. just after the August 2010 precipitation event). Drawing 13 illustrates the movement vectors and magnitudes on the South Lobe. The results for each monitor are presented in Appendix D on Tables D-1 to D-3. The upper slope is the least active area with annual movement rates of 0.04 and 0.05 m/yr for the two monitors on the upper slope. The mid slope and lower slope areas are more active. The movement rates on the mid-slope area range from 0.02 to 1.11 m/yr and the movement rates on the lower slope area range from 0.01 to 0.38 m/yr.

The ground surface elevation at all of the upper and mid-slope monitors is decreasing with time. Since 2003 the ground elevation has decreased, on average, by about 0.5 m and 1 m for the upper and mid slope areas, respectively. The corresponding average annual vertical rates of movement are -0.06 and -0.11 m/yr. The majority of the lower slope monitors show increasing ground surface elevation with time. Three of the five monitors which are decreasing in elevation (i.e. Monitors SL-4, SL-5 and 24D) are located higher up on the slope while the other two (i.e. Monitors SL-1 and 1484) are located near the top of the tailings pile directly above the creek channel. The monitors that have increasing ground elevations (0.02 m/yr on average) are all located in the eastern half of the lower slope area

As shown by the direction of movement vectors on Drawing 13, the upper and mid slope areas are generally moving down slope in an easterly direction and the lower slope area is undergoing some lateral spreading. The majority of monitors in the mid slope area near the boundary with the lower slope are moving in a north easterly direction towards the pond between the two lobes. On the lower slope area, the movement monitors at the north end are moving in a north easterly direction towards the pond. The monitors in the central area are generally moving east across the valley. The monitors at the south end are moving southward down the valley.

The movements of the mid and lower slope areas discussed above are a result of the mounding of the tailings in the middle portion of the lower slope area (e.g. Monitors 25B, SL-2, SL-3, 2005-08, 2005-09, 2005-10, 2005-11) which is providing passive resistance to the movement of the tailings. As the passive resistance has increased over the years the movement of the tailings has been redirected towards areas of less resistance. The most pronounced movement is towards the pond between the two lobes. As the tailings move in this north easterly direction they impart some thrust on the tailings mounded up in the middle area of the lower slope, essentially pushing them aside as the tailings move towards the pond. The mounding in the middle area of the lower slope and the main direction of the south lobe movement is illustrated on Figure 2-1.

The small movement rates on the upper slope area are not unexpected because the original landslide did not encompass much of this area, which may be due to a decrease in the inclination of the underlying valley slope above elevation 530 m. The flatter valley slope feature is visible on aerial photographs taken before mine site

development (UMA 2003). The mid and lower slopes are most active since these areas are coincident with the main area of the original landslide which occurred in 1974 (UMA 2003). As the tailings mound up in the valley bottom (i.e. lower slope area), the movement rates in the mid-slope area may continue to decrease as toe support (i.e. mounding) increases.

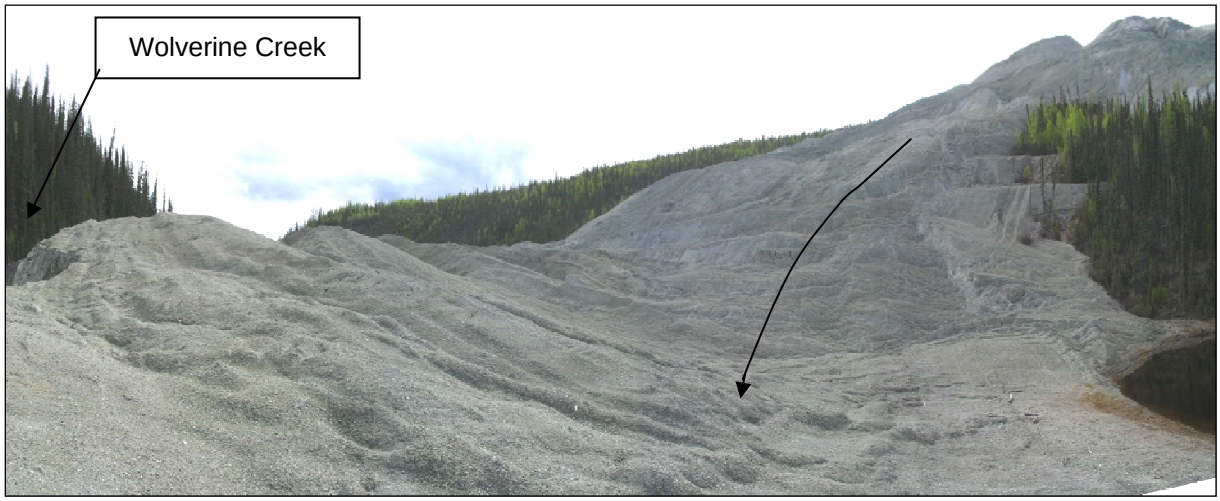

Figure 2-1) Mounding at Toe of South Lobe Near Monitor 2005-11 (view facing south)

Table 2.2: Range of Annual Horizontal Movement Rates – South Lobe

WOLVERINE CREEK TAILINGS PILE – SOUTH LOBE											
Slope Area		Annual Horizontal Movement Rates (m/yr)							Rate Change (m/yr)		
		Monitoring Period									
		1984	2004 to 2005	2005 to 2006	2006 to 2008	2008 to Jul 2010	July to Sept 2010	Sept 2010 to Aug 2011	2008 to Jul 2010	July to Sept 2010	Sept 2010 to Aug 2011
Upper	Avg.	0.50	0.13	0.10	0.07	0.04	0.11	0.05	-0.03	0.07	-0.06
(2 monitors)	Max.	-	0.18	0.18	0.09	0.06	0.12	0.05	-0.03	0.06	-0.07
	Min.	-	0.09	0.02	0.05	0.03	0.10	0.04	-0.02	0.07	-0.06
Mid	Avg.	7.00	0.76	0.59	0.45	0.36	0.53	0.42	-0.09	0.17	-0.11
(12 monitors)	Max.	-	0.93	0.81	0.62	0.52	0.71	1.11	-0.10	0.19	0.40
	Min.	-	0.35	0.04	0.03	0.02	0.11	0.02	-0.01	0.09	-0.09
Lower	Avg.	-	0.45	0.35	0.28	0.23	0.36	0.24	-0.05	0.13	-0.12
(14 monitors)	Max.	2.80	0.66	0.57	0.44	0.36	0.52	0.38	-0.08	0.16	-0.14
	Min.	0.50	0.05	0.03	0.02	0.00	0.05	0.01	-0.02	0.05	-0.04

2.4.2 North Lobe

Monitoring Period: September 2010 to August 2011

The movement rates for the North lobe summarized in Table 2.3 are less than those measured for the South lobe. The average horizontal movement rates for the upper, mid and lower slope areas of the North Lobe for this monitoring period are 0.02, 0.07 and 0.03 m/yr, respectively. These average annual movement rates are similar to the rates measured from the July 2010 monitoring event but are lower than the rates measured in September 2010 (i.e. just after the August 2010 precipitation event). The average annual movement rates for the monitoring periods before September 2010 showed that the movement rates were decreasing with time. Drawing 12 illustrates the movement vectors and magnitudes on the North Lobe. The monitoring results are presented in Appendix D on Tables D-1 to D-3. Drawing 12 illustrates the movement vectors and magnitudes on the North Lobe.

With the exception of Monitors 80-4 and 80-5 in the mid slope area, all of the monitors on the North Lobe have moved at rates ranging from 0.01 to 0.05 m/yr. Monitors 80-4 and 80-5 in the mid slope area are relatively active moving at rates of 0.24 and 0.18 m/yr, respectively.

The ground surface elevations at the monitor locations are typically decreasing with time. Since 2003 the ground elevation has decreased, on average, by about -0.21 m, -0.36 m and -0.20 m for the upper, mid and lower slope areas, respectively. For the current monitoring period the average annual decrease in ground elevations are -0.02, -0.02 and -0.0 m/yr for the upper, mid and lower slope areas, respectively
The general direction of movement for the North Lobe is eastward (downslope) which is consistent with the previous monitoring reports. Monitors NL-4, NL-5 and 1489 on the south side of the lower slope area are moving in a south easterly direction towards the pond where there is less resistance to movement.

Table 2.3: Range of Annual Movement Rates – North Lobe

WOLVERINE CREEK TAILINGS PILE – NORTH LOBE											
Slope Area		Annual Movement Rates (m/yr)							Rate Change (m/yr)		
		Monitoring Period									
		1984	2004 to 2005	2005 to 2006	2006 to 2008	2008 to Jul 2010	July to Sept 2010	Sept 2010 to Aug 2011	2008 to Jul 2010	July to Sept 2010	Sept 2010 to Aug 2011
Upper	Avg.	-	0.07	0.06	0.03	0.03	0.15	0.02	0.00	0.12	-0.13
(7 monitors)	Max.	0.90	0.12	0.18	0.05	0.10	0.19	0.05	0.05	0.09	-0.14
	Min.	0.40	0.03	0.03	0.02	0.01	0.08	0.01	-0.01	0.07	-0.07
Mid	Avg.	-	0.18	0.13	0.10	0.06	0.33	0.07	-0.04	0.27	-0.26
(10 monitors)	Max.	24.5	0.53	0.43	0.31	0.21	1.10	0.24	-0.10	0.89	-0.86
	Min.	1.6	0.02	0.02	0.01	0.00	0.13	0.00	-0.01	0.13	-0.13
Lower	Avg.	20.0	0.13	0.09	0.07	0.05	0.22	0.03	-0.02	0.17	-0.19
(8 monitors)	Max.	-	0.18	0.13	0.10	0.07	0.27	0.05	-0.03	0.20	-0.22
	Min.	-	0.08	0.05	0.04	0.03	0.14	0.02	-0.01	0.11	-0.12

2.4.3 Summary

The downslope movement rates of the tailings continued to slow down to the end of the July 2010 monitoring period but increased for a short period of time following the August 2010 precipitation event. As of August 2011 the movement rates measured in September 2010 have decreased and are similar to the rates measured in July 2008 and July 2010. The amount of movement measured from July 2010 to September 2010 was similar to that measured from September 2010 to August 2011 indicating that significant precipitation events have had an impact on the behaviour of the tailings pile movements.

2.5 Wolverine Creek Channel

Previous Monitoring Events

The channel profile between Stations 0+700 m and 1+500 m (Drawings 14 and 15) was surveyed by UGL in 2006 with the intent to utilize the original survey from 2003 as the baseline to compare subsequent surveys and evaluate channel degradation. Once the two plan and profiles were created it was noted that there was a discrepancy between the two surveys, in plan and profile, mainly between Station 0+800 and 1+100 m. In discussion with Jean-Louis Salesse of UGL, these two surveys could not be reconciled without checking some of the control points used for the 2003 survey. No conclusions were made in the 2006 monitoring report except a recommendation that the survey be re-done in 2007. In 2007, the creek channel survey was only partially completed (i.e. Station 1+025 to 1+450 m) and no conclusions could be made. The 2008 and subsequent surveys were completed from Station 0+700 to 1+450 m.

The 2008 survey results compared well in plan view with the 2003 baseline survey and the profile compares well with the 2003 baseline survey from Station 0+700 to 0+950 and from Station 1+050 to 1+475m. Between Station 0+950 and 1+050 the 2008 survey suggests that the channel has filled in by about 0.5 to 1 m. The beaver dam at the upstream end of the south lobe (Station 1+300 m) was removed in 2007 which resulted in a local straightening of the channel in plan view. Where the surveyed channel is above the previous baselines, it is implied that depositional processes have raised the channel bottom. Conversely, erosion processes have lowered the channel bottom at other locations.

The July 2010 profile survey results compared well with the baseline and 2008 surveys from 0+700 to 0+960 m. From this point to Station 1+050 m the channel profile was about 0.5 to 1.0 m lower than the 2008 survey but still above the 2003 baseline survey. From Station 1+050 to 1+300 m the July 2010 profile was slightly less than the 2008 profile but not below the baseline. Across the north lobe the profile is lower than the 2008 survey. Both the 2008 and July 2010 surveys were below the baseline survey.

The September 2010 survey compared well in plan view with the baseline, 2008 and July 2010 surveys. In profile the results generally compared well with the July 2010 survey. However, along the downstream half of the rock lined channel, from Station 0+800 to 0+925 m, the creek profile has a distinct ‘saw tooth’ pattern that was not observed in previous surveys. The valleys of the saw tooth pattern appear to be below the baseline survey and may be scour holes in the creek bed (note: this was visually apparent during a site visit in May 2011). Upstream of Station 1+100 m the September survey was lower than the July survey by as much as 0.5 m in some locations and below the baseline for a 75 m stretch upstream of Station 1+175 m. Across the north lobe the profile was slightly lower than the July survey.

August 2011 Survey

The August 2011 survey compares well in plan view with the baseline, 2008 and 2010 surveys upstream of Station 0+950 m. At Stations 0+950 m, 0+875 m, 0+850 m and downstream of Station 0+750 m the creek has shifted slightly from 2010. In profile the results generally compare well with the September 2010 survey upstream of Station 0+950m. Downstream of Station 0+950 m, the 2011 creek profile has a similar pattern to the September 2010 survey but it is shifted in the downstream direction. This is attributed to the change in creek alignment (i.e. in plan view) which results in variable creek profile lengths. The results of the 2011 survey are hard to compare to determine the extent of any changes in the creek channel but the general patterns suggest there has only been minor changes since September 2010.

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3. Recommendations

Based on previous recommendations, the 2011 performance monitoring and the damage that occurred due to the August 2010 precipitation event, the following work is recommended:

- The Clinton Creek Channel and Gabion Drop Structures should be inspected on an annual basis starting in 2012 including a survey of the creek channel and monitoring of the gabion drop structure movement monitors and the surveyed cross sections.

- Biennial Site Inspection (2012)
  - Visually inspect the waste rock dump,
  - Visually inspect the rock lined channel and weirs on Wolverine Creek
  - Visually inspect Wolverine Creek upstream of the rock lined channel

- The need for a full round of performance monitoring in 2012 does not appear to be warranted since the 2011 monitoring results suggest that there have been no significant changes at the mine site since the September 2010 monitoring event and the rates of waste rock and tailings movement have reduced to the rates monitored in 2008 and July 2010. When the Clinton Creek channel survey and monitoring of the gabion movement monitors are completed, some or all of the lost or destroyed Waste Rock Movement Monitors on the lower slope area and Drop Structure Monitors #1453 and #1460 should be replaced.

- 2013: a full round of performance monitoring should be completed if not completed in 2012.

If we can be of further assistance or should you wish to proceed with the recommended engineering work in 2012, please contact Tom Wingrove.

4. References

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AECOM, 2011b. Government of Yukon, Former Clinton Creek Asbestos Mine – Emergency Drop Structure Repairs, Construction Activity Report – 2011.

Drawings

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U1190
AIRSTRIP
WOLVERINE CREEK TAILINGS PILE
NORTH LOBE
FORMER MILL SITE
U2834 (RTK BASE)
SOUTH LOBE
U1561 (MINE)
U1086
WOLVERENE CREEK
HILL (MINE)
CREEK STABILIZATION AREA INCLUDING: HUDGEON LAKE OUTLET AND FOUR GABION DROP STRUCTURES
U5700
U1192
U5699
U5698
U1183
U1191
G-TRAV (MINE)
CLINTON CREEK
2835
HUDGEON LAKE
U1200
U1189
MINE ACCESS ROAD
CLINTON CREEK WASTE ROCK DUMP
U2836 (RTK BASE)
BEAR CREEK
U228 (MINE)
U1836
U1182
PORCUPINE PIT
U1193
SHACK (MINE)
U280 (MINE)
CLINTON CREEK
PORCUPINE CREEK

0 150 300 m
SCALE 1:1500(

UTM ZONE 7 NAD83
IMAGE DATE 1999

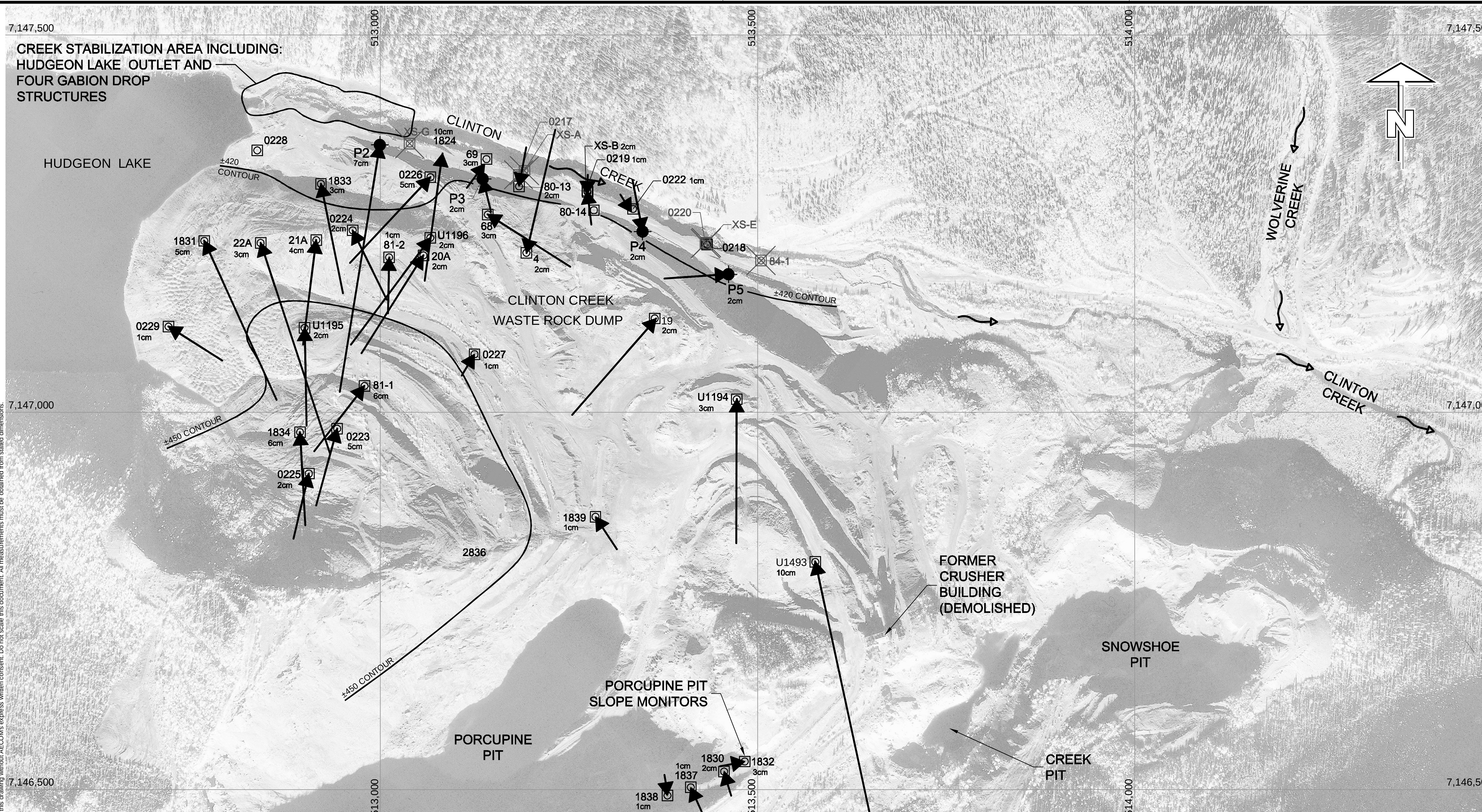
U5700 BENCHMARK

U228 (MINE) LOCAL MINE BENCHMARKS

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Site Plan and Bench Mark Locations Drawing - 01



7,147,500
513,000
513,500
514,000
7,147,000
7,146,500
CREEK STABILIZATION AREA INCLUDING:
HUDGEON LAKE OUTLET AND
FOUR GABION DROP
STRUCTURES
HUDGEON LAKE
CLINTON
CREEK
±420 CONTOUR
±450 CONTOUR
CLINTON CREEK
WASTE ROCK DUMP
WOLVERINE
CREEK
CLINTON
CREEK
FORMER
CRUSHER
BUILDING
(DEMOLISHED)
SNOWSHOE
PIT
PORCUPINE PIT
SLOPE MONITORS
PORCUPINE
PIT
CREEK
PIT
N
0228
XS-G
1824
10cm
P2
7cm
0226
5cm
1833
3cm
69
3cm
P3
2cm
0217
XS-A
XS-B 2cm
0219 1cm
0222 1cm
80-13
2cm
80-14
68
3cm
0220
XS-E
0218
84-1
P4
2cm
P5
2cm
1831
5cm
22A
3cm
21A
4cm
0224
2cm
81-2
1cm
U1196
2cm
20A
2cm
4
2cm
0229
1cm
U1195
2cm
19
2cm
0227
1cm
81-1
6cm
U1194
3cm
1834
6cm
0223
5cm
0225
2cm
1839
1cm
2836
U1493
10cm
1830
2cm
1832
3cm
1837
1cm
1838
1cm

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UTM ZONE 7 NAD83
IMAGE DATE 1999

XS-G — MONITOR LOCATION (DESTROYED, NOT FOUND)

0226 — MONITOR LOCATION (ACTIVE)

P2 — PIEZOMETER LOCATION

22cm — INCREMENTAL MOVEMENT (SEPT 2010 TO AUG 2011)

10cm — TOTAL MOVEMENT VECTOR (BASELINE TO AUG 2011)

UPPER SLOPE AREA
- ELEVATION >450±

MID SLOPE AREA
- ELEVATION >420± <450±

LOWER SLOPE AREA
- ELEVATION <420±

AECOM

Government of Yukon
Clinton Creek-2011 Site Inspection and Completion of Repairs
Long Term Performance Monitoring - 2011

Clinton Creek Waste Rock Dump Movement Monitoring

Drawing - 02

7 147 500
7 147 250
7 147 000
513 000
513 250
513 500

SECTION 1
SECTION 2
SECTION 3
SECTION 4
SECTION 5
SECTION 6
SECTION 7
SECTION 8

1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465

DROP STRUCTURE #1 (SEE DRAWING 04)
DROP STRUCTURE #2 (SEE DRAWING 05)
DROP STRUCTURE #3 (SEE DRAWING 06)
DROP STRUCTURE #4 (SEE DRAWING 07)

ALIGNMENT OF CREEK CHANNEL (TYP.)

1999
2001
JULY, 2006
JULY, 2004 (BASE LINE)
JULY, 2008
JULY, 2010
SEPTEMBER, 2010
AUGUST, 2011

20m
80m

0+000 0+050 0+100 0+150 0+200 0+250 0+300 0+350 0+400 0+450 0+500 0+550 0+600 0+650 0+700 0+750 0+800 0+850 0+900 0+950

CHANNEL STATION (m) TYP.

N

PLAN

0 25 50 m SCALE 1:2500

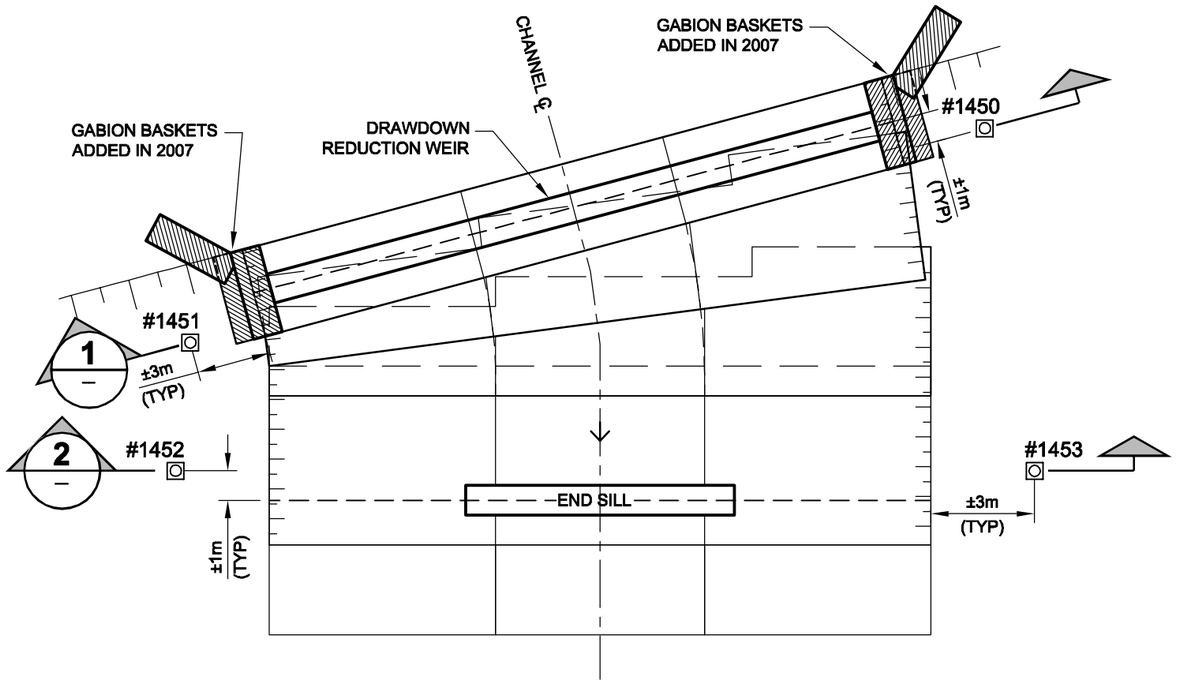
LEGEND

- 1450 CHANNEL CLOSURE MOVEMENT MONITOR (TYP)
- CREEK CENTRELINE 1999
- CREEK CENTRELINE 2001
- CREEK CENTRELINE 2004 (BASELINE FOR LONG TERM MONITORING)
- CREEK CENTRELINE 2006
- CREEK CENTRELINE 2008
- CREEK CENTRELINE JULY 2010
- CREEK CENTRELINE SEPTEMBER 2010
- CREEK CENTRELINE AUGUST 2011

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Clinton Creek
Channel Plan
Drawing - 03



DROP STRUCTURE PLAN VIEW

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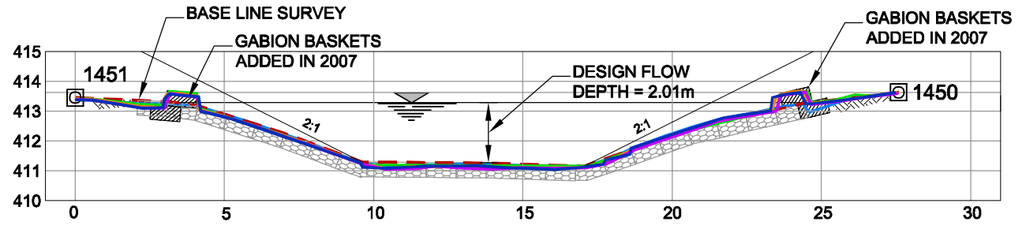

SECTION 1 —

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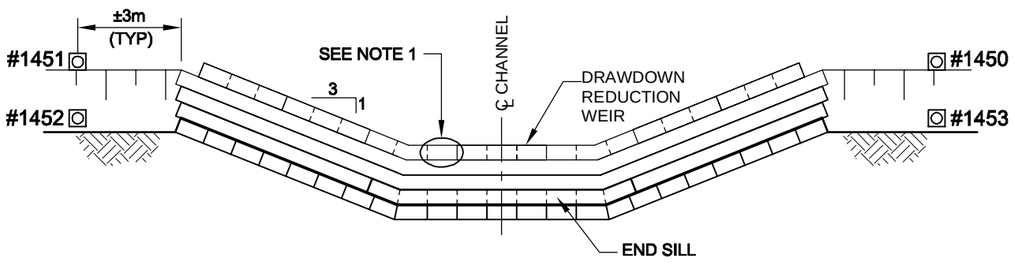

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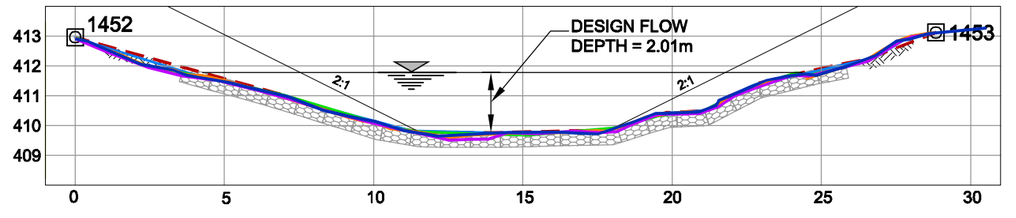

SECTION 2 —

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0 2 4

▣ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

NOTE 1: GABION FILL REMOVED FROM THIS CELL OF THE DRAWDOWN WEIR IN 2007 TO AID IN DRAWING DOWN THE LEVEL IN HUDGEON LAKE DURING LOW FLOW PERIODS.

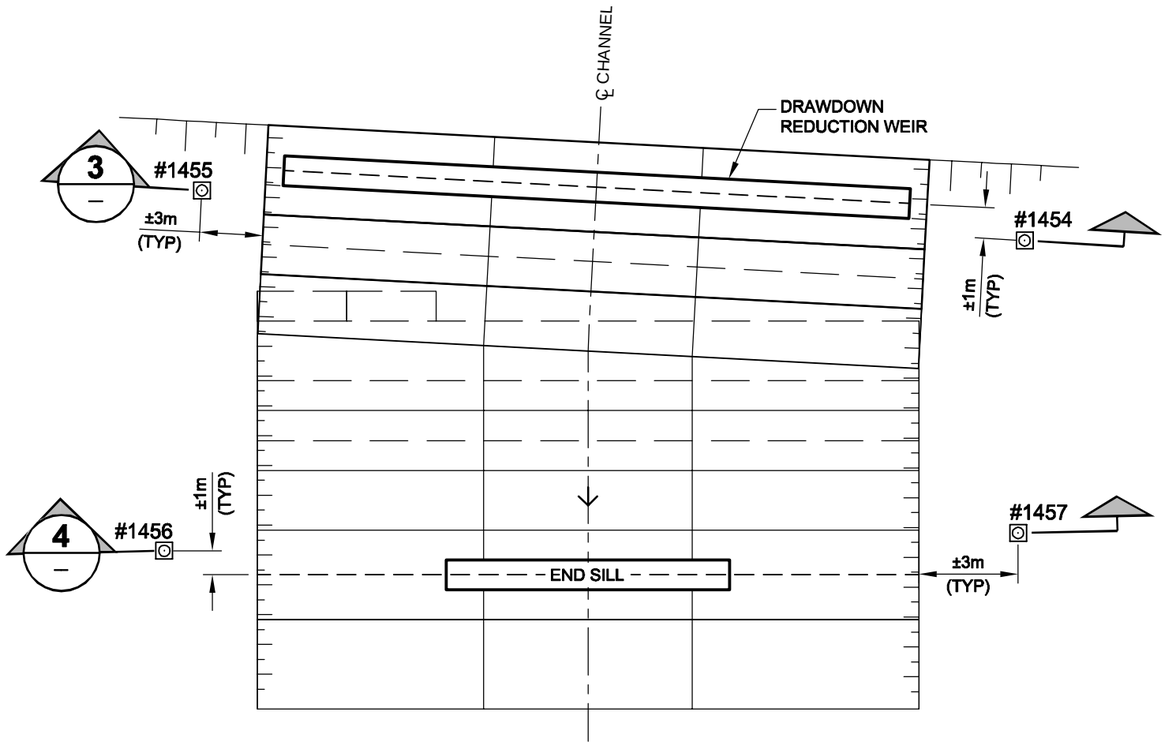
- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Drop Structure #1

Drawing - 04



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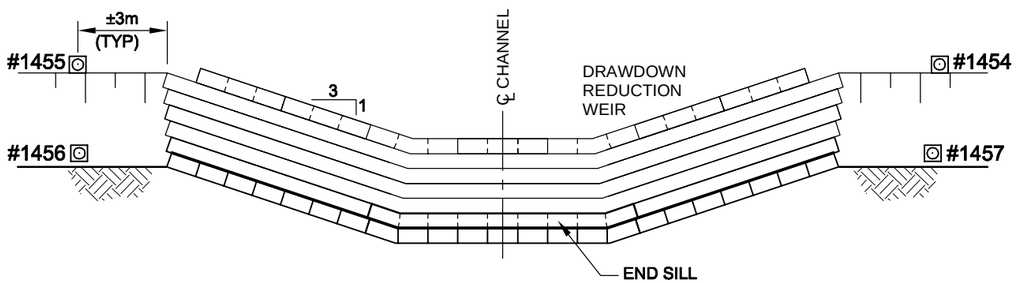
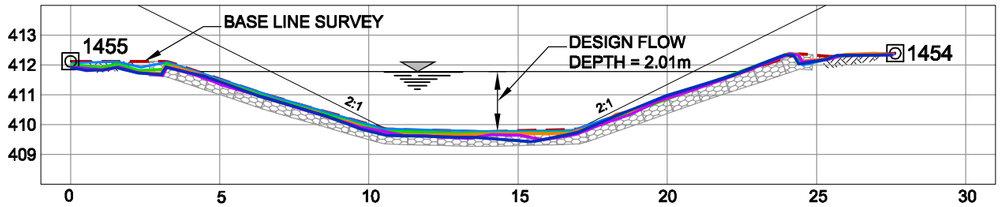
0 2 4 m SCALE 1:200



DROP STRUCTURE END VIEW

0 2 4 m SCALE 1:200



SECTION 3

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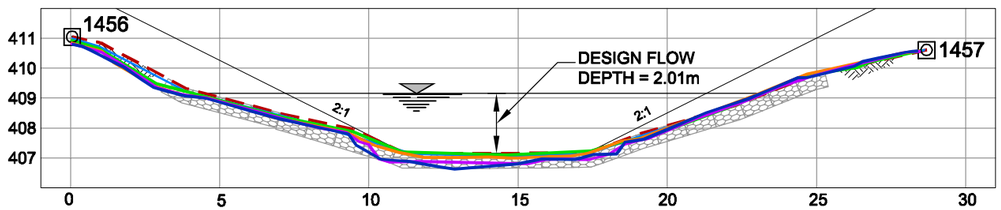


SECTION 4

0 2 4 m SCALE 1:200

▣ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

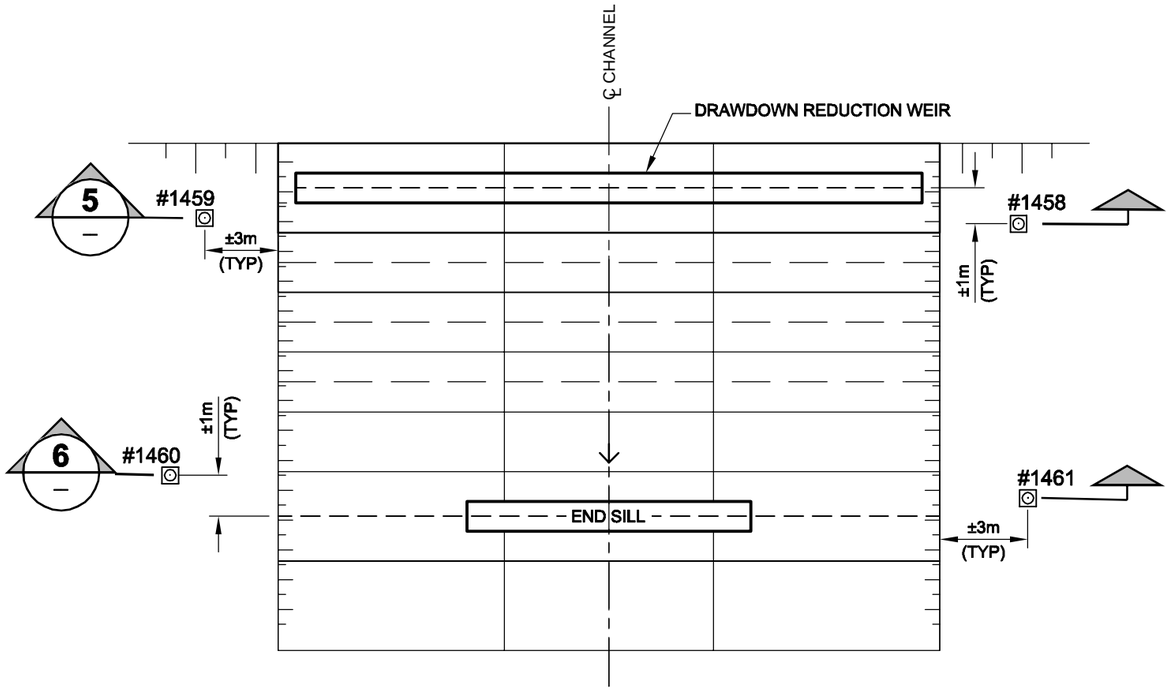
- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Drop Structure #2

Drawing - 05



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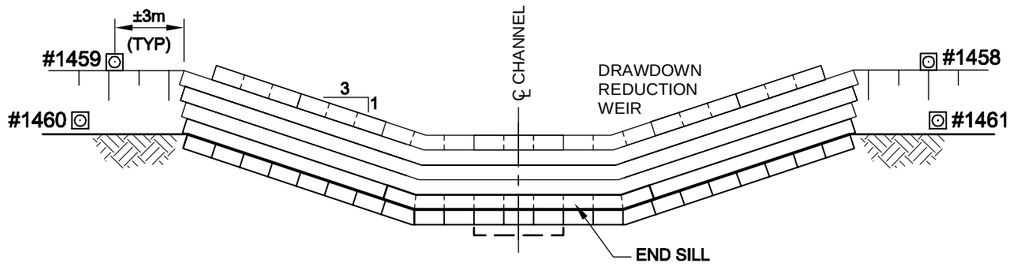

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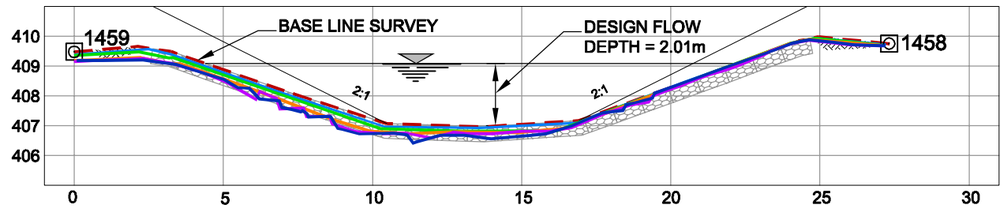

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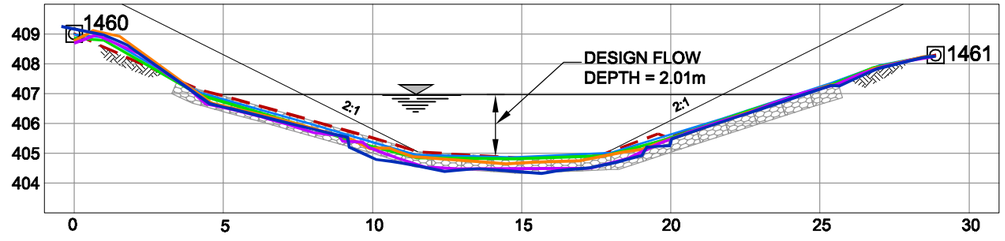


SECTION 6

▣ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

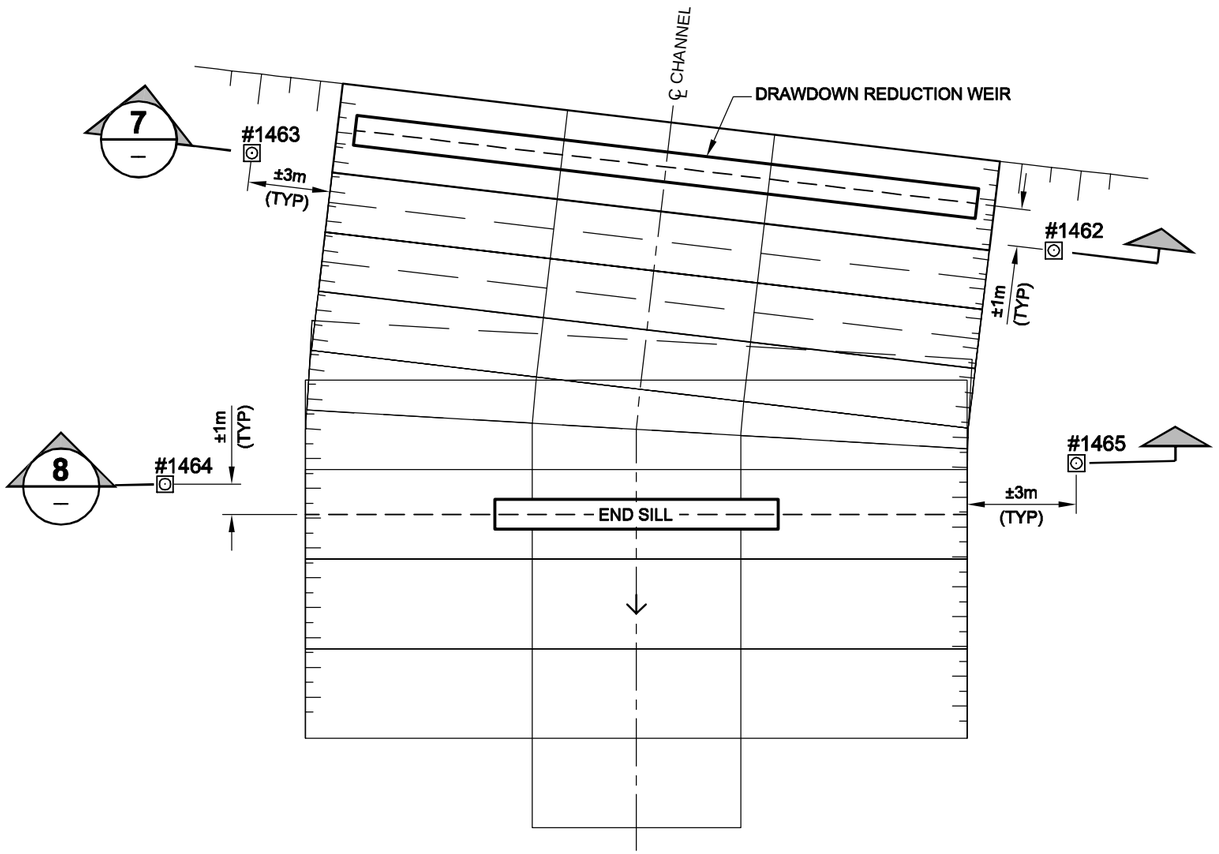
- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

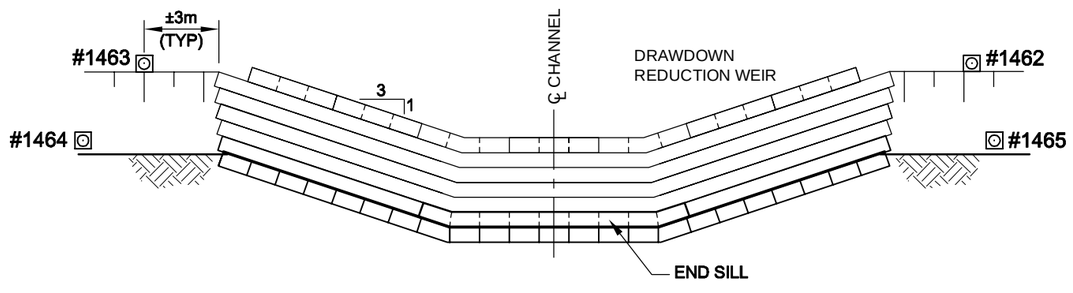
Drop Structure #3

Drawing - 06



DROP STRUCTURE PLAN VIEW

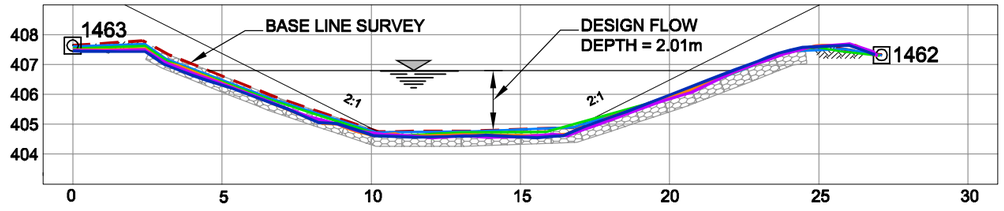
0 2 4 m SCALE 1:200



DROP STRUCTURE END VIEW

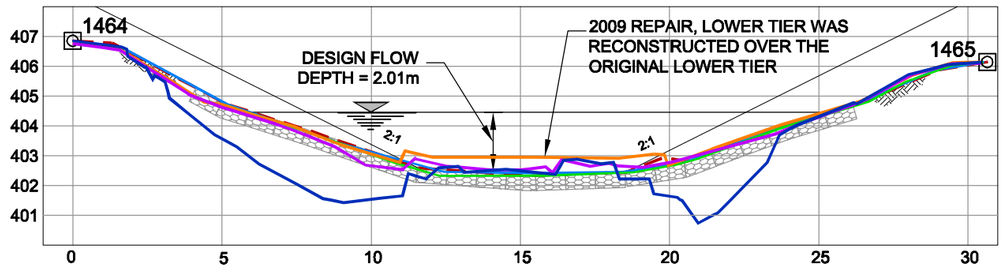
0 2 4 m SCALE 1:200

CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.



SECTION 7

0 2 4 m SCALE 1:200



SECTION 8

0 2 4 m SCALE 1:200

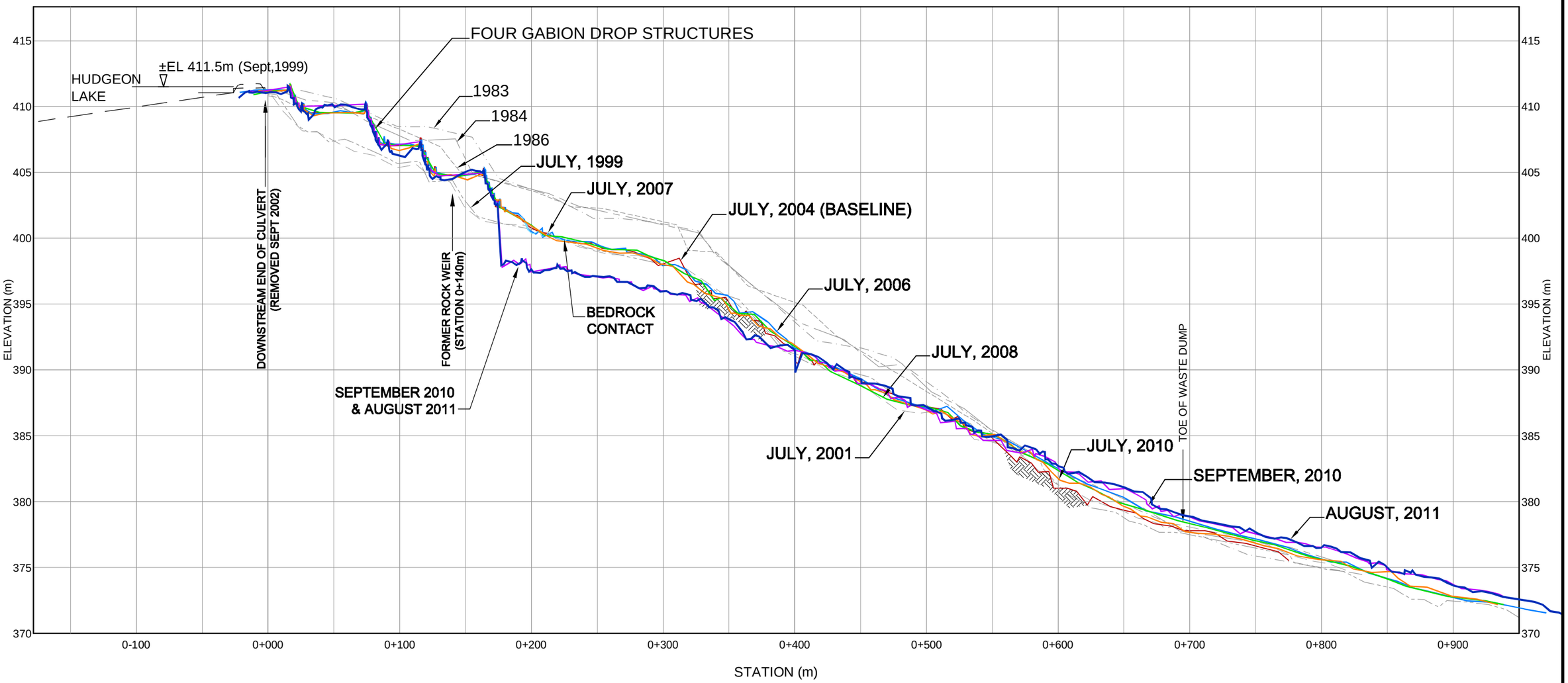
- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Drop Structure #4

Drawing - 07

AECOM



PROFILE

0 30 60 m H=1:3000
0 3 6 V=1:300

STATION	NORTHING	EASTING
0+000	7,147,427	512,863
0+250	7,147,366	513,113
0+500	7,147,272	513,363
0+750	7,147,204	513,613

COORD: UTM ZONE 7W NAD83

LEGEND

- PROFILE 1983
- PROFILE 1984
- PROFILE 1986
- PROFILE 1999
- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE AUGUST 2011

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Clinton Creek
Channel Profile
Drawing - 08

STATION (m)

ELEVATION (m)

HUDGEON LAKE
±EL 411.5m (Sept,1999)

DOWNSTREAM END OF CULVERT
(REMOVED SEPT 2002)

DROP STRUCTURE #1

DROP STRUCTURE #2

DROP STRUCTURE #3

DROP STRUCTURE #4

END SILL (0+175m)

CHANNEL TRANSITION

BOULDERS

(0+184m)

(0+195m)

JULY, 2001

JULY, 2004
(BASELINE)

FORMER ROCK WEIR
(STATION 0+140m)

JULY, 2006

JULY, 2008

BEDROCK
CONTACT

TRIGGER LEVEL AT
0.5m OFFSET FROM
BASELINE SURVEY

JULY, 2007

JULY, 2010

STA 0+225

SEPTEMBER, 2010
5m EROSION

2m
EROSION

AUGUST, 2011

3.5m EROSION
(SEPTEMBER, 2010)

TRIGGER LEVEL AT
1.5m OFFSET FROM
BASELINE SURVEY

2.1m EROSION
(SEPTEMBER, 2010)

ENLARGEMENT

SCALE 1:300

STATION 0+150 TO 0+200

PROFILE

H=1:1000
V=1:100

0-50 to 0+250

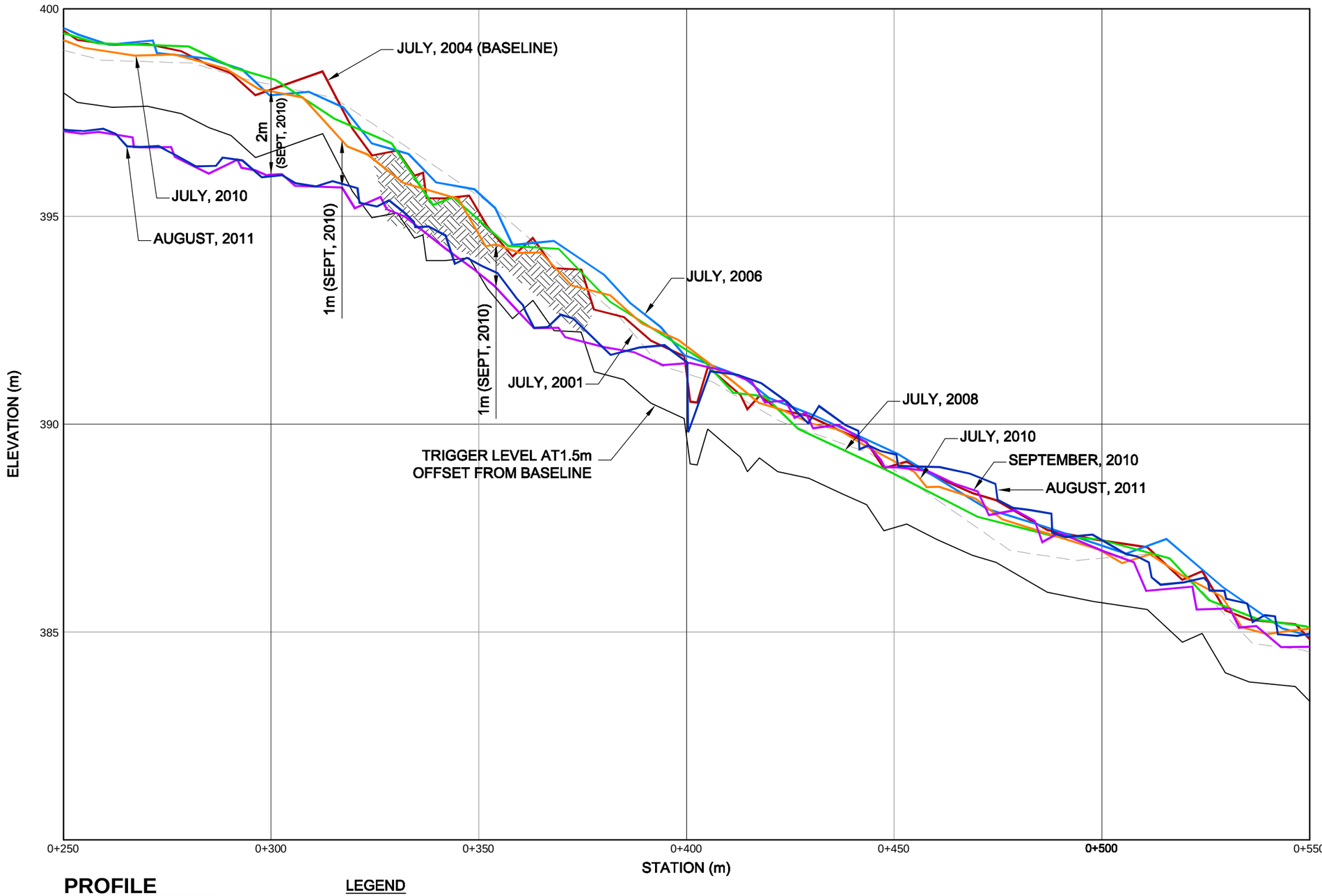
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Clinton Creek Channel Profile
Station 0-050 to 0+250
Drawing - 09



PROFILE

0 10 20 m H=1:1000
0 1 2 V=1:100

0+250 to 0+550

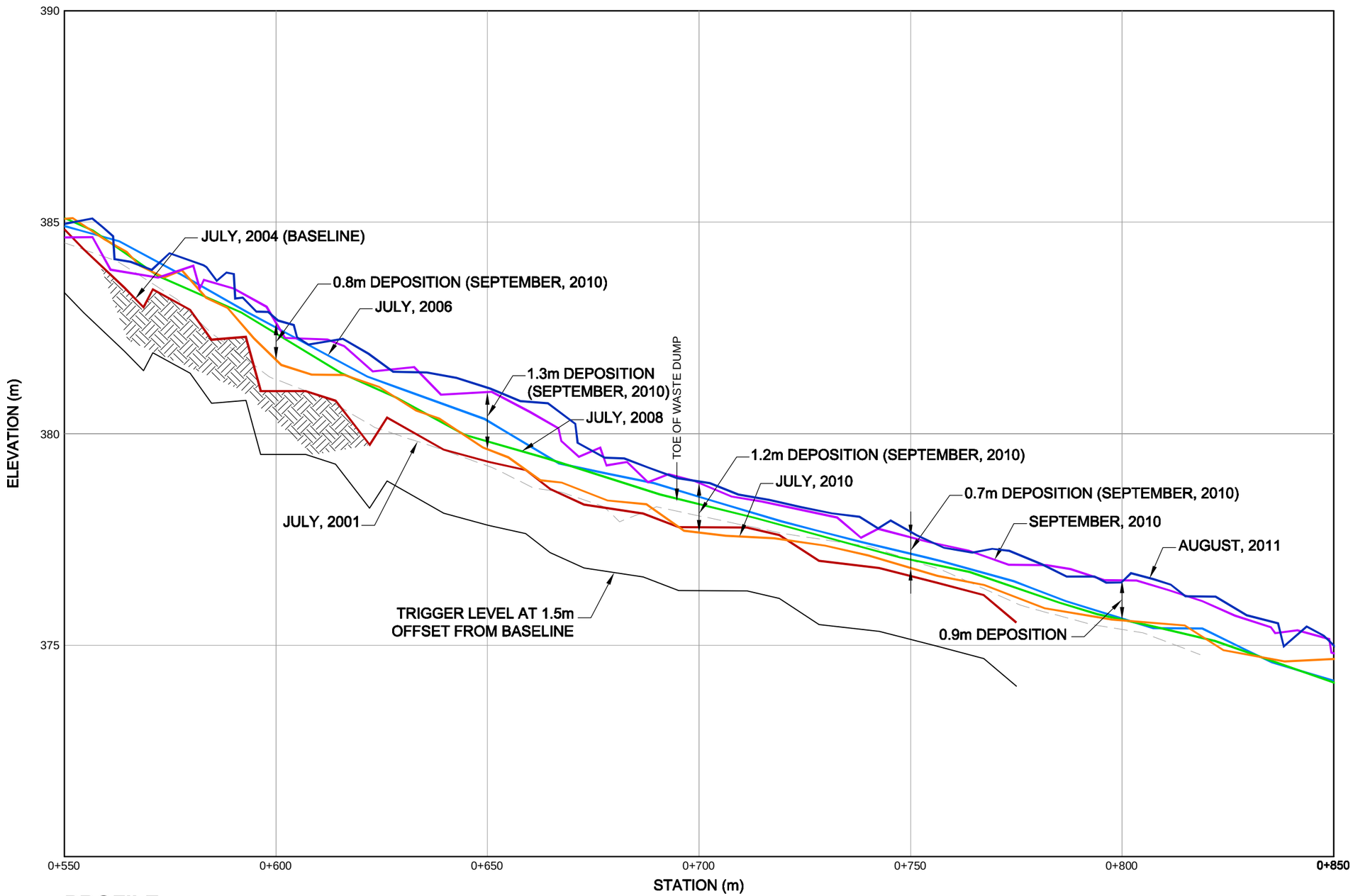
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Clinton Creek Channel Profile
Station 0+250 to 0+550
Drawing - 10



PROFILE

0 10 20 m H=1:1000
0 1 2 V=1:100

0+550 to 0+850

LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Clinton Creek Channel Profile
Station 0+550 to 0+850
Drawing - 11

B SIZE 11" x 17" (279.4mm x 431.8mm)

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Saved By: vibergj

ISS/REV: 0A
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513,000 513,500 514,000

7,148,500 7,148,000

530 425

1495 2cm
BH-14(T7) 1cm
80-1 2cm
26 1cm
26A 2cm
80-2 5cm
1483 2cm
2834 (RTK BASE)
1492 4cm
24 5cm
1084 8cm
1485 40cm
650-1 1cm
650-2 2cm
1491 6cm
80-7 5cm
NL-1 2cm
1083 (NL-2) 2cm
NL-3 3cm
350-3A 3cm
1489 2cm
NL-4 4cm
NL-5 2cm
1085 2cm
500-1 0cm
500-2 5cm
350-1A 5cm
350-2A 5cm
80-5 16cm
80-4 21cm
NL-BASE 1cm
2005-10
SL-5 33cm
2005-11 24cm
SL-4 30cm
1484 31cm
2005-09
SL-3 32cm
SL-2 27cm
SL-1 20cm
2005-08 4cm
2005-02 31cm
2005-01 35cm
2005-03 35cm
BH-16(T8) 41cm
24A 43cm
24D 33cm
25B 11cm
2005-04 37cm
2005-05 47cm
24B 41cm
2005-06 31cm
2005-07 0cm
80-9 2cm

NORTH LOBE
WOLVERINE CREEK
WOLVERINE CREEK TAILINGS PILES
SOUTH LOBE
FORMER MILL SITE
U1086

UPPER SLOPE AREA
MID SLOPE AREA
LOWER SLOPE AREA

530m ELEVATION CONTOUR
425m ELEVATION CONTOUR
ROCK LINED CHANNEL AND ROCK WEIRS

0 40 80 120 m
SCALE 1:4000

UTM ZONE 7 NAD83
IMAGE DATE 1999

MONITOR LOCATION (DESTROYED, NOT FOUND)
24 MONITOR LOCATION (ACTIVE)
SL/NL-01 VISUAL ALIGNMENT PIN
BH-14 (T7) 1978 TEST HOLE LOCATION

17cm INCREMENTAL MOVEMENT (SEPT 2010 TO AUG 2011)
100cm TOTAL MOVEMENT VECTOR (BASELINE TO AUG 2011)

COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Wolverine Creek Tailings Pile Movement Monitoring Drawing - 12

513,500

514,000

7,148,000

530

425

1483 2cm

80-2 5cm

80-5 16cm

80-4 21cm

2834 (RTK BASE)

350-1A 5cm

350-2A 5cm

NL-4 4cm

NL-5 2cm

NL-BASE 1cm

WOLVERINE CREEK TAILINGS PILES

2005-11 24cm

2005-10

1484 31cm

2005-09

2005-02 31cm

SL-5 33cm

2005-01 35cm

2005-03 35cm

SL-4 30cm

SL-3 32cm

SL-2 27cm

SL-1 20cm

SOUTH LOBE

24D 33cm

25B 11cm

2005-08 4cm

APPARENT DIRECTION OF MOVEMENT (TYPICAL)

BH-16(T8) 41cm

24A 43cm

24B 41cm

2005-04 37cm

1492 4cm

24 5cm

1084 8cm

1485 40cm

2005-05 47cm

2005-06 31cm

2005-07 0cm

80-9 2cm

530m ELEVATION CONTOUR

425m ELEVATION CONTOUR

UPPER SLOPE AREA

MID SLOPE AREA

LOWER SLOPE AREA

ROCK LINED CHANNEL AND ROCK WEIRS

N

0 20 40 m

SCALE 1:2000

UTM ZONE 7 NAD83
IMAGE DATE 1999

MONITOR LOCATION (DESTROYED, NOT FOUND)

24 MONITOR LOCATION (ACTIVE)

SL/NL-01 VISUAL ALIGNMENT PIN

BH-14 (T7) 1978 TEST HOLE LOCATION

47cm INCREMENTAL MOVEMENT (SEPT 2010 - AUG 2011)

100cm TOTAL MOVEMENT VECTOR (BASELINE TO AUG 2011)

APPARENT DIRECTION OF MOVEMENT

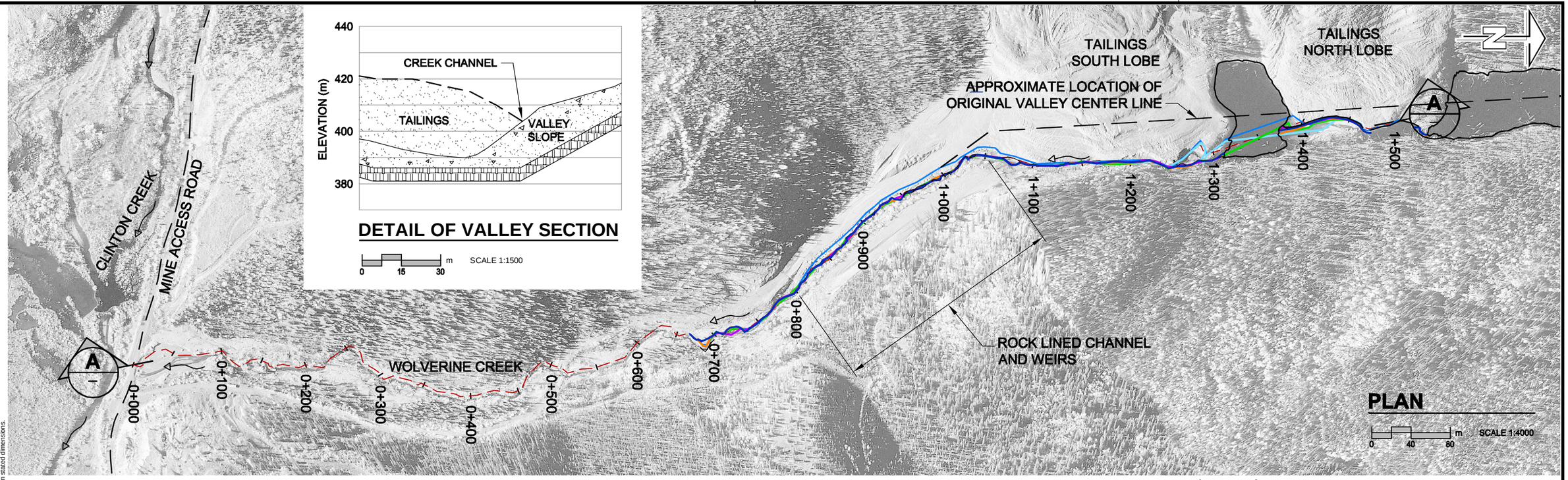
COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Wolverine Creek Tailings Pile
South Lobe Movement
Drawing - 13



DETAIL OF VALLEY SECTION

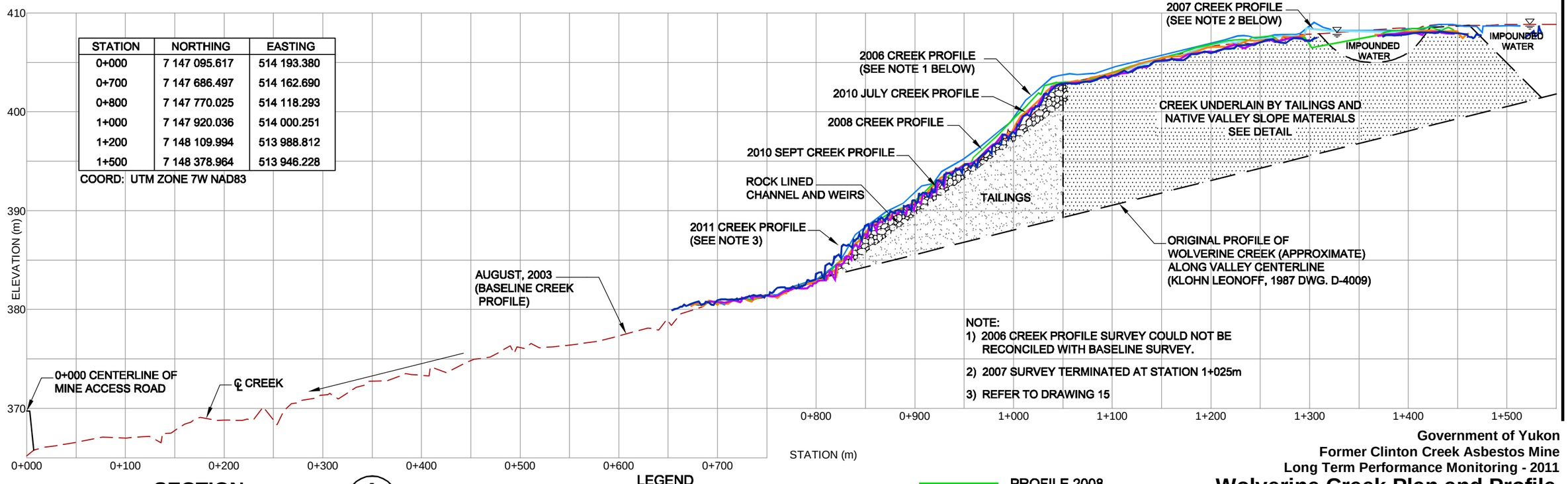
0 15 30 m SCALE 1:1500

PLAN

0 40 80 m SCALE 1:4000

STATION	NORTHING	EASTING
0+000	7 147 095.617	514 193.380
0+700	7 147 686.497	514 162.690
0+800	7 147 770.025	514 118.293
1+000	7 147 920.036	514 000.251
1+200	7 148 109.994	513 988.812
1+500	7 148 378.964	513 946.228

COORD: UTM ZONE 7W NAD83



NOTE:
1) 2006 CREEK PROFILE SURVEY COULD NOT BE RECONCILED WITH BASELINE SURVEY.
2) 2007 SURVEY TERMINATED AT STATION 1+025m
3) REFER TO DRAWING 15

SECTION A

0 40 80 m H=1:4000
0 4 8 V=1:400

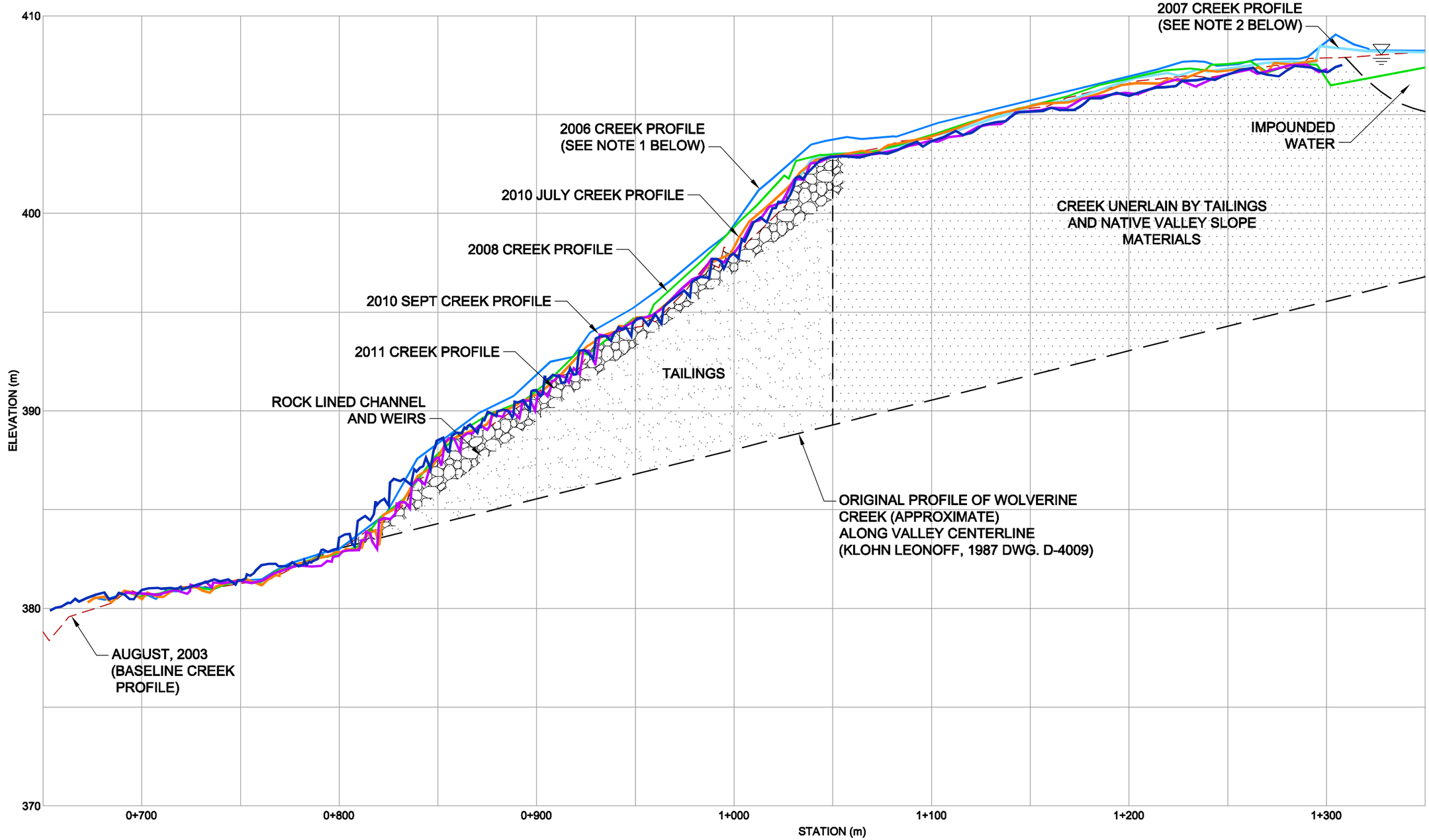
LEGEND
- PROFILE 2003 (BASELINE)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Wolverine Creek Plan and Profile

Drawing - 14



PROFILE

0 25 50 m H=1:2500

0 2.5 5 V=1:250

STATION 0+700 TO 1+350

LEGEND

- PROFILE 2003 (BASELINE)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011

NOTE:

1) 2006 CREEK PROFILE SURVEY COULD NOT BE RECONCILED WITH BASELINE SURVEY.

2) 2007 SURVEY TERMINATED AT STATION 1+025m

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2011

Wolverine Creek Profile

Drawing - 15

AECOM

Appendix A

Monitoring Instructions and Protocol and Survey Results from Underhill Geomatics

Government of Yukon
Former Clinton Creek Asbestos Mine
2011 Performance Monitoring and Survey Program

1. Set-up GPS base station near Mill Site at BM-U1086.
   (Ref. Drawing 1, Table 1)

2. Check control points to confirm BM-U1086 is stable
   (Ref. Drawing 1, Table 1).

3. Once control has been verified start survey of movement monitoring points.

4. Waste Rock Pile Movement Monitors (ref: Drawing 2, Table 2):
   - Setup RTK base station on Waste Rock pile at U2836,
   - Face Clinton Creek (CC) when surveying points,
   - **Survey ground level at the base of the pin on the side of the pin furthest from the creek.**
   - Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

5. Porcupine Pit Slope Monitors (ref: Drawing 2, Table 2):
   - Face the open pit when surveying,
   - **Survey ground level at the base of the pin on the side of the pin furthest from the pit.**
   - Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

6. Clinton Creek Channel Stabilization – Drop Structure Monitoring (ref: Drawings 3 and 4, Table 2):
   - **Movement Monitor Pins** # 1450 to 1465 located at the four corners of each drop structure
   - Face creek when surveying,
   - **survey ground level at the base of the pin on the side of the pin furthest from the creek.**
     - **i.** Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

   - **Survey cross-sections** #1 to #8 of drop structures along the line between the two sets of movement monitoring pins at each structure. As a minimum, take survey shots on top of the gabions every other basket (1m interval) including top of slope, mid-slope, toe of slope and centerline.
     i. Deliverable: drawing file with plan and sections

7. Clinton Creek Centreline Profile Survey (ref. Drawing 4 and 5):
    - Establish TBM's (check 2004/2006/2008 survey files for locations),
    - Start at Station 0+00m (see Table below for co-ordinates),
    - Survey from Station 0+000 to 0+800 m
    - Deliverable: drawing file with plan and profile

Clinton Creek Profile Survey: Station Co-ordinates

STATION (m)	NORTHING	EASTING
0+000	7,147,427	512,863
0+250	7,147,366	513,113
0+500	7,147,272	513,363
0+750	7,147,204	513,613
	UTM NAD 83 Zone 7W	

8. Tailings Movement Monitors(ref: Drawing 6, Table 3):
    - Setup RTK base station near crest of tailings pile (U 2834),
    - Face Wolverine Creek when surveying,
    - **Survey ground level at the base of the pin on the side furthest from the creek.**
    - Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

9. Wolverine Creek Centreline Profile Survey (ref: Drawing 7):
    - Establish TBM's if required (check 2003 / 2008 survey for locations),
    - Start at Station 0+700 m (see Table below for co-ordinates),
    - Survey from Station 0+700 to 1+500 m ***(PLEASE NOTE THAT THE STATION NUMBERS INCREASE IN THE UPSTREAM DIRECTION AS SHOWN ON THE ATTACHED DRAWING)***
    - Deliverable: drawing file with plan and profile

Wolverine Creek Profile Survey: Station Co-ordinates

STATION (m)	NORTHING	EASTING
0+000	7,147,095.6	514,193.4
0+700	7,147,686.5	514,162.7
0+800	7,147,770.0	514,118.3
1+000	7,147,920.0	514,000.3
1+200	7,148,110.0	513,988.8
1+500	7,148,379.0	513,946.2
	UTM NAD 83 Zone 7W	

10. Miscellaneous Surveys:

- Complete cross-section surveys at the gabion drop structures at the locations labeled as Sections A, B and C on Drawing 2 of the monitoring protocol package.
- Survey the crest of the waste rock pile slope along the Clinton Creek Channel. To avoid walking out to the edge of the waste rock pile slope, a consistent offset from the edge could be used to complete the survey.
- Deliverable: drawing file that can be used by CADD operators to prepare site plans, cross-sections etc.

B SIZE 11" x 17" (279.4mm x 431.8mm)

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Saved By: vibergj

ISS/REV: 0A

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7,149,500 7,149,000 7,148,500 7,148,000 7,147,500 7,147,000

U1190

AIRSTRIP

WOLVERINE CREEK TAILINGS PILE

NORTH LOBE

FORMER MILL SITE

U2834 (RTK BASE)

SOUTH LOBE

U1561 (MINE)

U1086

WOLVERENE CREEK

HILL (MINE)

U5700

U1183

U1191

G-TRAV (MINE)

U1192

U5699

U5698

HUDGEON LAKE

U1200

U1189

CLINTON CREEK WASTE ROCK DUMP

U2836 (RTK BASE)

BEAR CREEK

CLINTON CREEK

U228 (MINE)

U1836

U1182

PORCUPINE PIT

U1193

SHACK (MINE)

U280 (MINE)

PORCUPINE CREEK

0 150 300 m

SCALE 1:15000

UTM ZONE 7 NAD83
IMAGE DATE 1999

U5700 BENCHMARK

U228 (MINE) LOCAL MINE BENCHMARKS

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Site Plan
Bench Mark Locations
Drawing - 01

CREEK STABILIZATION AREA INCLUDING:
HUDGEON LAKE OUTLET
AND FOUR GABION
DROP STRUCTURES
(MOVEMENT MONITORS
#1450 TO #1465)

HUDGEON LAKE

CLINTON CREEK
WASTE ROCK DUMP

CLINTON CREEK

CREEK

±420 CONTOUR

±450 CONTOUR

FORMER
CRUSHER
BUILDING
(DEMOLISHED)

SNOWSHOE
PIT

PORCUPINE
PIT

PORCUPINE PIT
SLOPE MONITORS

CREEK
PIT

ENLARGEMENT

7,147,500
7,147,000
7,146,500
513,000
513,500
514,000

SCALE 1:5000

UTM ZONE 7 NAD83
IMAGE DATE 1999

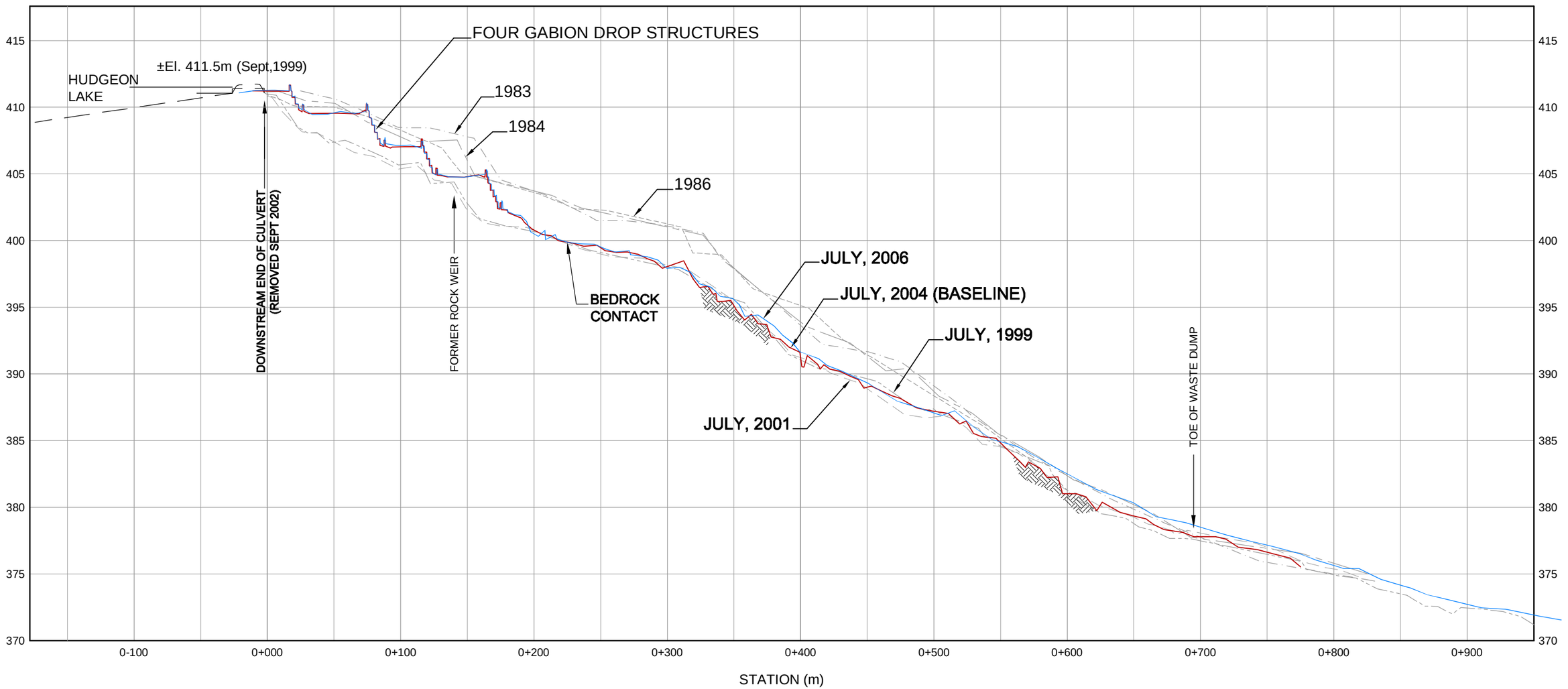
0226 MONITOR LOCATION (ACTIVE)
XS-G MONITOR LOCATION (DESTROYED)
P2 PIEZOMETER LOCATION

ELEVATION >450± - UPPER SLOPE
ELEVATION >420± <450± - MID SLOPE
ELEVATION <420± LOWER SLOPE

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Clinton Creek Waste Rock Dump
Movement Monitors
Drawing - 02



PROFILE

0 30 60 m H=1:3000
0 3 6 V=1:300

STATION	NORTHING	EASTING
0+000	7,147,427	512,863
0+250	7,147,366	513,113
0+500	7,147,272	513,363
0+750	7,147,204	513,613

COORD: UTM ZONE 7W NAD83

LEGEND

- PROFILE 1983
- PROFILE 1984
- PROFILE 1986
- PROFILE 1999
- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Clinton Creek
Channel Profile
Drawing - 03

AECOM

B SIZE 11" x 17" (279.4mm x 431.8mm)

PLOT: 11/03/29 11:29:34 AM

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513,000 513,500 514,000

7,148,500 7,148,000

530 425

1495 BH-14(T7)

80-1 650-1 650-2 1491

NORTH LOBE

NL-1 13cm
1083 (NL-2) 13cm
NL-3 10cm
350-3A 12cm
1489 9cm
NL-4 11cm
NL-5 6cm

SURVEY WATER EDGE

WOLVERINE CREEK

1085 500-1 500-2 80-7

26 26A 80-2 350-1A 350-2A

80-5 80-4

1483

FORMER MILL SITE

2834 (RTK BASE)

NL-BASE

WOLVERINE CREEK TAILINGS PILES

2005-11 2005-10 1484 2005-09 2005-02 SL-5 SL-4 2005-01 2005-03 SL-3 58cm SL-2 35cm SL-1 20cm

SOUTH LOBE

24D 25B BH-16(T8) 24B 24A 2005-04 2005-08 24 1084 1485 2005-05 2005-06 2005-07 80-9

1492

U1086

UPPER SLOPE AREA MID SLOPE AREA LOWER SLOPE AREA

ROCK LINED CHANNEL AND ROCK WEIRS

530m ELEVATION CONTOUR

425m ELEVATION CONTOUR

0 40 80 120 m

SCALE 1:4000

UTM ZONE 7 NAD83
IMAGE DATE 1999

24 MONITOR LOCATION (ACTIVE)

2005-01 MONITOR LOCATION (ADDDED IN 2005)

SL/NL-01 VISUAL ALIGNMENT PIN

BH-14 (T7) 1978 TEST HOLE LOCATION

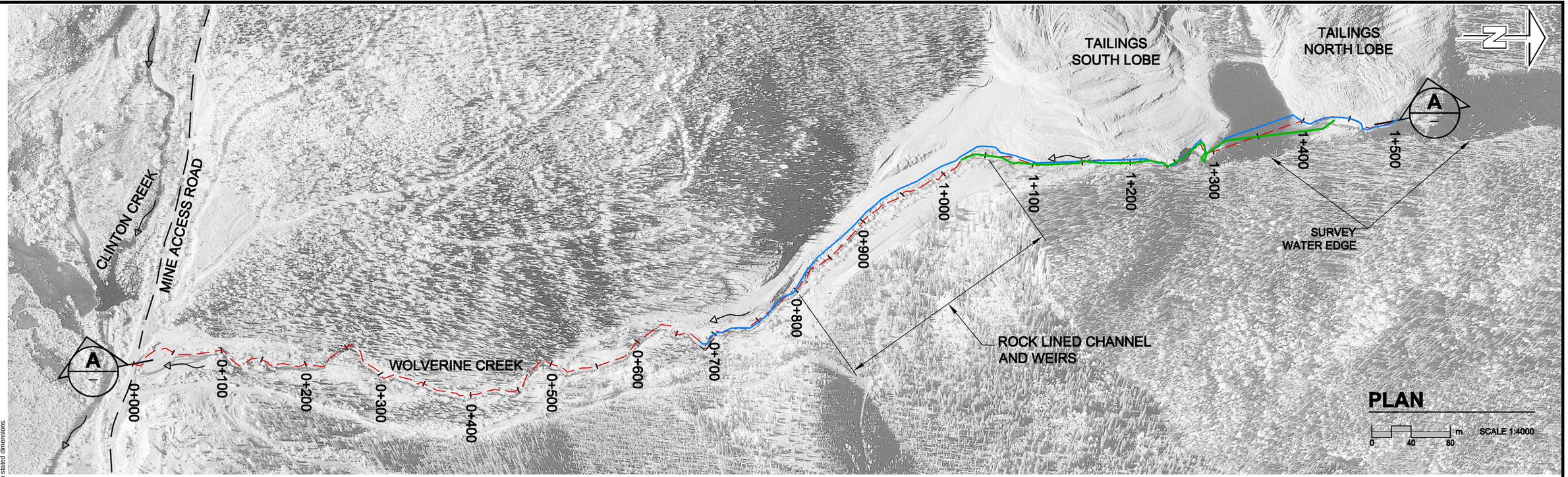
COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

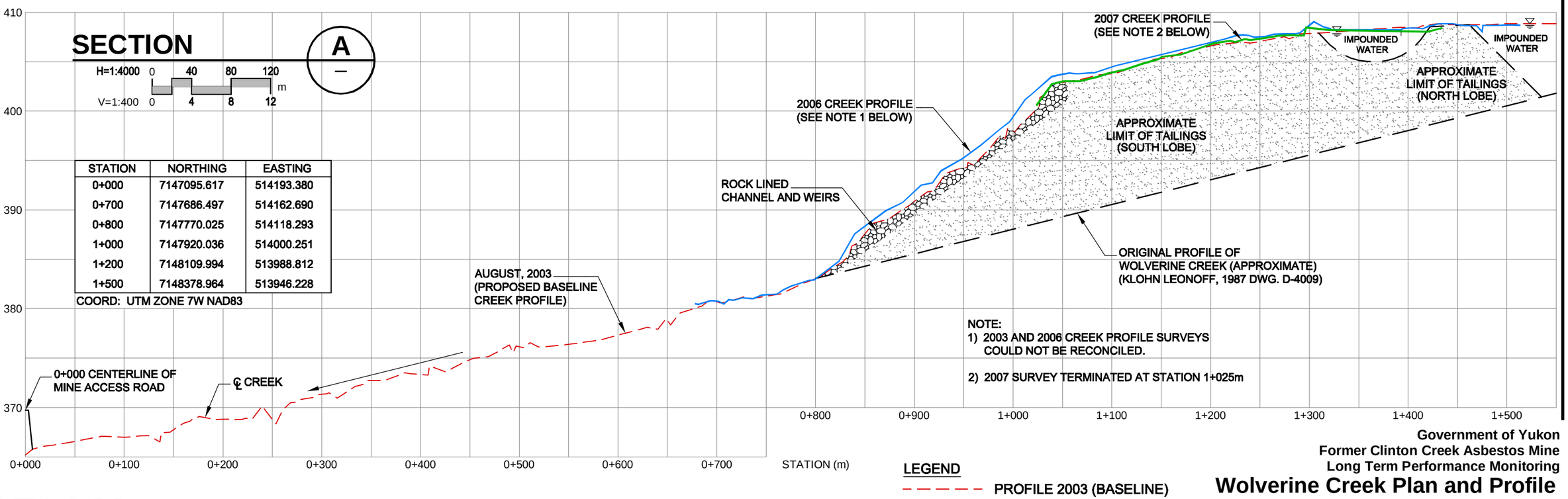
COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Wolverine Creek Tailings Pile Movement Monitors Drawing - 04





STATION	NORTHING	EASTING
0+000	7147095.617	514193.380
0+700	7147686.497	514162.690
0+800	7147770.025	514118.293
1+000	7147920.036	514000.251
1+200	7148109.994	513988.812
1+500	7148378.964	513946.228

COORD: UTM ZONE 7W NAD83

NOTE:
1) 2003 AND 2006 CREEK PROFILE SURVEYS COULD NOT BE RECONCILED.
2) 2007 SURVEY TERMINATED AT STATION 1+025m

LEGEND
- PROFILE 2003 (BASELINE)
- PROFILE 2006
- PROFILE 2007

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Wolverine Creek Plan and Profile

AECOM

Drawing - 05

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
UMA Job No.: 60160515 **Date:** March 2011

Table 1) Benchmarks at Former Clinton Creek Mine

UTM NAD83 ZONE 7N

Based on 1999 Air Photo Control (U1189 Destroyed)
Set new Control Points U1086 and U1836. Tied 2001 Control Points in stable areas

	Northing (m)	Easting (m)	Elevation (m)	ID
1086	7,147,972.205	513,176.707	590.950	U1086
1182	7,146,634.155	513,637.686	465.460	U1182
1190	7,149,824.696	512,500.926	609.520	U1190
1191	7,147,605.454	513,589.857	528.930	U1191
1192	7,147,564.047	512,278.761	441.290	U1192
1193	7,146,545.113	513,572.457	456.430	U1193
1200	7,147,166.861	513,662.996	375.480	U1200
1836	7,146,656.183	513,597.724	476.540	U1836
2834	7,148,172.722	513,447.467	607.224	U2834
2836	7,146,814.577	513,092.158	478.422	U2836
5698	7,147,458.764	512,825.164	415.050	U5698
5699	7,147,485.368	512,618.332	425.550	U5699
5700	7,147,657.353	512,155.907	481.380	U5700

Local Mine Ground Control Transformed to UTM by Underhill Geomatics

Transformation based on U5698,U5699,U5700,U1182 common 2001 and 2003 ties.(U1184 not found)
Used U5698 as base. LDD handles scale to ground and rotation -0°17'15" to grid. Manually scale to metric.
Elevation differences based on U1561 (UTM = 423.803m., LOCAL = 1389.87ft.)

	Northing (m)	Easting (m)	Elevation (m)	ID
228	7,146,650.833	513,454.406	500.740	U228
280	7,146,404.795	513,292.824	501.030	U280
300	7,147,747.252	512,674.428	509.290	HILL
400	7,146,435.213	513,325.619	495.390	SHACK
900	7,147,649.576	513,899.213	489.860	GTRAV
1561	7,148,082.327	514,012.370	423.800	U1561

LOCAL MINE GROUND SYSTEM (feet)

2003 GPS Control transformed to ground

	Northing (ft)	Easting (ft)	Elevation (ft)	ID
1086	113,283.833	107,216.924	1,938.260	U1086
1182	108,884.267	108,707.955	1,526.550	U1182
1190	119,375.619	105,029.244	1,999.190	U1190
1191	112,073.197	108,566.986	1,734.780	U1191
1192	111,958.873	104,262.818	1,447.250	U1192
1193	108,593.080	108,492.379	1,496.920	U1193
1200	110,632.388	108,799.766	1,231.340	U1200
1836	108,957.224	108,577.153	1,562.900	U1836
5698	111,604.300	106,054.560	1,361.160	U5698
5699	111,695.030	105,376.109	1,395.610	U5699
5700	112,267.162	103,861.093	1,578.780	U5700

Local Mine Control From Historical Files

	Northing (ft)	Easting (ft)	Elevation (ft)	ID
228	108,941.540	108,107.020	1,642.290	U228
280	108,136.470	107,572.500	1,643.240	U280
300	112,553.880	105,564.450	1,670.330	HILL
400	108,235.800	107,680.660	1,624.750	SHACK
900	112,213.030	109,583.730	1,606.590	GTRAV
1561	113,631.480	109,961.620	1,389.870	U1561

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
UMA Job No.: 60160515
Date: March 2011

Upper Slope) Elevation > 450m
Mid-Slope) Elevation 420 to 450m
Lower Slope) Elevation < 420m

Table 2) Clinton Creek Waste Rock Dump Instrumentation

Description	ID	Location	Type	Marker Cone	Monitor Tag	Underhill Geomatics Tag	Underhill Survey (Aug 21/03) UTM NAD 83			Comments
							Northing	Easting	Elevation	
Movement Monitor	0225	Upper Slope			0225	0225	7,146,918.716	512,905.221	475.17	
Movement Monitor	0223	Upper Slope			0223	0223	7,146,978.053	512,942.739	467.22	
Movement Monitor	1834	Upper Slope			1834	1834	7,146,973.618	512,893.433	461.12	
Movement Monitor	UU1195	Upper Slope	Bench Mark		UU1195		7,147,111.936	512,899.532	456.59	
Movement Monitor	81-1	Upper Slope			81-1		7,147,034.819	512,978.933	455.27	Old Pin
Movement Monitor	21-A	Mid-Slope	Prism		21-A		7,147,228.197	512,915.152	446.54	Old Pin with prism
Movement Monitor	20-A	Mid-Slope	Prism		20-A		7,147,207.859	513,057.137	445.83	Old Pin with prism
Movement Monitor	22-A	Mid-Slope		YES	22-A		7,147,224.290	512,841.309	444.99	
Movement Monitor	0224	Mid-Slope			0224	0224	7,147,241.091	512,963.327	444.85	Old pin found
Movement Monitor	UU1196	Mid-Slope	Bench Mark		UU1196		7,147,231.232	513,066.175	444.08	
Movement Monitor	81-2	Mid-Slope		YES	81-2		7,147,205.285	513,011.562	443.75	Old Pin
Movement Monitor	0227	Mid-Slope			0227	0227	7,147,076.844	513,124.776	439.48	
Movement Monitor	0229	Mid-Slope			0229	0229	7,147,113.528	512,719.142	437.43	Old Pin found
Movement Monitor	4	Mid-Slope			4		7,147,211.284	513,193.636	435.18	Old Pin
Movement Monitor	68	Mid-Slope		YES	68		7,147,262.029	513,142.415	434.42	
Movement Monitor	UU1194	Mid-Slope	Bench Mark		UU1194		7,147,017.321	513,472.438	433.19	
Local Mine Ground Co	1831	Mid-Slope			1831	1831	7,147,227.179	512,766.646	432.85	
Movement Monitor	19	Mid-Slope	3/4" diam. Bar	YES	19		7,147,124.347	513,365.638	429.24	located 3m east of #19-B
Movement Monitor	19-B	Mid-Slope	1/2" diam. Bar		19-B		7,147,126.637	513,363.485	429.13	was 19. Should be 19-B
Movement Monitor	1839	Mid-Slope	Marker		1839	1839	7,146,861.354	513,285.180	428.66	Marker Pin for T2
Movement Monitor	0226	Lower Slope			0226	0226	7,147,311.525	513,066.355	426.46	Was Underhill tag CP1635-1.
Movement Monitor	1833	Lower Slope	3/8" Steel Pin		1833	1833	7,147,302.699	512,921.250	418.34	
~~Movement Monitor~~	XS-G	Lower Slope	3/4" Steel Pin		n/a		7,147,356.110	513,038.841	416.54	**Destroyed**
Piezometer	P2	Lower Slope	1" white pipe		P2		7,147,354.357	512,999.352	416.10	P1 destroyed
Piezometer	P3	Lower Slope	1" white pipe		P3		7,147,309.317	513,135.578	415.35	
Movement Monitor	69	Lower Slope	Marker?		69		7,147,335.532	513,140.577	414.90	Mon 69 in previous UMA survey
~~Movement Monitor~~	0217	Lower Slope	Marker		0217	0217	7,147,314.731	513,183.178	414.87	**Destroyed**
Movement Monitor	0228	Lower Slope			0228	0228	7,147,346.995	512,836.840	413.95	
Movement Monitor	80-13	Lower Slope	3/8" Steel Pin		80-13		7,147,299.401	513,183.839	413.08	Found on South Side of Road
~~Movement Monitor~~	XS-A	Lower Slope	3/4" Steel Pin		XS-A		7,147,320.214	513,190.989	411.33	**Destroyed**
Movement Monitor	0219	Lower Slope	Marker		0219	0219	7,147,292.121	513,274.646	404.60	Relocated - July 2010
Movement Monitor	XS-B	Lower Slope	3/4" Steel Pin		XS-B		7,147,293.649	513,274.196	404.28	Nearly in Creek
Movement Monitor	80-14	Lower Slope	3/4" Steel Pin		80-14	No	7,147,267.767	513,283.109	403.77	Found on South Side of Road
Movement Monitor	0222	Lower Slope	Marker		0222	0222	7,147,269.485	513,334.964	398.01	Relocated - July 2010
Piezometer	P4	Lower Slope	1" white pipe		P4		7,147,239.500	513,347.557	397.28	
~~Movement Monitor~~	0220	Lower Slope	Marker		0220	0220	7,147,223.417	513,430.902	388.65	**Destroyed**
~~Movement Monitor~~	0218	Lower Slope	Marker		0218	0218	7,147,222.214	513,433.185	388.04	**Destroyed**
~~Movement Monitor~~	XS-E	Lower Slope	3/4" Steel Pin		XS-E	No	7,147,224.703	513,432.222	387.53	
Piezometer	P5	Lower Slope	1" white pipe		P5		7,147,182.931	513,461.461	387.21	
~~Movement Monitor~~	84-1	Lower Slope	Marker		84-1		7,147,201.069	513,504.647	381.77	**Destroyed**
PORCUPINE PIT AREA										
Movement Monitor	1839	north of pit	Marker		1839	1839	7,146,861.354	513,285.180	428.66	located at entrance to open pit
Movement Monitor	U1493	NE of pit	Marker		U1493	U1493	7,146,801.561	513,576.663	453.00	Located NW od former crusher building
Movement Monitor	1832	West pit slope	Marker		1832	1832	7,146,537.063	513,483.131	473.62	Pit Slope Monitor
Movement Monitor	1830	West pit slope	Marker		1830	1830	7,146,523.769	513,455.681	471.67	Pit Slope Monitor
Movement Monitor	1837	West pit slope	Marker		1837	1837	7,146,502.874	513,411.468	470.22	Pit Slope Monitor
Movement Monitor	1838	West pit slope	Marker		1838	1838	7,146,491.909	513,380.524	468.34	Pit Slope Monitor, original markings show '320'
1978 TEST HOLE LOCATIONS (WITH THERMISTORS)										
BH - 1 (T1)	T1	Mid-Slope	cable		BH - 1 (T1)		7,146,863.402	513,381.017	422.96	Borehole / Thermistor
BH - 2 (T2)	T2	Mid-Slope	cable		BH - 2 (T2)		7,146,882.784	513,274.725	424.28	Borehole / Thermistor
~~BH-4 (T3)~~	T3	Upper Slope	cable							Borehole / Thermistor - cable cut
~~BH-6 (T4)~~	T4	Lower Slope								**Destroyed**
GABION DROP STRUCTURE MOVEMENT MONITORS							**UGL Survey July 2007**			
Movement Monitor	1450	DS#1	steel pin		1450	1450	7,147,441.29	512,890.12	413.61	
Movement Monitor	1451	DS#1	steel pin		1451	1451	7,147,413.80	512,888.17	413.42	
Movement Monitor	1452	DS#1	steel pin		1452	1452	7,147,411.91	512,892.02	412.99	
Movement Monitor	1453	DS#1	steel pin		1453	1453	7,147,439.06	512,901.52	413.10	
Movement Monitor	1454	DS#2	steel pin		1454	1454	7,147,423.23	512,948.58	412.35	
Movement Monitor	1455	DS#2	steel pin		1455	1455	7,147,397.03	512,939.88	412.06	
Movement Monitor	1456	DS#2	steel pin		1456	1456	7,147,392.75	512,951.22	410.99	
Movement Monitor	1457	DS#2	steel pin		1457	1457	7,147,420.52	512,958.00	410.60	
Movement Monitor	1458	DS#3	steel pin		1458	1458	7,147,412.17	512,986.90	409.72	
Movement Monitor	1459	DS#3	steel pin		1459	1459	7,147,385.84	512,980.01	409.38	
~~Movement Monitor~~	1460	DS#3	steel pin		1460	1460	7,147,382.58	512,988.07	408.97	**Destroyed or lost**
Movement Monitor	1461	DS#3	steel pin		1461	1461	7,147,410.18	512,995.89	408.28	
Movement Monitor	1462	DS#4	steel pin		1462	1462	7,147,399.84	513,033.18	407.31	
Movement Monitor	1463	DS#4	steel pin		1463	1463	7,147,373.73	513,025.89	407.60	
Movement Monitor	1464	DS#4	steel pin		1464	1464	7,147,369.18	513,036.45	406.83	
Movement Monitor	1465	DS#4	steel pin		1465	1465	7,147,399.46	513,040.34	406.12	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
UMA Job No.: 60160515 **Date:** March 2011

Table 3) Wolverine Creek Tailings Pile - Movement Monitor Summary
Datum: NAD83, UTM Zone 7 Coordinates

Station	Northing	Easting	Elevation	Comment
24	7,148,033.895	513,525.561	549.553	
26	7,148,341.494	513,483.546	575.081	
1083 / NL-2	7,148,354.012	513,936.519	414.078	
1084	7,148,017.993	513,618.378	516.095	
1085	7,148,346.060	513,666.411	488.824	
1484	7,148,149.184	513,961.975	417.949	
1485	7,148,018.022	513,703.459	480.101	
1489	7,148,305.198	513,928.504	413.635	
1491	7,148,376.821	513,868.989	432.316	
1492	7,148,053.727	513,409.949	609.982	
1495	7,148,526.645	513,528.950	529.066	
2834	7,148,172.721	513,447.481	607.227	RTK base for tailings survey
1483	7,148,233.020	513,412.679	608.997	
24-A	7,148,035.439	513,775.702	464.888	
24-B	7,148,045.334	513,833.263	445.888	
24-D	7,148,071.928	513,920.650	422.279	
25-B	7,148,065.753	513,948.634	422.031	
26-A	7,148,339.318	513,540.493	557.740	
350-1A	7,148,298.609	513,822.642	448.002	
350-2A	7,148,300.538	513,873.845	428.576	
350-3A	7,148,312.197	513,899.138	417.275	
500-1	7,148,343.237	513,725.526	474.010	
500-2	7,148,344.367	513,842.258	438.050	
650-1	7,148,408.753	513,701.306	483.907	
650-2	7,148,400.253	513,816.079	439.717	
80-1	7,148,408.034	513,543.064	555.613	
80-2	7,148,290.083	513,549.484	552.632	
80-4	7,148,201.727	513,689.474	501.415	
80-5	7,148,249.423	513,718.768	481.074	
80-7	7,148,344.005	513,890.893	422.399	
80-9	7,147,996.383	513,970.725	411.035	
BH-14 T7	7,148,488.334	513,562.988	530.299	
BH-16 T8 CORD	7,148,048.627	513,761.307	464.593	
BH-16 T8 POST	7,148,048.841	513,761.873	464.910	
NL-1	7,148,365.727	513,942.447	413.164	
NL-2	see 1083			NL-2 and 1083 are the same point
NL-3	7,148,334.731	513,926.880	417.046	
NL-4	7,148,307.194	513,912.986	416.159	
NL-5	7,148,275.174	513,896.964	415.416	
SL-1	7,148,079.086	513,970.461	419.764	
SL-2	7,148,087.009	513,956.878	422.458	
SL-3	7,148,100.541	513,933.163	420.779	
New Monitors Points Established in 2005				
NL-Base	7,148,154.79	513,836.26	431.47	
SL-4	7,148,115.67	513,907.57	416.88	
SL-5	7,148,133.63	513,876.08	422.91	
2005-01	7,148,100.15	513,757.89	463.73	
2005-02	7,148,118.21	513,816.95	447.89	
2005-03	7,148,108.16	513,870.12	428.18	
2005-04	7,148,047.07	513,876.04	428.36	
2005-05	7,148,000.57	513,781.55	464.67	
2005-06	7,147,999.72	513,865.78	433.29	
2005-07	7,148,000.11	513,945.37	416.35	
2005-08	7,148,038.85	513,970.98	415.77	
2005-09	7,148,124.38	513,969.23	420.18	
2005-10	7,148,146.69	513,925.39	411.78	
2005-11	7,148,176.10	513,942.17	411.91	

Appendix B

Waste Rock Dump Movement Monitoring Results

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-1) Waste Rock Dump Stability - Upper Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
81-1	19-Jun-01	7,147,034.71	512,978.88	455.25	0.00	0.12	0.06	0.00	0.14	0.07
	20-Aug-03	7,147,034.82	512,978.93	455.27	0.12	0.12	0.06	0.02	0.02	0.01
	28-Jul-04	7,147,034.76	512,978.92	455.23	0.07	0.06	0.07	-0.03	-0.04	-0.05
	28-Jul-06	7,147,034.80	512,978.92	455.18	0.10	0.05	0.02	-0.07	-0.04	-0.02
	9-Jul-08	7,147,034.93	512,978.93	455.22	0.13	0.03	0.01	-0.04	0.04	0.02
	20-Jul-10	7,147,034.84	512,978.93	455.17	0.14	0.02	0.01	-0.08	-0.04	-0.02
	25-Sep-10	7,147,034.83	512,978.94	455.17	0.14	0.02	0.08	-0.08	0.00	0.00
	11-Aug-11	7,147,034.86	512,978.99	455.14	0.18	0.06	0.07	-0.11	-0.03	-0.04
223	19-Jun-01	n/a								
	20-Aug-03	7,146,978.05	512,942.74	467.22	0.00			0.00		
	28-Jul-04	7,146,978.08	512,942.73	467.20	0.03	0.03	0.03	-0.02	-0.02	-0.02
	28-Jul-06	7,146,978.12	512,942.73	467.21	0.07	0.04	0.02	-0.01	0.00	0.00
	9-Jul-08	7,146,978.16	512,942.75	467.15	0.11	0.05	0.02	-0.07	-0.05	-0.03
	20-Jul-10	7,146,978.19	512,942.75	467.13	0.14	0.03	0.02	-0.09	-0.02	-0.01
	25-Sep-10	7,146,978.17	512,942.78	467.10	0.12	0.04	0.21	-0.12	-0.03	-0.15
	11-Aug-11	7,146,978.22	512,942.79	467.08	0.17	0.05	0.06	-0.14	-0.02	-0.03
225	19-Jun-01	n/a								
	20-Aug-03	7,146,918.72	512,905.22	475.17	0.00			0.00		
	28-Jul-04	7,146,918.73	512,905.18	475.14	0.04	0.04	0.04	-0.03	-0.03	-0.03
	28-Jul-06	7,146,918.77	512,905.18	475.15	0.07	0.04	0.02	-0.03	0.00	0.00
	9-Jul-08	7,146,918.81	512,905.20	475.10	0.09	0.04	0.02	-0.07	-0.05	-0.03
	20-Jul-10	7,146,918.83	512,905.19	475.07	0.12	0.03	0.02	-0.11	-0.03	-0.01
	25-Sep-10	7,146,918.84	512,905.24	475.06	0.13	0.05	0.27	-0.11	-0.01	-0.04
	11-Aug-11	7,146,918.86	512,905.25	475.03	0.15	0.02	0.03	-0.14	-0.03	-0.03
1195	19-Jun-01	7,147,111.83	512,899.53	456.62	0.00	0.10	0.05	0.00	0.16	0.08
	20-Aug-03	7,147,111.94	512,899.53	456.59	0.11	0.11	0.05	-0.03	-0.03	-0.01
	28-Jul-04	7,147,111.95	512,899.52	456.60	0.12	0.02	0.02	-0.02	0.01	0.01
	28-Jul-06	7,147,111.95	512,899.50	456.56	0.13	0.03	0.01	-0.06	-0.04	-0.02
	4-Jul-07	7,147,112.01	512,899.50	456.54	0.18	0.06	0.06	-0.08	-0.02	-0.03
	9-Jul-08	7,147,112.03	512,899.52	456.51	0.20	0.03	0.03	-0.11	-0.03	-0.03
	20-Jul-10	7,147,112.05	512,899.52	456.48	0.22	0.02	0.01	-0.14	-0.03	-0.02
	25-Sep-10	7,147,112.03	512,899.52	456.43	0.21	0.01	0.07	-0.18	-0.04	-0.23
	11-Aug-11	7,147,112.05	512,899.53	456.41	0.23	0.02	0.02	-0.21	-0.03	-0.03
1834	19-Jun-01	n/a								
	20-Aug-03	7,146,973.62	512,893.43	461.12	0.00			0.00		
	28-Jul-04	7,146,973.64	512,893.38	461.09	0.06	0.06	0.06	-0.03	-0.03	-0.03
	28-Jul-06	7,146,973.69	512,893.36	461.09	0.11	0.06	0.03	-0.03	0.00	0.00
	4-Jul-07	7,146,973.72	512,893.36	461.08	0.13	0.03	0.03	-0.04	-0.01	-0.01
	9-Jul-08	7,146,973.74	512,893.38	461.06	0.13	0.03	0.03	-0.06	-0.01	-0.01
	20-Jul-10	7,146,973.79	512,893.34	461.04	0.20	0.07	0.04	-0.08	-0.02	-0.01
	25-Sep-10	7,146,973.78	512,893.40	461.03	0.16	0.06	0.35	-0.09	-0.01	-0.07
	11-Aug-11	7,146,973.83	512,893.42	461.04	0.22	0.06	0.07	-0.08	0.01	0.01

Average	1999 to 2001	0.00	0.11	0.06	0.00	0.15	0.08
	2001 to 2003	0.05	0.12	0.05	0.00	0.00	0.00
	2003 to 2004	0.06	0.04	0.04	-0.02	-0.02	-0.02
	2004 to 2006	0.09	0.04	0.02	-0.04	-0.02	-0.01
	2006 to 2008	0.13	0.03	0.02	-0.07	-0.02	-0.02
	2008 to 2010	0.16	0.04	0.02	-0.10	-0.03	-0.01
	Jul 2010 to Sep 2010	0.15	0.04	0.20	-0.12	-0.02	-0.10
	Jul 2010 to Aug 2011		**0.06**	**0.05**		**-0.04**	**-0.04**
	Sept 2010 to Aug 2011	**0.19**	**0.04**	**0.05**	**-0.14**	**-0.02**	**-0.02**
Maximum	1999 to 2001	0.00	0.12	0.06	0.00	0.16	0.08
	2001 to 2003	0.12	0.12	0.06	0.02	0.02	0.01
	2003 to 2004	0.12	0.06	0.07	-0.02	0.01	0.01
	2004 to 2006	0.13	0.06	0.03	-0.01	0.00	0.00
	2006 to 2008	0.20	0.05	0.03	-0.04	0.04	0.02
	2008 to 2010	0.22	0.07	0.04	-0.08	-0.02	-0.01
	Jul 2010 to Sep 2010	0.21	0.06	0.35	-0.08	0.00	0.00
	Jul 2010 to Aug 2011		**0.09**	**0.09**		**0.00**	**0.00**
	Sept 2010 to Aug 2011	**0.23**	**0.06**	**0.07**	**-0.08**	**0.01**	**0.01**
Minimum	1999 to 2001	0.00	0.10	0.05	0.00	0.14	0.07
	2001 to 2003	0.00	0.11	0.05	-0.03	-0.03	-0.01
	2003 to 2004	0.03	0.02	0.02	-0.03	-0.04	-0.05
	2004 to 2006	0.07	0.03	0.01	-0.07	-0.04	-0.02
	2006 to 2008	0.09	0.03	0.01	-0.11	-0.05	-0.03
	2008 to 2010	0.12	0.02	0.01	-0.14	-0.04	-0.02
	Jul 2010 to Sep 2010	0.12	0.01	0.07	-0.18	-0.04	-0.23
	Jul 2010 to Aug 2011		**0.01**	**0.01**		**-0.07**	**-0.07**
	Sept 2010 to Aug 2011	**0.15**	**0.02**	**0.02**	**-0.21**	**-0.03**	**-0.04**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-2) Waste Rock Dump Stability - Mid Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
4	19-Jun-01	7,147,211.31	513,193.67	435.30	0.00	0.06	0.03	0.00	-0.17	-0.09
	20-Aug-03	7,147,211.28	513,193.64	435.18	0.05	0.05	0.02	-0.12	-0.12	-0.06
	28-Jul-04	7,147,211.22	513,193.64	435.08	0.10	0.06	0.07	-0.22	-0.10	-0.11
	28-Jul-06	7,147,211.16	513,193.61	435.06	0.16	0.07	0.03	-0.24	-0.02	-0.01
	9-Jul-08	7,147,211.10	513,193.62	434.97	0.21	0.06	0.03	-0.33	-0.09	-0.05
	20-Jul-10	7,147,211.05	513,193.59	434.91	0.28	0.06	0.03	-0.39	-0.06	-0.03
	25-Sep-10	7,147,211.04	513,193.60	434.90	0.28	0.02	0.10	-0.40	-0.01	-0.06
	11-Aug-11	7,147,211.02	513,193.60	434.88	0.30	0.02	0.03	-0.42	-0.01	-0.01
19	19-Jun-01	7,147,124.18	513,365.54	430.10	0.00	0.22	0.11	0.00	-0.32	-0.16
	20-Aug-03	7,147,124.35	513,365.64	429.24	0.19	0.19	0.09	-0.86	-0.86	-0.40
	28-Jul-04	7,147,124.36	513,365.70	429.13	0.24	0.06	0.06	-0.97	-0.11	-0.11
	28-Jul-06	not surveyed in 2006								
	9-Jul-08	7,147,124.48	513,365.75	428.78	0.36	0.13	0.03	-1.32	-0.35	-0.09
	20-Jul-10	7,147,124.46	513,365.72	428.66	0.33	0.04	0.02	-1.44	-0.12	-0.06
	25-Sep-10	7,147,124.43	513,365.74	428.64	0.32	0.03	0.18	-1.47	-0.03	-0.14
	11-Aug-11	7,147,124.41	513,365.74	428.58	0.30	0.02	0.02	-1.52	-0.06	-0.07
20A	19-Jun-01	7,147,207.71	513,057.05	445.86	0.00	0.22	0.11	0.00	0.05	0.03
	20-Aug-03	7,147,207.86	513,057.14	445.83	0.17	0.17	0.08	-0.03	-0.03	-0.01
	28-Jul-04	7,147,207.85	513,057.12	445.74	0.15	0.02	0.03	-0.11	-0.09	-0.09
	28-Jul-06	7,147,207.88	513,057.14	445.69	0.19	0.05	0.02	-0.17	-0.05	-0.03
	4-Jul-07	7,147,207.91	513,057.16	445.66	0.22	0.03	0.03	-0.20	-0.03	-0.03
	9-Jul-08	7,147,207.92	513,057.18	445.63	0.25	0.03	0.03	-0.23	-0.03	-0.03
	20-Jul-10	7,147,207.95	513,057.18	445.57	0.27	0.03	0.01	-0.29	-0.06	-0.03
	25-Sep-10	7,147,207.93	513,057.18	445.55	0.25	0.02	0.11	-0.31	-0.02	-0.12
	11-Aug-11	7,147,207.94	513,057.20	445.53	0.27	0.02	0.03	-0.32	-0.02	-0.02
21A	19-Jun-01	7,147,228.14	512,915.05	446.57	0.00	0.20	0.10	0.00	0.05	0.02
	20-Aug-03	7,147,228.20	512,915.15	446.54	0.11	0.11	0.05	-0.03	-0.03	-0.02
	28-Jul-04	7,147,228.18	512,915.11	446.43	0.07	0.04	0.05	-0.14	-0.11	-0.11
	28-Jul-06	7,147,228.26	512,915.11	446.38	0.13	0.08	0.04	-0.19	-0.05	-0.02
	4-Jul-07	7,147,228.30	512,915.11	446.37	0.17	0.12	0.13	-0.21	-0.06	-0.02
	9-Jul-08	7,147,228.31	512,915.12	446.32	0.18	0.05	0.05	-0.25	-0.06	-0.07
	20-Jul-10	7,147,228.36	512,915.09	446.26	0.22	0.02	0.02	-0.31	-0.05	-0.04
	25-Sep-10	7,147,228.34	512,915.10	446.23	0.21	0.02	0.09	-0.35	-0.03	-0.19
	11-Aug-11	7,147,228.38	512,915.08	446.19	0.24	0.04	0.05	-0.38	-0.03	-0.04
22A	19-Jun-01	7,147,224.10	512,841.41	445.02	0.00	0.19	0.10	0.00	-0.03	-0.02
	20-Aug-03	7,147,224.29	512,841.31	444.99	0.22	0.22	0.10	-0.03	-0.03	-0.01
	28-Jul-04	7,147,224.27	512,841.30	444.88	0.21	0.02	0.02	-0.14	-0.11	-0.12
	28-Jul-06	7,147,224.40	512,841.26	444.81	0.33	0.13	0.07	-0.21	-0.07	-0.03
	4-Jul-07	7,147,224.45	512,841.23	444.77	0.39	0.05	0.06	-0.25	-0.04	-0.05
	9-Jul-08	7,147,224.48	512,841.23	444.72	0.42	0.04	0.04	-0.30	-0.05	-0.05
	20-Jul-10	7,147,224.57	512,841.21	444.62	0.51	0.09	0.04	-0.40	-0.09	-0.05
	25-Sep-10	7,147,224.59	512,841.24	444.59	0.52	0.04	0.23	-0.44	-0.04	-0.21
	11-Aug-11	7,147,224.62	512,841.23	444.54	0.55	0.03	0.04	-0.48	-0.05	-0.05
68	19-Jun-01	7,147,261.98	513,142.46	434.49	0.00	0.02	0.01	0.00	-0.15	-0.08
	20-Aug-03	7,147,262.03	513,142.42	434.42	0.07	0.07	0.03	-0.07	-0.07	-0.03
	28-Jul-04	7,147,262.00	513,142.42	434.33	0.05	0.03	0.04	-0.16	-0.09	-0.09
	28-Jul-06	7,147,262.02	513,142.36	434.31	0.11	0.06	0.03	-0.18	-0.02	-0.01
	4-Jul-07	7,147,262.06	513,142.33	434.27	0.15	0.10	0.04	-0.22	-0.06	-0.02
	9-Jul-08	7,147,262.05	513,142.32	434.22	0.17	0.02	0.01	-0.27	-0.05	-0.03
	20-Jul-10	7,147,262.07	513,142.27	434.16	0.22	0.05	0.02	-0.33	-0.06	-0.02
	25-Sep-10	7,147,262.07	513,142.29	434.13	0.20	0.02	0.01	-0.36	-0.03	-0.01
	11-Aug-11	7,147,262.10	513,142.27	434.09	0.22	0.03	0.03	-0.40	-0.03	-0.04

Client: Government of Yukon
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Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-2) Waste Rock Dump Stability - Mid Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
81-2	19-Jun-01	7,147,205.22	513,011.60	443.70	0.00	0.15	0.08	0.00	0.04	0.02
	20-Aug-03	7,147,205.29	513,011.56	443.75	0.07	0.07	0.03	0.05	0.05	0.02
	28-Jul-04	7,147,205.26	513,011.60	443.71	0.03	0.05	0.05	0.01	-0.04	-0.05
	28-Jul-06	7,147,205.28	513,011.59	443.71	0.05	0.02	0.01	0.01	0.00	0.00
	4-Jul-07	7,147,205.31	513,011.58	443.69	0.09	0.03	0.04	-0.01	-0.02	-0.02
	9-Jul-08	7,147,205.32	513,011.59	443.68	0.09	0.02	0.02	-0.02	-0.01	-0.01
	20-Jul-10	7,147,205.32	513,011.61	443.64	0.10	0.01	0.01	-0.06	-0.04	-0.02
	25-Sep-10	7,147,205.33	513,011.60	443.61	0.10	0.00	0.02	-0.09	-0.03	-0.16
	11-Aug-11	7,147,205.34	513,011.60	443.61	0.11	0.01	0.02	-0.09	-0.01	-0.01
224	19-Jun-01	n/a								
	20-Aug-03	7,147,241.09	512,963.33	444.85	0.00			0.00		
	28-Jul-04	7,147,241.12	512,963.29	444.82	0.04	0.04	0.05	-0.03	-0.03	-0.03
	28-Jul-06	7,147,241.17	512,963.29	444.79	0.09	0.05	0.03	-0.06	-0.03	-0.02
	4-Jul-07	7,147,241.19	512,963.25	444.74	0.12	0.04	0.04	-0.11	-0.05	-0.05
	9-Jul-08	7,147,241.21	512,963.27	444.72	0.13	0.03	0.03	-0.13	-0.02	-0.02
	20-Jul-10	7,147,241.22	512,963.26	444.67	0.15	0.02	0.01	-0.18	-0.05	-0.02
	25-Sep-10	7,147,241.23	512,963.26	444.64	0.15	0.01	0.03	-0.21	-0.04	-0.20
	11-Aug-11	7,147,241.24	512,963.26	444.61	0.17	0.02	0.02	-0.24	-0.03	-0.04
227	19-Jun-01	n/a								
	20-Aug-03	7,147,076.84	513,124.78	439.48	0.00			0.00		
	28-Jul-04	7,147,076.78	513,124.77	439.44	0.07	0.07	0.07	-0.04	-0.04	-0.04
	28-Jul-06	7,147,076.82	513,124.77	439.45	0.03	0.04	0.02	-0.03	0.01	0.01
	9-Jul-08	7,147,076.83	513,124.80	439.42	0.02	0.03	0.01	-0.06	-0.03	-0.02
	20-Jul-10	7,147,076.85	513,124.79	439.40	0.02	0.02	0.01	-0.08	-0.02	-0.01
	25-Sep-10	7,147,076.87	513,124.80	439.35	0.04	0.02	0.13	-0.13	-0.06	-0.30
	11-Aug-11	7,147,076.87	513,124.80	439.35	0.03	0.01	0.01	-0.13	0.00	0.00
229	19-Jun-01	n/a								
	20-Aug-03	7,147,113.53	512,719.14	437.43	0.00			0.00		
	28-Jul-04	7,147,113.49	512,719.14	437.37	0.04	0.04	0.05	-0.06	-0.06	-0.06
	28-Jul-06	7,147,113.55	512,719.11	437.39	0.04	0.07	0.04	-0.05	0.02	0.01
	4-Jul-07	7,147,113.52	512,719.04	437.37	0.11	0.08	0.08	-0.06	-0.02	-0.02
	9-Jul-08	7,147,113.56	512,719.06	437.33	0.09	0.04	0.04	-0.10	-0.04	-0.04
	20-Jul-10	7,147,113.60	512,719.03	437.30	0.14	0.05	0.03	-0.13	-0.03	-0.02
	25-Sep-10	7,147,113.60	512,719.02	437.27	0.14	0.01	0.04	-0.16	-0.03	-0.15
	11-Aug-11	7,147,113.61	512,719.02	437.24	0.15	0.01	0.02	-0.19	-0.02	-0.03
1194	19-Jun-01	7,147,017.22	513,472.45	433.19	0.00	0.09	0.05	0.00	-0.18	-0.09
	20-Aug-03	7,147,017.32	513,472.44	433.19	0.10	0.10	0.05	0.00	0.00	0.00
	28-Jul-04	7,147,017.35	513,472.44	433.12	0.13	0.03	0.03	-0.07	-0.07	-0.07
	28-Jul-06	7,147,017.43	513,472.44	433.08	0.21	0.08	0.04	-0.11	-0.04	-0.02
	9-Jul-08	7,147,017.49	513,472.46	433.04	0.27	0.07	0.03	-0.15	-0.04	-0.02
	20-Jul-10	7,147,017.56	513,472.46	433.07	0.34	0.07	0.03	-0.12	0.02	0.01
	25-Sep-10	7,147,017.54	513,472.46	432.96	0.32	0.02	0.10	-0.23	-0.10	-0.56
	11-Aug-11	7,147,017.57	513,472.46	432.97	0.35	0.03	0.03	-0.22	0.00	0.00
1196	19-Jun-01	7,147,231.16	513,066.14	444.13	0.00	0.17	0.09	0.00	0.03	0.01
	20-Aug-03	7,147,231.23	513,066.18	444.08	0.08	0.08	0.04	-0.05	-0.05	-0.02
	28-Jul-04	7,147,231.26	513,066.20	444.05	0.12	0.04	0.04	-0.08	-0.03	-0.03
	28-Jul-06	7,147,231.28	513,066.23	443.97	0.16	0.04	0.02	-0.17	-0.08	-0.04
	4-Jul-07	7,147,231.35	513,066.26	443.93	0.23	0.07	0.08	-0.20	-0.04	-0.04
	9-Jul-08	7,147,231.36	513,066.28	443.87	0.25	0.02	0.02	-0.26	-0.06	-0.06
	20-Jul-10	7,147,231.40	513,066.31	443.80	0.30	0.05	0.03	-0.33	-0.07	-0.03
	25-Sep-10	7,147,231.39	513,066.32	443.77	0.30	0.01	0.03	-0.36	-0.03	-0.17
	11-Aug-11	7,147,231.42	513,066.33	443.73	0.32	0.02	0.03	-0.40	-0.04	-0.05

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-2) Waste Rock Dump Stability - Mid Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1831	19-Jun-01	n/a								
	20-Aug-03	7,147,227.18	512,766.65	432.85	0.00			0.00		
	28-Jul-04	7,147,227.23	512,766.60	432.79	0.07	0.07	0.08	-0.06	-0.06	-0.07
	28-Jul-06	7,147,227.36	512,766.55	432.71	0.20	0.13	0.07	-0.14	-0.07	-0.04
	4-Jul-07	7,147,227.41	512,766.51	432.67	0.27	0.06	0.07	-0.18	-0.04	-0.04
	9-Jul-08	7,147,227.44	512,766.52	432.61	0.29	0.03	0.03	-0.24	-0.06	-0.06
	20-Jul-10	7,147,227.55	512,766.46	432.76	0.41	0.12	0.06	-0.09	0.15	0.07
	25-Sep-10	7,147,227.54	512,766.51	432.50	0.39	0.05	0.29	-0.35	-0.26	-1.41
	11-Aug-11	7,147,227.57	512,766.47	432.47	0.43	0.05	0.06	-0.38	-0.04	-0.04

Average	1999 to 2001	0.00	0.15	0.08	0.00	-0.08	-0.04
	2001 to 2003	0.12	0.12	0.05	-0.13	-0.13	-0.06
	2003 to 2004	0.10	0.04	0.05	-0.16	-0.07	-0.08
	2004 to 2006	0.14	0.07	0.03	-0.13	-0.03	-0.02
	2006 to 2008	0.21	0.04	0.03	-0.28	-0.07	-0.04
	2008 to 2010	0.25	0.05	0.02	-0.32	-0.04	-0.02
	Jul 2010 to Sep 2010	0.25	0.02	0.10	-0.37	-0.05	-0.28
	Jul 2010 to Aug 2011		**0.03**	**0.03**		**-0.08**	**-0.08**
	Sept 2010 to Aug 2011	**0.27**	**0.02**	**0.03**	**-0.40**	**-0.03**	**-0.03**
Maximum	1999 to 2001	0.00	0.22	0.11	0.00	0.05	0.03
	2001 to 2003	0.22	0.22	0.10	0.05	0.05	0.02
	2003 to 2004	0.24	0.07	0.08	0.01	-0.03	-0.03
	2004 to 2006	0.33	0.13	0.07	0.01	0.02	0.01
	2006 to 2008	0.42	0.13	0.05	-0.02	-0.01	-0.01
	2008 to 2010	0.51	0.12	0.06	-0.06	0.15	0.07
	Jul 2010 to Sep 2010	0.52	0.05	0.29	-0.09	-0.01	-0.01
	Jul 2010 to Aug 2011		**0.06**	**0.06**		**-0.02**	**-0.02**
	Sept 2010 to Aug 2011	**0.55**	**0.05**	**0.06**	**-0.09**	**0.00**	**0.00**
Minimum	1999 to 2001	0.00	0.02	0.01	0.00	-0.32	-0.16
	2001 to 2003	0.05	0.05	0.02	-0.86	-0.86	-0.40
	2003 to 2004	0.03	0.02	0.02	-0.97	-0.11	-0.12
	2004 to 2006	0.03	0.02	0.01	-0.24	-0.08	-0.04
	2006 to 2008	0.02	0.02	0.01	-1.32	-0.35	-0.09
	2008 to 2010	0.02	0.01	0.01	-1.44	-0.12	-0.06
	Jul 2010 to Sep 2010	0.04	0.00	0.01	-1.47	-0.26	-1.41
	Jul 2010 to Aug 2011		**0.01**	**0.01**		**-0.29**	**-0.28**
	Sept 2010 to Aug 2011	**0.03**	**0.01**	**0.01**	**-1.52**	**-0.06**	**-0.07**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
69	19-Jun-01	7,147,335.52	513,140.55	414.88	0.00	0.19	0.10	0.00	-0.05	-0.03
	20-Aug-03	7,147,335.53	513,140.58	414.90	0.03	0.03	0.01	0.02	0.02	0.01
	28-Jul-04	7,147,335.53	513,140.56	414.87	0.01	0.02	0.02	-0.01	-0.03	-0.04
	28-Jul-06	7,147,335.49	513,140.52	414.91	0.04	0.05	0.03	0.03	0.05	0.02
	9-Jul-08	7,147,335.48	513,140.50	414.89	0.06	0.02	0.01	0.01	-0.02	-0.01
RELOCATED	20-Jul-10	7,147,329.16	513,138.51	416.48	0.12	0.03	0.01	-0.05	0.00	0.00
	25-Sep-10	7,147,329.17	513,138.53	416.43	0.14	0.02	0.12	-0.09	-0.05	-0.27
	11-Aug-11	7,147,329.20	513,138.54	416.43	0.16	0.03	0.03	-0.10	0.00	0.00
80-13	19-Jun-01	n/a								
	20-Aug-03	7,147,299.40	513,183.84	413.08	0.00			0.00		
	28-Jul-04	7,147,299.39	513,183.83	413.06	0.02	0.02	0.02	-0.02	-0.02	-0.03
	28-Jul-06	7,147,299.35	513,183.82	413.10	0.06	0.04	0.02	0.02	0.05	0.02
	9-Jul-08	7,147,299.35	513,183.81	413.07	0.06	0.01	0.01	-0.01	-0.03	-0.02
	20-Jul-10	7,147,299.32	513,183.77	413.21	0.10	0.05	0.03	0.13	0.13	0.07
	25-Sep-10	7,147,299.32	513,183.81	413.18	0.09	0.04	0.21	0.10	-0.03	-0.14
	11-Aug-11	7,147,299.33	513,183.83	413.15	0.07	0.02	0.02	0.07	-0.03	-0.04
80-14	19-Jun-01	n/a								
	20-Aug-03	7,147,267.77	513,283.11	403.77	0.00			0.00		
	28-Jul-04	7,147,267.79	513,283.08	403.74	0.03	0.03	0.03	-0.03	-0.03	-0.03
	28-Jul-06	7,147,267.65	513,283.10	403.80	0.12	0.14	0.07	0.03	0.05	0.03
	9-Jul-08	7,147,267.63	513,283.14	403.83	0.14	0.04	0.02	0.06	0.04	0.02
	20-Jul-10	7,147,267.74	513,283.03	403.82	0.09	0.16	0.08	0.05	-0.01	0.00
	25-Sep-10	7,147,267.75	513,283.05	403.83	0.06	0.03	0.15	0.06	0.01	0.06
	11-Aug-11	destroyed or lost								
84-1	19-Jun-01	7,147,201.04	513,504.62	381.71	0.00	0.13	0.07	0.00	-0.01	-0.01
	20-Aug-03	7,147,201.07	513,504.65	381.77	0.04	0.04	0.02	0.06	0.06	0.03
	28-Jul-04	7,147,201.08	513,504.64	381.72	0.05	0.01	0.02	0.00	-0.06	-0.06
	28-Jul-06	7,147,201.09	513,504.63	381.83	0.05	0.01	0.01	0.11	0.11	0.06
	9-Jul-08	7,147,201.07	513,504.62	381.78	0.03	0.02	0.01	0.07	-0.04	-0.02
	20-Jul-10	7,147,201.10	513,504.61	381.79	0.06	0.03	0.01	0.08	0.00	0.00
	25-Sep-10	destroyed								
217	19-Jun-01	7,147,314.81	513,183.13	414.83	0.00	0.05	0.02	0.00	-0.05	-0.03
	20-Aug-03	7,147,314.73	513,183.18	414.87	0.09	0.09	0.04	0.04	0.04	0.02
	28-Jul-04	7,147,314.77	513,183.18	414.84	0.06	0.03	0.04	0.01	-0.03	-0.03
	28-Jul-06	7,147,314.72	513,183.16	414.86	0.09	0.05	0.03	0.03	0.02	0.01
	9-Jul-08	7,147,314.72	513,183.17	414.86	0.09	0.01	0.01	0.04	0.01	0.00
	20-Jul-10	7,147,314.72	513,183.15	414.86	0.09	0.01	0.01	0.04	0.00	0.00
	25-Sep-10	destroyed								
218	19-Jun-01	7,147,222.17	513,433.25	387.99	0.00	0.07	0.04	0.00	0.05	0.02
	20-Aug-03	7,147,222.21	513,433.19	388.04	0.07	0.07	0.03	0.05	0.05	0.02
	28-Jul-04	7,147,222.22	513,433.18	388.03	0.08	0.00	0.00	0.03	-0.01	-0.01
	28-Jul-06	7,147,222.20	513,433.18	388.09	0.08	0.02	0.01	0.10	0.06	0.03
	9-Jul-08	7,147,222.21	513,433.18	388.09	0.08	0.01	0.01	0.09	0.00	0.00
	20-Jul-10	7,147,222.20	513,433.18	388.10	0.08	0.00	0.00	0.10	0.01	0.00
	25-Sep-10	destroyed or lost								
219	19-Jun-01	7,147,292.13	513,274.61	404.48	0.00	0.17	0.09	0.00	-0.05	-0.03
	20-Aug-03	7,147,292.12	513,274.65	404.60	0.03	0.03	0.02	0.17	0.12	0.06
	28-Jul-04	7,147,292.13	513,274.65	404.55	0.04	0.01	0.01	0.00	-0.05	-0.05
	28-Jul-06	7,147,292.12	513,274.62	404.62	0.01	0.03	0.02	0.12	0.07	0.04
	9-Jul-08	7,147,292.14	513,274.63	404.62	0.01	0.02	0.01	0.05	0.00	0.00
	20-Jul-10	7,147,292.15	513,274.65	404.60	0.04	0.02	0.01	0.02	-0.01	-0.01
	25-Sep-10	7,147,292.14	513,274.64	404.57	0.03	0.01	0.07	0.09	-0.03	-0.17
RELOCATED	25-Sep-10	7,147,288.58	513,273.60	405.59						
	11-Aug-11	7,147,288.59	513,273.59	405.61	0.16	0.01	0.02	0.06	0.02	0.02

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
220	19-Jun-01	7,147,223.43	513,431.01	388.55	0.00	0.25	0.13	0.00	0.06	0.03
	20-Aug-03	7,147,223.42	513,430.90	388.65	0.11	0.11	0.05	0.10	0.10	0.05
	28-Jul-04	7,147,223.43	513,430.90	388.60	0.11	0.01	0.01	0.06	-0.05	-0.05
	28-Jul-06	7,147,223.42	513,430.88	388.68	0.13	0.02	0.01	0.13	0.08	0.04
	9-Jul-08	7,147,223.43	513,430.88	388.67	0.13	0.01	0.01	0.12	-0.01	-0.01
	20-Jul-10	7,147,223.43	513,430.88	388.68	0.13	0.01	0.00	0.13	0.02	0.01
	25-Sep-10	destroyed								
222	19-Jun-01	7,147,269.46	513,334.94	397.91	0.00	0.06	0.03	0.00	-0.05	-0.02
	20-Aug-03	7,147,269.49	513,334.96	398.01	0.04	0.04	0.02	0.10	0.10	0.04
	28-Jul-04	7,147,269.52	513,334.97	397.96	0.06	0.03	0.03	0.04	-0.05	-0.05
	28-Jul-06	7,147,269.51	513,334.93	397.99	0.05	0.03	0.02	0.08	0.03	0.02
	9-Jul-08	7,147,269.53	513,334.95	397.99	0.07	0.02	0.01	0.08	0.00	0.00
	20-Jul-10	7,147,269.54	513,334.95	397.98	0.09	0.02	0.01	0.07	-0.01	0.00
RELOCATED	20-Jul-10	7,147,265.33	513,333.03	399.65						
	11-Aug-11	7,147,265.33	513,333.04	399.66	0.01	0.01	0.00	0.00	0.00	0.00
226	19-Jun-01	n/a								
	20-Aug-03	7,147,311.53	513,066.36	426.46	0.00			0.00		
	28-Jul-04	7,147,311.54	513,066.40	426.43	0.04	0.04	0.05	-0.03	-0.03	-0.03
	28-Jul-06	7,147,311.56	513,066.42	426.36	0.07	0.03	0.01	-0.10	-0.07	-0.04
	4-Jul-07	7,147,311.62	513,066.44	426.32	0.13	0.07	0.07	-0.14	-0.04	-0.04
	9-Jul-08	7,147,311.61	513,066.47	426.27	0.15	0.03	0.03	-0.19	-0.05	-0.05
	20-Jul-10	7,147,311.67	513,066.49	426.18	0.20	0.06	0.03	-0.28	-0.09	-0.04
	25-Sep-10	7,147,311.68	513,066.53	426.14	0.23	0.03	0.18	-0.32	-0.05	-0.26
	11-Aug-11	7,147,311.73	513,066.55	426.08	0.28	0.05	0.06	-0.38	-0.05	-0.06
228	19-Jun-01	n/a								
	20-Aug-03	7,147,347.00	512,836.84	413.95	0			0		
	28-Jul-04	7,147,347.03	512,836.79	413.88	0.06	0.06	0.07	-0.07	-0.07	-0.08
	28-Jul-06	7,147,347.13	512,836.73	413.92	0.18	0.12	0.06	-0.03	0.04	0.02
	4-Jul-07	7,147,347.15	512,836.70	413.86	0.21	0.04	0.04	-0.09	-0.06	-0.07
	9-Jul-08	7,147,347.20	512,836.68	413.83	0.26	0.04	0.04	-0.12	-0.02	-0.02
	20-Jul-10	7,147,347.29	512,836.62	413.78	0.37	0.11	0.05	-0.17	-0.05	-0.02
	25-Sep-10	7,147,347.31	512,836.66	413.76	0.36	0.05	0.25	-0.19	-0.02	-0.10
	11-Aug-11	destroyed or lost								
1833	19-Jun-01	n/a								
	20-Aug-03	7,147,302.70	512,921.25	418.34	0			0		
	28-Jul-04	7,147,302.69	512,921.27	418.30	0.02	0.02	0.02	-0.04	-0.04	-0.04
	28-Jul-06	7,147,302.78	512,921.24	418.35	0.08	0.10	0.05	0.01	0.04	0.02
	4-Jul-07	7,147,302.84	512,921.20	418.34	0.15	0.07	0.07	0.00	-0.01	-0.01
	9-Jul-08	7,147,302.86	512,921.23	418.44	0.16	0.03	0.03	0.10	0.10	0.10
	20-Jul-10	7,147,302.92	512,921.21	418.39	0.23	0.07	0.04	0.05	-0.05	-0.02
	25-Sep-10	7,147,302.93	512,921.21	418.37	0.23	0.01	0.05	0.03	-0.01	-0.08
	11-Aug-11	7,147,302.96	512,921.20	418.44	0.26	0.03	0.04	0.10	0.06	0.07
P2	19-Jun-01	7,147,354.12	512,999.27	416.14	0.00	0.17	0.09	0.00	-0.09	-0.05
	20-Aug-03	7,147,354.36	512,999.35	416.10	0.25	0.25	0.11	-0.04	-0.04	-0.02
	28-Jul-04	7,147,354.41	512,999.36	415.98	0.30	0.05	0.05	-0.16	-0.12	-0.13
	28-Jul-06	7,147,354.50	512,999.34	415.99	0.39	0.10	0.05	-0.15	0.00	0.00
	4-Jul-07	7,147,354.63	512,999.38	416.05	0.52	0.13	0.14	-0.09	0.06	0.07
	9-Jul-08	7,147,354.57	512,999.39	415.98	0.46	0.06	0.06	-0.16	-0.07	-0.07
	20-Jul-10	7,147,354.70	512,999.38	415.90	0.59	0.13	0.07	-0.24	-0.08	-0.04
	25-Sep-10	7,147,354.71	512,999.43	415.93	0.60	0.05	0.28	-0.21	0.03	0.16
	11-Aug-11	7,147,354.74	512,999.37	415.94	0.63	0.07	0.08	-0.20	0.01	0.01

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
P3	19-Jun-01	7,147,309.29	513,135.55	415.34	0.00	0.11	0.06	0.00	-0.11	-0.06
	20-Aug-03	7,147,309.32	513,135.58	415.35	0.04	0.04	0.02	0.01	0.01	0.00
	28-Jul-04	7,147,309.30	513,135.56	415.24	0.01	0.03	0.03	-0.10	-0.11	-0.11
	28-Jul-06	7,147,309.30	513,135.53	415.19	0.02	0.02	0.01	-0.15	-0.05	-0.03
	9-Jul-08	7,147,309.31	513,135.55	415.17	0.01	0.02	0.01	-0.17	-0.02	-0.01
	20-Jul-10	7,147,309.32	513,135.51	415.06	0.05	0.04	0.02	-0.28	-0.11	-0.05
	25-Sep-10	7,147,309.33	513,135.54	415.03	0.03	0.03	0.15	-0.31	-0.03	-0.15
	11-Aug-11	7,147,309.35	513,135.54	414.99	0.06	0.02	0.02	-0.35	-0.04	-0.05
P4	19-Jun-01	7,147,239.53	513,347.49	397.05	0			0		
	20-Aug-03	7,147,239.50	513,347.56	397.28	0.07	0.07	0.02	0.23	0.23	0.06
	28-Jul-04	7,147,239.49	513,347.51	397.31	0.05	0.05	0.05	0.26	0.03	0.03
	28-Jul-06	7,147,239.44	513,347.50	397.34	0.09	0.05	0.02	0.29	0.03	0.01
	9-Jul-08	7,147,239.44	513,347.49	397.31	0.09	0.01	0.00	0.26	-0.03	-0.01
	20-Jul-10	7,147,239.44	513,347.46	397.30	0.09	0.04	0.02	0.25	-0.01	-0.01
	25-Sep-10	7,147,239.41	513,347.49	397.32	0.12	0.05	0.25	0.27	0.02	0.10
	11-Aug-11	7,147,239.43	513,347.51	397.18	0.10	0.02	0.03	0.12	-0.14	-0.16
P5	19-Jun-01	7,147,182.91	513,461.26	386.86	0			0		
	20-Aug-03	7,147,182.93	513,461.46	387.21	0.20	0.20	0.05	0.35	0.35	0.09
	28-Jul-04	7,147,182.95	513,461.42	387.20	0.17	0.04	0.05	0.34	-0.01	-0.01
	28-Jul-06	7,147,182.92	513,461.40	387.24	0.14	0.04	0.02	0.38	0.04	0.02
	9-Jul-08	7,147,182.92	513,461.40	387.23	0.14	0.01	0.00	0.37	-0.01	0.00
	20-Jul-10	7,147,182.92	513,461.38	387.24	0.12	0.01	0.01	0.38	0.01	0.00
	25-Sep-10	7,147,182.91	513,461.41	387.19	0.15	0.03	0.15	0.33	-0.05	-0.27
	11-Aug-11	7,147,182.92	513,461.40	387.22	0.14	0.02	0.02	0.36	0.03	0.03
XS-A	19-Jun-01	n/a								
	20-Aug-03	7,147,320.21	513,190.99	411.33	0			0		
	28-Jul-04	7,147,320.32	513,191.01	411.24	0.10	0.10	0.11	-0.09	-0.09	-0.09
relocated	28-Jul-06	7,147,315.67	513,189.82	413.35						
	9-Jul-08	7,147,315.71	513,189.83	413.35	0.14	0.04	0.02	0.08	0.01	0.00
	20-Jul-10	7,147,315.72	513,189.82	413.36	0.05	0.01	0.01	0.01	0.01	0.00
	25-Sep-10	destroyed								
XS-B	19-Jun-01	n/a								
	20-Aug-03	7,147,293.65	513,274.20	404.28	0.00			0.00		
	28-Jul-04	7,147,293.70	513,274.20	404.29	0.06	0.06	0.06	0.01	0.01	0.01
	28-Jul-06	7,147,293.67	513,274.18	404.31	0.03	0.04	0.02	0.03	0.02	0.01
	9-Jul-08	7,147,293.68	513,274.18	404.31	0.04	0.01	0.01	0.03	0.00	0.00
	20-Jul-10	7,147,293.69	513,274.18	404.33	0.04	0.01	0.00	0.05	0.02	0.01
	25-Sep-10	7,147,293.69	513,274.18	404.30	0.04	0.01	0.03	0.02	-0.02	-0.13
	11-Aug-11	7,147,293.71	513,274.19	404.29	0.06	0.02	0.03	0.01	-0.02	-0.02
XS-E	19-Jun-01	n/a								
	20-Aug-03	7,147,224.70	513,432.22	387.53	0.00			0.00		
	28-Jul-04	7,147,224.67	513,432.18	387.52	0.06	0.06	0.06	-0.01	-0.01	-0.01
	28-Jul-06	7,147,224.66	513,432.16	387.59	0.07	0.01	0.01	0.06	0.07	0.04
	9-Jul-08	7,147,224.67	513,432.16	387.53	0.07	0.01	0.00	0.00	-0.06	-0.03
	20-Jul-10	7,147,224.68	513,432.16	387.54	0.06	0.02	0.01	0.01	0.01	0.01
	25-Sep-10	destroyed								

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
XS-G	19-Jun-01	7,147,355.94	513,038.74	416.55	0.00	0.19	0.10	0.00	-0.12	-0.06
	20-Aug-03	7,147,356.11	513,038.84	416.54	0.20	0.20	0.09	-0.01	-0.01	0.00
	28-Jul-06	destroyed								

Average	1999 to 2001	0.00	0.14	0.07	0.00	-0.04	-0.02
	2001 to 2003	0.06	0.10	0.04	0.05	0.09	0.03
	2003 to 2004	0.07	0.04	0.04	0.01	-0.04	-0.04
	2004 to 2006	0.09	0.05	0.02	0.05	0.04	0.02
	2006 to 2008	0.11	0.02	0.02	0.04	-0.01	-0.01
	2008 to 2010	0.14	0.04	0.02	0.02	-0.01	-0.01
	Jul 2010 to Sep 2010	0.17	0.03	0.16	-0.02	-0.02	-0.10
	Jul 2010 to Aug 2011		**0.04**	**0.04**		**-0.04**	**-0.04**
	Sept 2010 to Aug 2011	**0.17**	**0.03**	**0.03**	**-0.03**	**-0.02**	**-0.02**
Maximum	1999 to 2001	0.00	0.25	0.13	0.00	0.06	0.03
	2001 to 2003	0.25	0.25	0.11	0.35	0.35	0.09
	2003 to 2004	0.30	0.10	0.11	0.34	0.03	0.03
	2004 to 2006	0.39	0.14	0.07	0.38	0.11	0.06
	2006 to 2008	0.46	0.06	0.06	0.37	0.10	0.10
	2008 to 2010	0.59	0.16	0.08	0.38	0.13	0.07
	Jul 2010 to Sep 2010	0.60	0.05	0.28	0.33	0.03	0.16
	Jul 2010 to Aug 2011		**0.08**	**0.07**		**0.05**	**0.05**
	Sept 2010 to Aug 2011	**0.63**	**0.07**	**0.08**	**0.36**	**0.06**	**0.07**
Minimum	1999 to 2001	0.00	0.05	0.02	0.00	-0.12	-0.06
	2001 to 2003	0.00	0.03	0.01	-0.04	-0.04	-0.02
	2003 to 2004	0.01	0.00	0.00	-0.16	-0.12	-0.13
	2004 to 2006	0.01	0.01	0.01	-0.15	-0.07	-0.04
	2006 to 2008	0.01	0.01	0.00	-0.19	-0.07	-0.07
	2008 to 2010	0.04	0.00	0.00	-0.28	-0.11	-0.05
	Jul 2010 to Sep 2010	0.03	0.01	0.03	-0.32	-0.05	-0.27
	Jul 2010 to Aug 2011		**0.01**	**0.00**		**-0.12**	**-0.12**
	Sept 2010 to Aug 2011	**0.01**	**0.01**	**0.00**	**-0.38**	**-0.14**	**-0.16**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

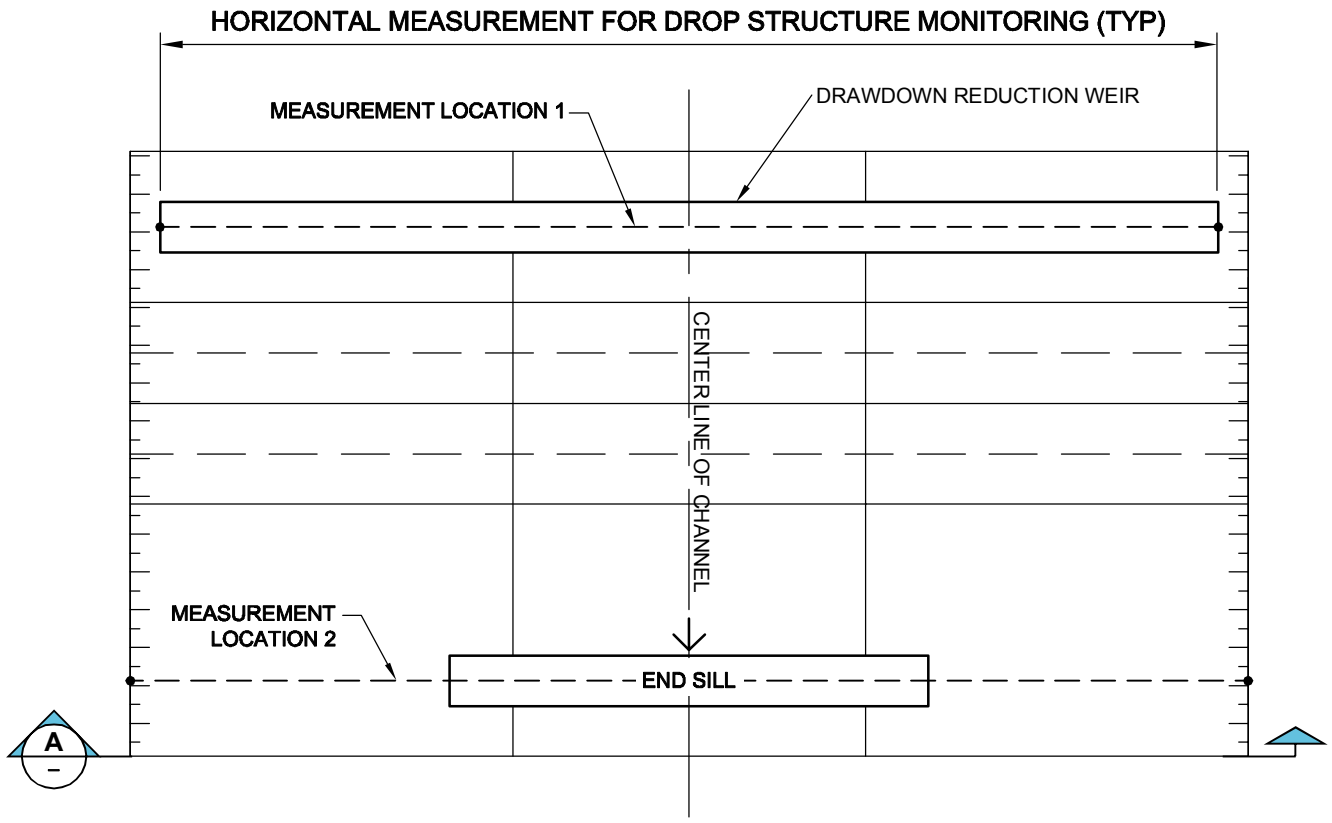
Table B-4) Open Pit Area - Summary

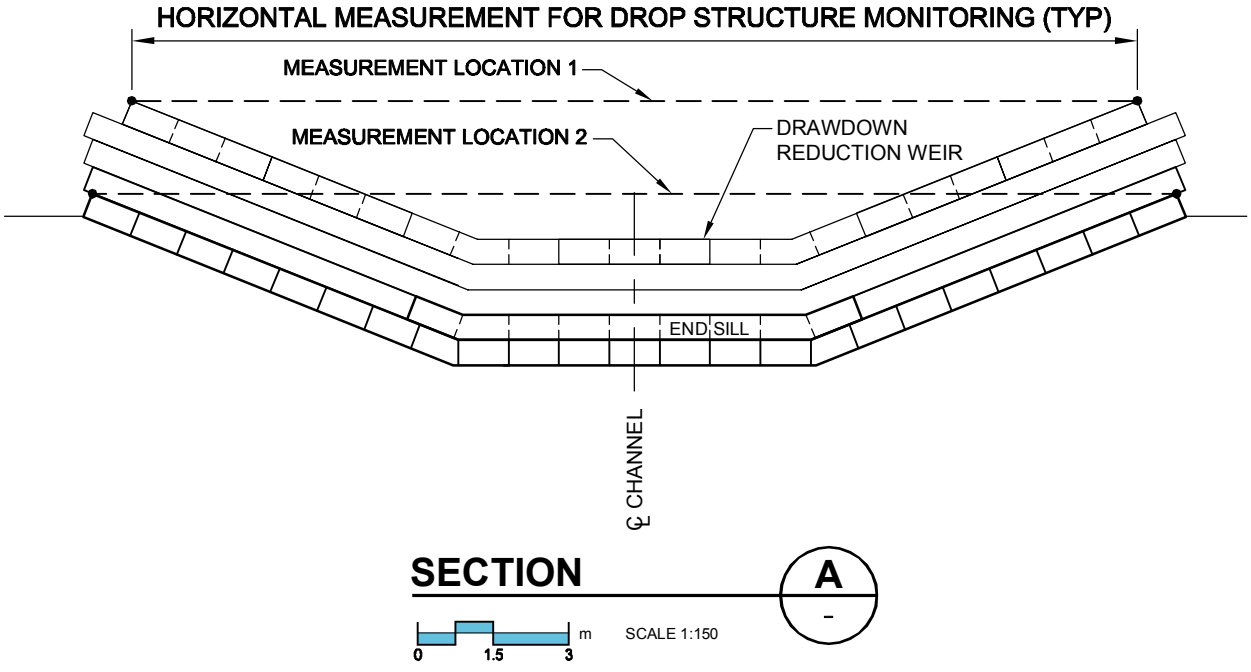
Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1493	19-Jun-01	n/a								
	20-Aug-03	7,146,801.56	513,576.66	453.00	0.00			0.00		
	28-Jul-04	7,146,801.65	513,576.65	452.96	0.08	0.08	0.09	-0.04	-0.04	-0.04
	28-Jul-06	7,146,801.85	513,576.60	452.89	0.29	0.21	0.10	-0.11	-0.07	-0.03
	9-Jul-08	7,146,802.00	513,576.60	452.79	0.44	0.15	0.08	-0.21	-0.10	-0.05
	20-Jul-10	7,146,802.12	513,576.56	452.72	0.57	0.13	0.06	-0.28	-0.07	-0.03
	25-Sep-10	7,146,802.12	513,576.55	452.67	0.57	0.00	0.01	-0.33	-0.05	-0.28
	11-Aug-11	7,146,802.22	513,576.52	452.66	0.67	0.11	0.12	-0.34	-0.02	-0.02
1830	19-Jun-01	n/a								
	20-Aug-03	7,146,523.77	513,455.68	471.67	0.00			0.00		
	28-Jul-04	7,146,523.79	513,455.68	471.68	0.02	0.02	0.02	0.01	0.01	0.01
	28-Jul-06	7,146,523.79	513,455.68	471.73	0.02	0.01	0.00	0.06	0.05	0.03
	9-Jul-08	7,146,523.78	513,455.68	471.70	0.02	0.01	0.00	0.03	-0.03	-0.02
	20-Jul-10	7,146,523.80	513,455.68	471.71	0.03	0.02	0.01	0.04	0.01	0.01
	25-Sep-10	7,146,523.81	513,455.69	471.69	0.04	0.01	0.06	0.02	-0.02	-0.12
	11-Aug-11	7,146,523.80	513,455.67	471.69	0.03	0.02	0.02	0.02	0.00	0.00
1832	19-Jun-01	n/a								
	20-Aug-03	7,146,537.06	513,483.13	473.62	0.00			0.00		
	28-Jul-04	7,146,537.06	513,483.16	473.58	0.03	0.03	0.03	-0.04	-0.04	-0.05
	28-Jul-06	7,146,537.04	513,483.16	473.68	0.04	0.02	0.01	0.06	0.10	0.05
	9-Jul-08	7,146,537.07	513,483.17	473.65	0.03	0.03	0.02	0.02	-0.04	-0.02
	20-Jul-10	7,146,537.08	513,483.16	473.65	0.03	0.01	0.01	0.03	0.00	0.00
	25-Sep-10	7,146,537.09	513,483.17	473.65	0.05	0.02	0.12	0.03	0.00	0.01
	11-Aug-11	7,146,537.07	513,483.16	473.63	0.03	0.03	0.03	0.01	-0.02	-0.02
1837	19-Jun-01	n/a								
	20-Aug-03	7,146,502.87	513,411.47	470.22	0.00			0.00		
	28-Jul-04	7,146,502.89	513,411.46	470.20	0.02	0.02	0.02	-0.02	-0.02	-0.02
	28-Jul-06	7,146,502.88	513,411.44	470.24	0.02	0.02	0.01	0.02	0.03	0.02
	9-Jul-08	7,146,502.89	513,411.44	470.25	0.03	0.01	0.01	0.03	0.01	0.01
	20-Jul-10	7,146,502.91	513,411.47	470.26	0.04	0.04	0.02	0.04	0.01	0.01
	25-Sep-10	7,146,502.90	513,411.47	470.22	0.03	0.01	0.04	0.00	-0.05	-0.25
	11-Aug-11	7,146,502.90	513,411.46	470.25	0.03	0.01	0.02	0.03	0.03	0.03
1838	19-Jun-01	n/a								
	20-Aug-03	7,146,491.91	513,380.52	468.34	0.00			0.00		
	28-Jul-04	7,146,491.89	513,380.52	468.33	0.02	0.02	0.02	-0.01	-0.01	-0.01
	28-Jul-06	7,146,491.87	513,380.53	468.38	0.04	0.02	0.01	0.04	0.05	0.03
	9-Jul-08	7,146,491.89	513,380.52	468.38	0.02	0.01	0.01	0.04	0.00	0.00
	20-Jul-10	7,146,491.89	513,380.53	468.39	0.02	0.01	0.00	0.05	0.00	0.00
	25-Sep-10	7,146,491.88	513,380.53	468.36	0.03	0.01	0.04	0.02	-0.02	-0.13
	11-Aug-11	7,146,491.89	513,380.52	468.37	0.02	0.01	0.01	0.03	0.01	0.01
1839	19-Jun-01	n/a								
	20-Aug-03	7,146,861.35	513,285.18	428.66	0.00			0.00		
	28-Jul-04	7,146,861.34	513,285.17	428.61	0.02	0.02	0.02	-0.05	-0.05	-0.05
	28-Jul-06	7,146,861.40	513,285.20	428.60	0.05	0.07	0.03	-0.06	-0.01	-0.01
	9-Jul-08	7,146,861.36	513,285.15	428.39	0.03	0.06	0.03	-0.28	-0.21	-0.11
	20-Jul-10	7,146,861.43	513,285.17	428.32	0.08	0.07	0.04	-0.34	-0.06	-0.03
	25-Sep-10	7,146,861.41	513,285.16	428.29	0.06	0.02	0.11	-0.37	-0.04	-0.20
	11-Aug-11	7,146,861.41	513,285.14	428.23	0.07	0.01	0.02	-0.43	-0.06	-0.07

Average	1999 to 2001	n/a	n/a	n/a	n/a	n/a	n/a
	2001 to 2003	n/a	n/a	n/a	n/a	n/a	n/a
	2003 to 2004	0.03	0.03	0.03	-0.03	-0.03	-0.03
	2004 to 2006	0.08	0.06	0.03	0.00	0.03	0.01
	2006 to 2008	0.10	0.05	0.02	-0.06	-0.06	-0.03
	2008 to 2010	0.13	0.05	0.02	-0.08	-0.02	-0.01
	Jul 2010 to Sep 2010	0.13	0.01	0.06	-0.11	-0.03	-0.16
	Jul 2010 to Aug 2011		**0.03**	**0.03**		**-0.04**	**-0.04**
	Sept 2010 to Aug 2011	**0.14**	**0.03**	**0.04**	**-0.11**	**-0.01**	**-0.01**
Maximum	1999 to 2001	n/a	n/a	n/a	n/a	n/a	n/a
	2001 to 2003	n/a	n/a	n/a	n/a	n/a	n/a
	2003 to 2004	0.08	0.08	0.09	0.01	0.01	0.01
	2004 to 2006	0.29	0.21	0.10	0.06	0.10	0.05
	2006 to 2008	0.44	0.15	0.08	0.04	0.01	0.01
	2008 to 2010	0.57	0.13	0.06	0.05	0.01	0.01
	Jul 2010 to Sep 2010	0.57	0.02	0.12	0.03	0.00	0.01
	Jul 2010 to Aug 2011		**0.11**	**0.10**		**-0.01**	**-0.01**
	Sept 2010 to Aug 2011	**0.67**	**0.11**	**0.12**	**0.03**	**0.03**	**0.03**
Minimum	1999 to 2001	n/a	n/a	n/a	n/a	n/a	n/a
	2001 to 2003	n/a	n/a	n/a	n/a	n/a	n/a
	2003 to 2004	0.02	0.02	0.02	-0.05	-0.05	-0.05
	2004 to 2006	0.02	0.01	0.00	-0.11	-0.07	-0.03
	2006 to 2008	0.02	0.01	0.00	-0.28	-0.21	-0.11
	2008 to 2010	0.02	0.01	0.00	-0.34	-0.07	-0.03
	Jul 2010 to Sep 2010	0.03	0.00	0.01	-0.37	-0.05	-0.28
	Jul 2010 to Aug 2011		**0.01**	**0.01**		**-0.09**	**-0.09**
	Sept 2010 to Aug 2011	**0.02**	**0.01**	**0.01**	**-0.43**	**-0.06**	**-0.07**

Appendix C

Gabion Drop Structure Movements





SECTION A – A

0 1.5 3 m SCALE 1:150

Yukon Government
Clinton Creek
2010 Site Inspection and Long Term Performance Monitoring

Drop Structure Measurements

AECOM

Drawing - C-1

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - 2011 Site Inspection & Long Term Performance Monitoring
Job No.: 60217901
Date: 31-May-11

Table C-1) Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure Monitoring
Horizontal Measurements - Summary

Measurement Location #1 - Across Drawdown Weir

Drop Structure	Horizontal Distance Across Drop Structure (metres)										Incremental Change (m)			Average Annual Rate Of Movement (m/yr)		Total Change (m)	Comment
	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date							
	29-Jul-04	22-May-05	21-Jun-06	3-Oct-06	4-Jul-07	21-Sep-07	8-Sep-08	16-Jul-09	20-Jul-10	31-May-11	Sept 2008 to Jul 2009	Jul 2009 to Jul 2010	Jul 2010 to May 2011	July 2009 to July 2010	Jul 2010 to May 2011		
1	19.62	19.57	19.57	19.58	19.51	19.55	19.48	19.40	19.35	19.22	-0.08	-0.05	-0.13	-0.05	-0.15	-0.40	survey tags 1 & 2
2	19.49	19.48	19.48	19.48	19.43	19.48	19.46	19.41	19.40	19.30	-0.05	-0.01	-0.10	-0.01	-0.12	-0.19	survey tags 5 & 6
3	19.44	19.32	19.25	19.21	19.14	19.17	19.08	19.00	18.99	18.85	-0.08	-0.01	-0.14	-0.01	-0.16	-0.59	survey tags 9 & 10
4	n/a	19.61	19.55	19.51	19.43	19.46	19.40	19.35	19.29	19.16	-0.05	-0.06	-0.13	-0.06	-0.15	-0.45	survey tags 13 & 14

Measurement Location #2 - Across Lower Tier In-Line With End Sill

Drop Structure	Horizontal Distance Across Drop Structure (metres)										Incremental Change (m)			Average Annual Rate Of Movement (m/yr)		Total Change (m)	Comment
	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date							
	29-Jul-04	22-May-05	21-Jun-06	3-Oct-06	4-Jul-07	21-Sep-07	8-Sep-08	16-Jul-09	20-Jul-10	31-May-11	Sept 2008 to Jul 2009	Jul 2009 to Jul 2010	Jul 2010 to May 2011	July 2009 to July 2010	Jul 2010 to May 2011		
1	n/a	21.00	20.99	20.90	20.83	20.85	20.77	20.66	20.58	20.40	-0.11	-0.08	-0.18	-0.08	-0.21	-0.60	survey tags 3 & 4
2	n/a	21.15	21.06	21.05	21.01	21.01	20.95	20.90	20.83	20.70	-0.05	-0.07	-0.13	-0.07	-0.15	-0.45	survey tags 7 & 8
3	n/a	21.50	21.31	21.31	21.25	21.24	21.17	21.09	21.03	20.90	-0.08	-0.06	-0.13	-0.06	-0.15	-0.60	survey tags 11 & 12
4	n/a	21.48	21.46	21.36	21.34	21.35	21.30	21.27	21.20	n/a	-0.03	-0.07	n/a	-0.07	n/a	-0.28	survey tags 15 & 16

Year	Monitored By
2004, 2005	UMA
2006	Gov of Yukon
2007	UMA (July) / GY Survey tags installed in September 2006
2008	Gov of Yukon
2009 - 2011	AECOM

Average	**-0.07**	**-0.05**	**-0.13**	**-0.05**	**-0.16**	**-0.45**
Minimum	**-0.03**	**-0.01**	**-0.10**	**-0.01**	**-0.12**	**-0.19**
Maximum	**-0.11**	**-0.08**	**-0.18**	**-0.08**	**-0.21**	**-0.60**

Horizontal Measurement Locations

Measurement Location #1 - Across The Drawdown Weir

Drop Structure	Incremental Change Summary								
	Jul 04 to May 05	May 05 to Jun 06	Jun 06 to Oct 06	Oct 06 to Jul 07	Jul 07 to Sept 07	Sept 07 to Sept 08	Sep 08 to Jul 09	Jul 09 to Jul 10	Jul 10 to May 11
1	-0.05	0.00	0.01	-0.07	0.04	-0.07	-0.08	-0.05	-0.13
2	-0.01	0.00	0.00	-0.05	0.05	-0.02	-0.05	-0.01	-0.10
3	-0.12	-0.07	-0.04	-0.07	0.03	-0.09	-0.08	-0.01	-0.14
4		-0.06	-0.04	-0.08	0.03	-0.06	-0.05	-0.06	-0.13

Measurement Location #2 - Across Lower Tier

Drop Structure	Incremental Change Summary								
	Jul 04 to May 05	May 05 to Jun 06	Jun 06 to Oct 06	Oct 06 to Jul 07	Jul 07 to Sept 07	Sept 07 to Sept 08	Sep 08 to Jul 09	Jul 09 to Jul 10	Jul 10 to May 11
1	n/a	-0.01	-0.09	-0.07	0.02	-0.08	-0.11	-0.08	-0.18
2	n/a	-0.09	-0.01	-0.04	0.00	-0.06	-0.05	-0.07	-0.13
3	n/a	-0.19	0.00	-0.06	-0.01	-0.07	-0.08	-0.06	-0.13
4	n/a	-0.02	-0.10	-0.02	0.01	-0.05	-0.03	-0.07	n/a

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60217901
Date: May 31, 2011

Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure #1 Monitoring

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	0	0	19.62								
22-May-05	297	297	19.57	-0.05	-0.05	**-0.06**	21.00				
21-Jun-06	692	395	19.57	-0.05	0.00	**0.00**	20.99	-0.01	-0.01	**-0.01**	
3-Oct-06	796	104	19.58	-0.04	0.01	**0.04**	20.90	-0.10	-0.09	**-0.32**	
4-Jul-07	1,070	274	19.51	-0.11	-0.07	**-0.09**	20.83	-0.17	-0.07	**-0.09**	
21-Sep-07	1,149	79	19.55	-0.07	0.04	**0.18**	20.85	-0.15	0.02	**0.09**	
8-Sep-08	1,502	353	19.48	-0.14	-0.07	**-0.07**	20.77	-0.23	-0.08	**-0.08**	
16-Jul-09	1,813	311	19.40	-0.22	-0.08	**-0.09**	20.66	-0.34	-0.11	**-0.13**	
20-Jul-10	2,182	369	19.35	-0.27	-0.05	**-0.05**	20.58	-0.42	-0.08	**-0.08**	
31-May-11	2,497	315	19.22	-0.40	-0.13	**-0.15**	20.40	-0.60	-0.18	**-0.21**	large rain event Aug 2010

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60217901
Date: May 31, 2011

Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure #2 Monitoring

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	0	0	19.49								
22-May-05	297	297	19.48	-0.01	-0.01	**-0.01**	21.15				
21-Jun-06	692	395	19.48	-0.01	0.00	**0.00**	21.06	-0.09	-0.09	**-0.08**	
3-Oct-06	796	104	19.48	-0.01	0.00	**0.00**	21.05	-0.10	-0.01	**-0.04**	
4-Jul-07	1,070	274	19.43	-0.06	-0.05	**-0.07**	21.01	-0.14	-0.04	**-0.05**	
21-Sep-07	1,149	79	19.48	-0.01	0.05	**0.23**	21.01	-0.14	0.00	**0.00**	
8-Sep-08	1,502	353	19.46	-0.03	-0.02	**-0.02**	20.95	-0.20	-0.06	**-0.06**	
16-Jul-09	1,813	311	19.41	-0.08	-0.05	**-0.06**	20.90	-0.25	-0.05	**-0.06**	
20-Jul-10	2,182	369	19.40	-0.09	-0.01	**-0.01**	20.83	-0.32	-0.07	**-0.07**	
31-May-11	2,497	315	19.30	-0.19	-0.10	**-0.12**	20.70	-0.45	-0.13	**-0.15**	large rain event Aug 2010

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60217901
Date: May 31, 2011

Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure #3 Monitoring

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	0	0	19.44								
22-May-05	297	297	19.32	-0.12	-0.12	**-0.15**	21.50				
21-Jun-06	692	395	19.25	-0.19	-0.07	**-0.06**	21.31	-0.19	-0.19	**-0.18**	
3-Oct-06	796	104	19.21	-0.23	-0.04	**-0.14**	21.31	-0.19	0.00	**0.00**	
4-Jul-07	1,070	274	19.14	-0.30	-0.07	**-0.09**	21.25	-0.25	-0.06	**-0.08**	
21-Sep-07	1,149	79	19.17	-0.27	0.03	**0.14**	21.24	-0.26	-0.01	**-0.05**	
8-Sep-08	1,502	353	19.08	-0.36	-0.09	**-0.09**	21.17	-0.33	-0.07	**-0.07**	
16-Jul-09	1,813	311	19.00	-0.44	-0.08	**-0.09**	21.09	-0.41	-0.08	**-0.09**	
20-Jul-10	2,182	369	18.99	-0.45	-0.01	**-0.01**	21.03	-0.47	-0.06	**-0.06**	
31-May-11	2,497	315	18.85	-0.59	-0.14	**-0.16**	20.90	-0.60	-0.13	**-0.15**	large rain event Aug 2010

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60217901
Date: May 31, 2011

Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure #4 Monitoring

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	n/a										
22-May-05	0	0	19.61				21.48				
21-Jun-06	395	395	19.55	-0.06	-0.06	**-0.06**	21.46	-0.02	-0.02	**-0.02**	
3-Oct-06	499	104	19.51	-0.10	-0.04	**-0.14**	21.36	-0.12	-0.10	**-0.35**	
4-Jul-07	773	274	19.43	-0.18	-0.08	**-0.11**	21.34	-0.14	-0.02	**-0.03**	
21-Sep-07	852	79	19.46	-0.15	0.03	**0.14**	21.35	-0.13	0.01	**0.05**	
8-Sep-08	1205	353	19.40	-0.21	-0.06	**-0.06**	21.30	-0.18	-0.05	**-0.05**	
16-Jul-09	1516	311	19.35	-0.26	-0.05	**-0.06**	21.27	-0.21	-0.03	**-0.04**	
20-Jul-10	1885	369	19.29	-0.32	-0.06	**-0.06**	21.20	-0.28	-0.07	**-0.07**	large rain event Aug 2010
31-May-11	2200	315	19.16	-0.45	-0.13	**-0.15**	n/a	n/a	n/a	n/a	End sill washed out Aug 2010

Appendix D

Tailings Pile Movement Monitoring Results

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

Project No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D1) Tailings Stability - Upper Slopes (Elevation > 530 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1483	21-Aug-03	7,148,233.01	513,412.67	609.08	0	0	0.00			0.00		
	28-Jul-04	7,148,233.01	513,412.69	609.02	342	342	0.03	0.03	0.03	-0.06	-0.06	-0.06
	23-Sep-04	7,148,233.02	513,412.68	609.00	399	57	0.02	0.02	0.10	-0.08	-0.03	-0.16
	17-Sep-05	7,148,233.03	513,412.71	608.96	758	359	0.05	0.03	0.03	-0.12	-0.04	-0.04
	28-Jul-06	7,148,233.06	513,412.70	609.00	1,072	314	0.06	0.03	0.04	-0.08	0.04	0.05
	9-Jul-08	7,148,233.04	513,412.75	608.94	1,784	712	0.08	0.05	0.02	-0.14	-0.06	-0.03
	20-Jul-10	7,148,233.04	513,412.71	608.90	2,525	741	0.06	0.03	0.02	-0.18	-0.04	-0.02
	25-Sep-10	7,148,233.05	513,412.74	608.87	2,592	67	0.08	0.02	0.12	-0.21	-0.02	-0.12
	11-Aug-11	7,148,233.04	513,412.75	608.85	2,912	320	0.09	0.02	0.02	-0.23	-0.02	-0.03
26	21-Aug-03	7,148,341.45	513,483.53	575.11	9,275	7,007	0.00		0.04	0.00		-0.02
	28-Jul-04	7,148,341.48	513,483.55	575.10	9,617	342	0.03	0.04	0.04	-0.01	-0.01	-0.01
	23-Sep-04	7,148,341.49	513,483.55	575.08	9,674	57	0.03	0.02	0.10	-0.03	-0.01	-0.10
	17-Sep-05	7,148,341.47	513,483.57	575.01	10,033	359	0.04	0.04	0.04	-0.10	-0.07	-0.07
	28-Jul-06	7,148,341.50	513,483.58	575.07	10,347	314	0.06	0.04	0.04	-0.04	0.06	0.07
	9-Jul-08	7,148,341.50	513,483.61	575.02	11,059	712	0.09	0.04	0.02	-0.09	-0.05	-0.03
	20-Jul-10	7,148,341.49	513,483.62	575.01	11800.0	741	0.10	0.02	0.01	-0.10	-0.01	-0.01
	25-Sep-10	7,148,341.49	513,483.66	574.97	11867.0	67	0.13	0.04	0.19	-0.14	-0.04	-0.20
	11-Aug-11	7,148,341.50	513,483.66	574.96	12187.0	320	0.14	0.01	0.01	-0.15	-0.01	-0.01
80-2	21-Aug-03	7,148,290.05	513,549.41	552.78	7,294	7,007	0.00		0.05	0.00		-0.03
	28-Jul-04	7,148,290.09	513,549.50	552.65	7,636	342	0.09	0.09	0.10	-0.13	-0.13	-0.14
	23-Sep-04	7,148,290.08	513,549.48	552.63	7,693	57	0.08	0.01	0.09	-0.15	-0.02	-0.12
	17-Sep-05	7,148,290.08	513,549.57	552.50	8,052	359	0.16	0.09	0.09	-0.28	-0.14	-0.14
	28-Jul-06	7,148,290.09	513,549.60	552.54	8,366	314	0.20	0.03	0.04	-0.24	0.05	0.05
	9-Jul-08	7,148,290.08	513,549.69	552.45	9,078	712	0.28	0.09	0.05	-0.33	-0.10	-0.05
	20-Jul-10	7,148,290.09	513,549.75	552.37	9,819	741	0.34	0.06	0.03	-0.41	-0.08	-0.04
	25-Sep-10	7,148,290.08	513,549.78	552.33	9,886	67	0.37	0.03	0.16	-0.45	-0.03	-0.19
	11-Aug-11	7,148,290.09	513,549.83	552.28	10,206	320	0.42	0.05	0.05	-0.50	-0.05	-0.06
26-A	21-Aug-03	7,148,339.30	513,540.50	557.82	9,275	7,007	0.00		0.04	0.00		-0.04
	28-Jul-04	7,148,339.32	513,540.52	557.75	9,617	342	0.03	0.03	0.03	-0.07	-0.07	-0.08
	23-Sep-04	7,148,339.32	513,540.49	557.74	9,674	57	0.02	0.02	0.15	-0.08	-0.01	-0.06
	17-Sep-05	7,148,339.34	513,540.56	557.65	10,033	359	0.07	0.07	0.07	-0.18	-0.10	-0.10
	28-Jul-06	7,148,339.33	513,540.54	557.71	10,347	314	0.05	0.02	0.03	-0.11	0.06	0.07
	9-Jul-08	7,148,339.35	513,540.59	557.67	11,059	712	0.10	0.05	0.03	-0.15	-0.04	-0.02
	20-Jul-10	7,148,339.36	513,540.57	557.61	11,800	741	0.09	0.03	0.02	-0.21	-0.06	-0.03
	25-Sep-10	7,148,339.35	513,540.60	557.60	11,867	67	0.11	0.04	0.19	-0.22	-0.01	-0.04
	11-Aug-11	7,148,339.37	513,540.61	557.59	12,187	320	0.12	0.02	0.02	-0.23	-0.01	-0.01
80-1	21-Aug-03	7,148,407.98	513,543.04	555.71	7,294	7,007	0.00		0.09	0.00		-0.10
	28-Jul-04	7,148,408.01	513,543.07	555.61	7,636	342	0.04	0.04	0.05	-0.10	-0.10	-0.10
	23-Sep-04	7,148,408.03	513,543.06	555.61	7,693	57	0.06	0.03	0.16	-0.10	0.00	0.00
	17-Sep-05	7,148,408.01	513,543.12	555.49	8,052	359	0.09	0.06	0.06	-0.22	-0.12	-0.13
	28-Jul-06	7,148,408.02	513,543.14	555.55	8,366	314	0.11	0.03	0.03	-0.16	0.06	0.07
	9-Jul-08	7,148,408.04	513,543.21	555.48	9,078	712	0.18	0.07	0.04	-0.23	-0.08	-0.04
	20-Jul-10	7,148,408.03	513,543.24	555.43	9,819	741	0.21	0.03	0.01	-0.29	-0.05	-0.03
	25-Sep-10	7,148,408.04	513,543.27	555.40	9,886	67	0.24	0.03	0.17	-0.31	-0.03	-0.15
	11-Aug-11	7,148,408.05	513,543.29	555.37	10,206	320	0.26	0.02	0.02	-0.34	-0.03	-0.03
BH-14 (T7)	21-Aug-03	7,148,488.36	513,563.01	530.33	0	0	0.00			0.00		
	28-Jul-04	7,148,488.36	513,563.01	530.29	342	342	0.01	0.01	0.01	-0.04	-0.04	-0.05
	23-Sep-04	7,148,488.33	513,562.99	530.30	399	57	0.03	0.03	0.22	-0.03	0.01	0.08
	17-Sep-05	7,148,488.34	513,562.87	530.24	758	359	0.14	0.12	0.12	-0.09	-0.06	-0.06
	28-Jul-06	7,148,488.37	513,563.02	530.34	1,072	314	0.02	0.16	0.18	0.01	0.10	0.11
	9-Jul-08	7,148,488.43	513,563.07	530.36	1,784	712	0.10	0.07	0.04	0.03	0.02	0.01
	20-Jul-10	7,148,488.36	513,562.88	530.38	2,525	741	0.14	0.21	0.10	0.05	0.02	0.01
	25-Sep-10	7,148,488.36	513,562.91	530.35	2,592	67	0.11	0.03	0.16	0.02	-0.03	-0.17
	11-Aug-11	7,148,488.37	513,562.90	530.35	2,912	320	0.11	0.01	0.01	0.02	0.00	0.00
1495	21-Aug-03	7,148,526.59	513,528.92	529.06	0	0	0.00			0.00		
	28-Jul-04	7,148,526.62	513,528.97	529.05	342	342	0.06	0.06	0.06	-0.01	-0.01	-0.01
	23-Sep-04	7,148,526.65	513,528.95	529.07	399	57	0.06	0.03	0.20	0.01	0.01	0.08
	17-Sep-05	7,148,526.65	513,529.00	528.97	758	359	0.10	0.05	0.05	-0.09	-0.10	-0.10
	28-Jul-06	7,148,526.67	513,529.02	529.06	1,072	314	0.13	0.03	0.03	0.00	0.09	0.11
	9-Jul-08	7,148,526.69	513,529.07	529.04	1,784	712	0.18	0.06	0.03	-0.02	-0.01	-0.01
	20-Jul-10	7,148,526.71	513,529.10	529.06	2,525	741	0.22	0.03	0.02	0.00	0.01	0.01
	25-Sep-10	7,148,526.72	513,529.11	529.03	2,592	67	0.23	0.01	0.08	-0.03	-0.02	-0.14
	11-Aug-11	7,148,526.71	513,529.13	529.01	2,912	320	0.24	0.02	0.02	-0.05	-0.02	-0.02

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

Project No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D1) Tailings Stability - Upper Slopes (Elevation > 530 m)

Average	Aug 03 to Jul 04	0.04	0.04	0.04	-0.06	-0.06	-0.06
	Jul 04 to Sep 04	0.04	0.02	0.15	-0.07	-0.01	-0.04
	Sep 04 to Sep 05	0.09	0.06	0.07	-0.16	-0.09	-0.09
	Sep 05 to Jul 06	0.09	0.05	0.06	-0.09	0.07	0.08
	Jul 06 to Jul 08	0.15	0.06	0.03	-0.13	-0.04	-0.02
	Jul 08 to Jul 10	0.16	0.06	0.03	-0.16	-0.03	-0.01
	Jul 10 to Sept 10	**0.18**	**0.03**	**0.15**	**-0.19**	**-0.03**	**-0.14**
	Sept 10 to Aug 11	**0.20**	**0.02**	**0.02**	**-0.21**	**-0.02**	**-0.02**
Maximum	Aug 03 to Jul 04	0.09	0.09	0.10	-0.01	-0.01	-0.01
	Jul 04 to Sep 04	0.08	0.03	0.22	0.01	0.01	0.08
	Sep 04 to Sep 05	0.16	0.12	0.12	-0.09	-0.04	-0.04
	Sep 05 to Jul 06	0.20	0.16	0.18	0.01	0.10	0.11
	Jul 06 to Jul 08	0.28	0.09	0.05	0.03	0.02	0.01
	Jul 08 to Jul 10	0.34	0.21	0.10	0.05	0.02	0.01
	Jul 10 to Sept 10	**0.37**	**0.04**	**0.19**	**0.02**	**-0.01**	**-0.04**
	Sept 10 to Aug 11	**0.42**	**0.05**	**0.05**	**0.02**	**0.00**	**0.00**
Minimum	Aug 03 to Jul 04	0.01	0.01	0.01	-0.13	-0.13	-0.14
	Jul 04 to Sep 04	0.02	0.01	0.09	-0.15	-0.03	-0.16
	Sep 04 to Sep 05	0.04	0.03	0.03	-0.28	-0.14	-0.14
	Sep 05 to Jul 06	0.02	0.02	0.03	-0.24	0.04	0.05
	Jul 06 to Jul 08	0.08	0.04	0.02	-0.33	-0.10	-0.05
	Jul 08 to Jul 10	0.06	0.02	0.01	-0.41	-0.08	-0.04
	Jul 10 to Sept 10	**0.08**	**0.01**	**0.08**	**-0.45**	**-0.04**	**-0.20**
	Sept 10 to Aug 11	**0.09**	**0.01**	**0.01**	**-0.50**	**-0.05**	**-0.06**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

Project No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D1) Tailings Stability - Upper Slopes (Elevation > 530 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1492	21-Aug-03	7,148,053.74	513,409.91	610.07	1,496	1,496	0.00		0.07	0.00		-0.10
	28-Jul-04	7,148,053.72	513,409.97	609.98	1,838	342	0.06	0.06	0.07	-0.09	-0.09	-0.09
	23-Sep-04	7,148,053.73	513,409.95	609.98	1,895	57	0.04	0.02	0.14	-0.09	0.00	-0.01
	17-Sep-05	7,148,053.69	513,410.03	609.80	2,254	359	0.12	0.08	0.09	-0.27	-0.18	-0.19
	28-Jul-06	7,148,053.68	513,410.04	609.79	2,568	314	0.14	0.02	0.02	-0.28	-0.01	-0.01
	9-Jul-08	7,148,053.66	513,410.14	609.70	3,280	712	0.24	0.10	0.05	-0.38	-0.09	-0.05
	20-Jul-10	7,148,053.64	513,410.20	609.61	4,021	741	0.31	0.07	0.03	-0.46	-0.08	-0.04
	25-Sep-10	7,148,053.62	513,410.21	609.59	4,088	67	0.32	0.02	0.10	-0.48	-0.02	-0.14
	11-Aug-11	7,148,053.61	513,410.24	609.53	4,408	320	0.36	0.04	0.04	-0.54	-0.06	-0.07
24	21-Aug-03	7,148,033.83	513,525.34	549.69	9,275	7,007	0.00		0.47	0.00		-0.29
	28-Jul-04	7,148,033.87	513,525.57	549.55	9,617	342	0.23	0.23	0.24	-0.14	-0.14	-0.15
	23-Sep-04	7,148,033.90	513,525.56	549.55	9,674	57	0.23	0.03	0.19	-0.14	0.01	0.04
	17-Sep-05	7,148,033.91	513,525.74	549.37	10,033	359	0.41	0.18	0.18	-0.33	-0.19	-0.19
	28-Jul-06	7,148,033.92	513,525.89	549.37	10,347	313	0.56	0.15	0.18	-0.32	0.00	0.00
	9-Jul-08	7,148,033.94	513,526.07	549.28	11,059	712	0.73	0.17	0.09	-0.41	-0.09	-0.05
	20-Jul-10	7,148,033.97	513,526.17	549.24	11,800	741	0.84	0.11	0.06	-0.46	-0.04	-0.02
	25-Sep-10	7,148,033.95	513,526.17	549.22	11,867	67	0.84	0.02	0.12	-0.47	-0.02	-0.10
	11-Aug-11	7,148,033.96	513,526.22	549.17	12,187	320	0.89	0.05	0.05	-0.52	-0.04	-0.05

Average	Aug 03 to Jul 04	0.14	0.14	0.15	-0.11	-0.11	-0.12
	Jul 04 to Sep 04	0.13	0.03	0.17	-0.11	0.00	0.01
	Sep 04 to Sep 05	0.26	0.13	0.13	-0.30	-0.19	-0.19
	Sep 05 to Jul 06	0.35	0.09	0.10	-0.30	0.00	0.00
	Jul 06 to Jul 08	0.49	0.14	0.07	-0.39	-0.09	-0.05
	Jul 08 to Jul 10	0.58	0.09	0.04	-0.46	-0.06	-0.03
	Jul 10 to Sept 10	**0.58**	**0.02**	**0.11**	**-0.48**	**-0.02**	**-0.12**
	Sept 10 to Aug 11	**0.62**	**0.04**	**0.05**	**-0.53**	**-0.05**	**-0.06**
Maximum	Aug 03 to Jul 04	0.23	0.23	0.24	-0.09	-0.09	-0.09
	Jul 04 to Sep 04	0.23	0.03	0.19	-0.09	0.01	0.04
	Sep 04 to Sep 05	0.41	0.18	0.18	-0.27	-0.18	-0.19
	Sep 05 to Jul 06	0.56	0.15	0.18	-0.28	0.00	0.00
	Jul 06 to Jul 08	0.73	0.17	0.09	-0.38	-0.09	-0.05
	Jul 08 to Jul 10	0.84	0.11	0.06	-0.46	-0.04	-0.02
	Jul 10 to Sept 10	**0.84**	**0.02**	**0.12**	**-0.47**	**-0.02**	**-0.10**
	Sept 10 to Aug 11	**0.89**	**0.05**	**0.05**	**-0.52**	**-0.04**	**-0.05**
Minimum	Aug 03 to Jul 04	0.06	0.06	0.07	-0.14	-0.14	-0.15
	Jul 04 to Sep 04	0.04	0.02	0.14	-0.14	0.00	-0.01
	Sep 04 to Sep 05	0.12	0.08	0.09	-0.33	-0.19	-0.19
	Sep 05 to Jul 06	0.14	0.02	0.02	-0.32	-0.01	-0.01
	Jul 06 to Jul 08	0.24	0.10	0.05	-0.41	-0.09	-0.05
	Jul 08 to Jul 10	0.31	0.07	0.03	-0.46	-0.08	-0.04
	Jul 10 to Sept 10	**0.32**	**0.02**	**0.10**	**-0.48**	**-0.02**	**-0.14**
	Sept 10 to Aug 11	**0.36**	**0.04**	**0.04**	**-0.54**	**-0.06**	**-0.07**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
80-4	21-Aug-03	7,148,201.56	513,688.82	501.73	7,294	7,007	0.00		0.75	0.00		-0.28
	28-Jul-04	7,148,201.69	513,689.40	501.49	7,636	342	0.59	0.59	0.63	-0.24	-0.24	-0.26
	23-Sep-04	7,148,201.73	513,689.47	501.42	7,693	57	0.67	0.09	0.56	-0.31	-0.07	-0.47
	17-Sep-05	7,148,201.81	513,689.99	501.18	8,052	359	1.19	0.52	0.53	-0.55	-0.24	-0.24
	28-Jul-06	7,148,201.90	513,690.35	501.14	8,366	314	1.56	0.37	0.43	-0.59	-0.04	-0.05
	9-Jul-08	7,148,202.02	513,690.93	500.95	9,078	712	2.16	0.60	0.31	-0.78	-0.19	-0.10
	20-Jul-10	7,148,202.11	513,691.36	500.78	9,819	741	2.59	0.43	0.21	-0.95	-0.17	-0.08
	25-Sep-10	7,148,202.14	513,691.44	500.75	9,886	67	2.68	0.09	0.48	-0.98	-0.04	-0.21
	11-Aug-11	7,148,202.18	513,691.65	500.66	10,206	320	2.89	0.21	0.24	-1.08	-0.09	-0.10
80-5	21-Aug-03	7,148,249.32	513,718.34	481.19	7,294	7,007	0.00		0.91	0.00		-0.43
	28-Jul-04	7,148,249.41	513,718.73	481.10	7,636	342	0.40	0.40	0.43	-0.09	-0.09	-0.10
	23-Sep-04	7,148,249.42	513,718.77	481.07	7,693	57	0.44	0.04	0.28	-0.12	-0.02	-0.16
	17-Sep-05	7,148,249.49	513,719.16	480.92	8,052	359	0.84	0.39	0.40	-0.27	-0.16	-0.16
	28-Jul-06	7,148,249.55	513,719.41	480.96	8,366	314	1.09	0.26	0.30	-0.23	0.04	0.05
	9-Jul-08	7,148,249.63	513,719.85	480.86	9,078	712	1.54	0.45	0.23	-0.33	-0.10	-0.05
	20-Jul-10	7,148,249.68	513,720.15	480.77	9,819	741	1.85	0.31	0.15	-0.42	-0.08	-0.04
	25-Sep-10	7,148,249.67	513,720.21	480.72	9,886	67	1.91	0.06	0.33	-0.47	-0.05	-0.29
	11-Aug-11	7,148,249.71	513,720.37	480.69	10,206	320	2.07	0.16	0.18	-0.50	-0.03	-0.04
1085	21-Aug-03	7,148,346.05	513,666.41	488.88	0	0	0.00			0.00		
	28-Jul-04	7,148,346.06	513,666.43	488.84	342	342	0.02	0.02	0.02	-0.04	-0.04	-0.04
	23-Sep-04	7,148,346.06	513,666.41	488.82	399	57	0.01	0.02	0.14	-0.06	-0.01	-0.09
	17-Sep-05	7,148,346.06	513,666.46	488.72	758	359	0.05	0.05	0.05	-0.16	-0.10	-0.10
	28-Jul-06	7,148,346.08	513,666.47	488.82	1,072	314	0.06	0.02	0.02	-0.06	0.09	0.11
	9-Jul-08	7,148,346.05	513,666.51	488.82	1,784	712	0.10	0.05	0.03	-0.06	0.00	0.00
	20-Jul-10	7,148,346.05	513,666.52	488.78	2,525	741	0.10	0.01	0.00	-0.10	-0.04	-0.02
	25-Sep-10	7,148,346.05	513,666.54	488.75	2,592	67	0.13	0.02	0.13	-0.13	-0.03	-0.15
	11-Aug-11	7,148,346.06	513,666.56	488.72	2,912	320	0.15	0.02	0.03	-0.16	-0.03	-0.04
500-1	21-Aug-03	7,148,343.22	513,725.53	474.09	9,088	7,007	0.00		2.29	0.00		-0.79
	28-Jul-04	7,148,343.24	513,725.54	474.02	9,430	342	0.02	0.02	0.02	-0.07	-0.07	-0.07
	23-Sep-04	7,148,343.24	513,725.53	474.01	9,487	57	0.01	0.01	0.09	-0.08	-0.01	-0.06
	17-Sep-05	7,148,343.24	513,725.55	473.95	9,846	359	0.03	0.02	0.02	-0.14	-0.06	-0.06
	28-Jul-06	7,148,343.24	513,725.56	474.10	10,160	314	0.04	0.02	0.02	0.01	0.14	0.16
	9-Jul-08	7,148,343.25	513,725.57	474.08	10,872	712	0.05	0.01	0.01	-0.01	-0.01	-0.01
	20-Jul-10	7,148,343.23	513,725.56	474.10	11613.0	741	0.04	0.02	0.01	0.01	0.01	0.01
	25-Sep-10	7,148,343.22	513,725.59	474.05	11680.0	67	0.06	0.03	0.14	-0.04	-0.04	-0.23
	11-Aug-11	7,148,343.22	513,725.59	474.08	12000.0	320	0.07	0.00	0.00	-0.01	0.02	0.03
650-1	21-Aug-03	7,148,408.73	513,701.26	483.95	9,088	7,007	0.00		1.31	0.00		-0.60
	28-Jul-04	7,148,408.75	513,701.33	483.92	9,430	342	0.06	0.06	0.07	-0.03	-0.03	-0.03
	23-Sep-04	7,148,408.75	513,701.31	483.91	9,487	57	0.05	0.02	0.13	-0.04	-0.01	-0.07
	17-Sep-05	7,148,408.75	513,701.34	483.87	9,846	359	0.08	0.04	0.04	-0.08	-0.03	-0.03
	28-Jul-06	7,148,408.77	513,701.35	483.89	10,160	314	0.09	0.02	0.03	-0.06	0.02	0.02
	9-Jul-08	7,148,408.75	513,701.39	483.87	10,872	712	0.13	0.05	0.02	-0.08	-0.02	-0.01
	20-Jul-10	7,148,408.75	513,701.40	483.84	11613.0	741	0.14	0.02	0.01	-0.12	-0.04	-0.02
	25-Sep-10	7,148,408.75	513,701.44	483.80	11680.0	67	0.18	0.04	0.21	-0.15	-0.03	-0.19
	11-Aug-11	7,148,408.74	513,701.46	483.77	12000.0	320	0.19	0.01	0.02	-0.18	-0.03	-0.03
350-1A	21-Aug-03	7,148,298.59	513,822.46	448.09	9,078	7,007	0.00		3.75	0.00		-1.33
	28-Jul-04	7,148,298.61	513,822.64	448.01	9,420	342	0.19	0.19	0.20	-0.08	-0.08	-0.09
	23-Sep-04	7,148,298.61	513,822.64	448.00	9,477	57	0.19	0.00	0.03	-0.09	0.00	-0.03
	17-Sep-05	7,148,298.64	513,822.81	447.93	9,836	359	0.35	0.17	0.17	-0.16	-0.07	-0.08
	28-Jul-06	7,148,298.65	513,822.90	447.93	10,150	314	0.45	0.10	0.11	-0.16	0.00	0.00
	9-Jul-08	7,148,298.68	513,823.08	447.87	10,862	712	0.62	0.17	0.09	-0.22	-0.06	-0.03
	20-Jul-10	7,148,298.70	513,823.18	447.83	11,603	741	0.73	0.11	0.05	-0.26	-0.05	-0.02
	25-Sep-10	7,148,298.69	513,823.22	447.79	11,670	67	0.77	0.05	0.26	-0.30	-0.03	-0.19
	11-Aug-11	7,148,298.70	513,823.27	447.77	11,990	320	0.82	0.05	0.05	-0.32	-0.02	-0.03
500-2	21-Aug-03	7,148,344.36	513,842.07	438.14	9,078	7,007	0.00		3.49	0.00		-1.40
	28-Jul-04	7,148,344.36	513,842.27	438.06	9,420	342	0.20	0.20	0.21	-0.08	-0.08	-0.08
	23-Sep-04	7,148,344.37	513,842.26	438.05	9,477	57	0.19	0.02	0.10	-0.09	-0.01	-0.08
	17-Sep-05	7,148,344.37	513,842.43	438.00	9,836	359	0.36	0.17	0.18	-0.14	-0.05	-0.05
	28-Jul-06	7,148,344.39	513,842.53	438.02	10,150	314	0.46	0.10	0.11	-0.12	0.03	0.03
	9-Jul-08	7,148,344.41	513,842.70	437.96	10,862	712	0.64	0.18	0.09	-0.18	-0.07	-0.03
	20-Jul-10	7,148,344.40	513,842.82	437.91	11,603	741	0.75	0.12	0.06	-0.23	-0.05	-0.02
	25-Sep-10	7,148,344.40	513,842.86	437.87	11,670	67	0.79	0.04	0.22	-0.27	-0.04	-0.21
	11-Aug-11	7,148,344.40	513,842.91	437.87	11,990	320	0.84	0.05	0.05	-0.27	0.00	0.00

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
650-2	21-Aug-03	7,148,400.26	513,815.95	439.87	9,078	7,007	0.00		2.00	0.00		-0.62
	28-Jul-04	7,148,400.25	513,816.10	439.75	9,420	342	0.15	0.15	0.16	-0.12	-0.12	-0.12
	23-Sep-04	7,148,400.25	513,816.08	439.72	9,477	57	0.13	0.02	0.12	-0.15	-0.04	-0.24
	17-Sep-05	7,148,400.24	513,816.21	439.67	9,836	359	0.26	0.13	0.13	-0.20	-0.04	-0.05
	28-Jul-06	7,148,400.25	513,816.27	439.70	10,150	314	0.32	0.06	0.07	-0.17	0.02	0.03
	9-Jul-08	7,148,400.20	513,816.38	439.64	10,862	712	0.43	0.12	0.06	-0.23	-0.06	-0.03
	20-Jul-10	7,148,400.19	513,816.43	439.58	11603.0	741	0.48	0.06	0.03	-0.29	-0.07	-0.03
	25-Sep-10	7,148,400.17	513,816.46	439.53	11670.0	67	0.52	0.04	0.20	-0.34	-0.04	-0.23
	11-Aug-11	7,148,400.18	513,816.49	439.54	11,990	320	0.54	0.02	0.03	-0.33	0.00	0.00
350-2A	21-Aug-03	7,148,300.52	513,873.67	428.71	9,070	7,007	0.00		3.80	0.00		-1.52
	28-Jul-04	7,148,300.53	513,873.83	428.58	9,412	342	0.16	0.16	0.17	-0.13	-0.13	-0.14
	23-Sep-04	7,148,300.54	513,873.85	428.58	9,469	57	0.17	0.01	0.09	-0.13	-0.01	-0.04
	17-Sep-05	7,148,300.52	513,873.98	428.51	9,828	359	0.31	0.14	0.14	-0.20	-0.06	-0.07
	28-Jul-06	7,148,300.52	513,874.08	428.52	10,142	314	0.41	0.10	0.12	-0.19	0.01	0.01
	9-Jul-08	7,148,300.50	513,874.23	428.47	10,854	712	0.56	0.15	0.08	-0.25	-0.06	-0.03
	20-Jul-10	7,148,300.49	513,874.35	428.42	11,595	741	0.68	0.12	0.06	-0.29	-0.04	-0.02
	25-Sep-10	7,148,300.48	513,874.39	428.38	11,662	67	0.72	0.04	0.23	-0.33	-0.04	-0.23
	11-Aug-11	7,148,300.48	513,874.44	428.37	11,982	320	0.77	0.05	0.05	-0.34	-0.01	-0.01
1491	21-Aug-03	7,148,376.83	513,868.79	432.49	0	0	0.00			0.00		
	28-Jul-04	7,148,376.82	513,869.00	432.34	342	342	0.21	0.21	0.22	-0.15	-0.15	-0.16
	23-Sep-04	7,148,376.82	513,868.99	432.32	399	57	0.20	0.01	0.05	-0.17	-0.02	-0.13
	17-Sep-05	7,148,376.85	513,869.15	432.27	758	359	0.36	0.17	0.17	-0.22	-0.05	-0.05
	28-Jul-06	7,148,376.90	513,869.24	432.34	1,072	314	0.45	0.09	0.11	-0.15	0.07	0.08
	9-Jul-08	7,148,376.96	513,869.39	432.28	1,784	712	0.62	0.17	0.09	-0.21	-0.06	-0.03
	20-Jul-10	7,148,376.92	513,869.51	432.21	2,525	741	0.72	0.12	0.06	-0.29	-0.07	-0.04
	25-Sep-10	7,148,376.94	513,869.71	432.10	2,592	67	0.92	0.20	1.10	-0.39	-0.10	-0.57
	11-Aug-11	7,148,376.96	513,869.76	432.10	2,912	320	0.98	0.06	0.06	-0.39	0.00	0.00

Average	Aug 03 to Jul 04	0.20	0.20	0.21	-0.10	-0.10	-0.11
	Jul 04 to Sep 04	0.21	0.02	0.16	-0.12	-0.02	-0.14
	Sep 04 to Sep 05	0.38	0.18	0.18	-0.21	-0.09	-0.09
	Sep 05 to Jul 06	0.49	0.11	0.13	-0.17	0.04	0.04
	Jul 06 to Jul 08	0.68	0.19	0.10	-0.23	-0.06	-0.03
	Jul 08 to Jul 10	0.81	0.13	0.06	-0.29	-0.06	-0.03
	Jul 10 to Sept 10	**0.87**	**0.06**	**0.33**	**-0.34**	**-0.05**	**-0.25**
	Sept 10 to Aug 11	**0.93**	**0.06**	**0.07**	**-0.36**	**-0.02**	**-0.02**
Maximum	Aug 03 to Jul 04	0.59	0.59	0.63	-0.03	-0.03	-0.03
	Jul 04 to Sep 04	0.67	0.09	0.56	-0.04	0.00	-0.03
	Sep 04 to Sep 05	1.19	0.52	0.53	-0.08	-0.03	-0.03
	Sep 05 to Jul 06	1.56	0.37	0.43	0.01	0.14	0.16
	Jul 06 to Jul 08	2.16	0.60	0.31	-0.01	0.00	0.00
	Jul 08 to Jul 10	2.59	0.43	0.21	0.01	0.01	0.01
	Jul 10 to Sept 10	**2.68**	**0.20**	**1.10**	**-0.04**	**-0.03**	**-0.15**
	Sept 10 to Aug 11	**2.89**	**0.21**	**0.24**	**-0.01**	**0.02**	**0.03**
Minimum	Aug 03 to Jul 04	0.02	0.02	0.02	-0.24	-0.24	-0.26
	Jul 04 to Sep 04	0.01	0.00	0.03	-0.31	-0.07	-0.47
	Sep 04 to Sep 05	0.03	0.02	0.02	-0.55	-0.24	-0.24
	Sep 05 to Jul 06	0.04	0.02	0.02	-0.59	-0.04	-0.05
	Jul 06 to Jul 08	0.05	0.01	0.01	-0.78	-0.19	-0.10
	Jul 08 to Jul 10	0.04	0.01	0.00	-0.95	-0.17	-0.08
	Jul 10 to Sept 10	**0.06**	**0.02**	**0.13**	**-0.98**	**-0.10**	**-0.57**
	Sept 10 to Aug 11	**0.07**	**0.00**	**0.00**	**-1.08**	**-0.09**	**-0.10**

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1084	21-Aug-03	7,148,017.97	513,617.95	516.26	0	0	0.00			0.00		
	28-Jul-04	7,148,017.98	513,618.35	516.10	342	342	0.40	0.40	0.43	-0.16	-0.16	-0.17
	23-Sep-04	7,148,017.99	513,618.38	516.10	399	57	0.43	0.03	0.18	-0.16	-0.01	-0.06
	17-Sep-05	7,148,018.02	513,618.72	516.02	758	359	0.77	0.34	0.35	-0.24	-0.08	-0.08
	28-Jul-06	7,148,018.00	513,618.94	515.98	1,072	314	0.99	0.22	0.26	-0.28	-0.04	-0.04
	9-Jul-08	7,148,018.01	513,619.24	515.89	1,784	712	1.29	0.30	0.15	-0.37	-0.10	-0.05
	20-Jul-10	7,148,018.02	513,619.42	515.83	2,525	741	1.47	0.18	0.09	-0.43	-0.05	-0.03
	25-Sep-10	7,148,018.01	513,619.44	515.80	2,592	67	1.49	0.03	0.14	-0.46	-0.03	-0.17
	11-Aug-11	7,148,018.00	513,619.52	515.78	2,912	320	1.57	0.08	0.09	-0.48	-0.02	-0.03
1485	21-Aug-03	7,148,017.91	513,702.37	480.46	0	0	0.00			0.00		
	28-Jul-04	7,148,018.00	513,703.32	480.19	342	342	0.95	0.95	1.02	-0.27	-0.27	-0.29
	23-Sep-04	7,148,018.02	513,703.46	480.10	399	57	1.09	0.14	0.89	-0.36	-0.09	-0.56
	17-Sep-05	7,148,018.12	513,704.37	479.82	758	359	2.00	0.91	0.93	-0.64	-0.29	-0.29
	28-Jul-06	7,148,018.16	513,705.01	479.62	1,072	314	2.65	0.65	0.75	-0.84	-0.19	-0.22
	9-Jul-08	7,148,018.25	513,706.15	479.22	1,784	712	3.79	1.14	0.58	-1.24	-0.40	-0.20
	20-Jul-10	7,148,018.30	513,707.09	478.84	2,525	741	4.74	0.95	0.47	-1.62	-0.39	-0.19
	25-Sep-10	7,148,018.30	513,707.21	478.78	2,592	67	4.85	0.12	0.63	-1.68	-0.06	-0.33
	11-Aug-11	7,148,018.33	513,707.61	478.60	2,912	320	5.25	0.40	0.46	-1.86	-0.17	-0.20
BH-16 (T8)	21-Aug-03	7,148,048.49	513,760.30	464.94	0	0	0.00			0.00		
	28-Jul-04	7,148,048.61	513,761.19	464.65	342	342	0.90	0.90	0.96	-0.29	-0.29	-0.31
	23-Sep-04	7,148,048.63	513,761.31	464.59	399	57	1.02	0.12	0.77	-0.35	-0.05	-0.35
	17-Sep-05	7,148,048.72	513,762.13	464.34	758	359	1.84	0.82	0.84	-0.60	-0.25	-0.26
	28-Jul-06	7,148,048.79	513,762.77	464.20	1,072	314	2.49	0.64	0.75	-0.75	-0.14	-0.17
	9-Jul-08	7,148,048.93	513,763.85	463.84	1,784	712	3.58	1.10	0.56	-1.10	-0.36	-0.18
	20-Jul-10	7,148,049.03	513,764.78	463.53	2,525	741	4.52	0.94	0.46	-1.41	-0.31	-0.15
	25-Sep-10	7,148,049.03	513,764.89	463.49	2,592	67	4.63	0.11	0.58	-1.45	-0.04	-0.25
	11-Aug-11	7,148,049.27	513,765.84	463.55	2,912	320	5.59	0.98	1.11	-1.39	0.06	0.07
24A	21-Aug-03	7,148,035.28	513,774.68	465.27	9,275	7,007	0.00		3.20	0.00		-1.10
	28-Jul-04	7,148,035.42	513,775.58	464.94	9,617	342	0.91	0.91	0.97	-0.33	-0.33	-0.35
	23-Sep-04	7,148,035.44	513,775.70	464.89	9,674	57	1.03	0.13	0.82	-0.38	-0.05	-0.34
	17-Sep-05	7,148,035.58	513,776.55	464.66	10,033	359	1.90	0.86	0.87	-0.61	-0.23	-0.23
	28-Jul-06	7,148,035.66	513,777.19	464.47	10,347	673	2.54	0.64	0.75	-0.80	-0.19	-0.22
	9-Jul-08	7,148,035.85	513,778.31	464.12	11,059	712	3.67	1.13	0.58	-1.15	-0.35	-0.18
	20-Jul-10	7,148,035.99	513,779.27	463.82	11,800	741	4.64	0.97	0.48	-1.45	-0.30	-0.15
	25-Sep-10	7,148,035.99	513,779.39	463.76	11,867	67	4.76	0.12	0.66	-1.51	-0.06	-0.32
	11-Aug-11	7,148,036.06	513,779.82	463.62	12,187	320	5.20	0.43	0.50	-1.65	-0.14	-0.16
24B	21-Aug-03	7,148,045.09	513,832.26	446.30	9,275	7,007	0.00		3.18	0.00		-1.04
	28-Jul-04	7,148,045.31	513,833.13	446.00	9,617	342	0.90	0.90	0.96	-0.30	-0.30	-0.32
	23-Sep-04	7,148,045.33	513,833.26	445.89	9,674	57	1.03	0.13	0.85	-0.41	-0.11	-0.69
	17-Sep-05	7,148,045.55	513,834.05	445.62	10,033	359	1.85	0.82	0.83	-0.68	-0.27	-0.27
	28-Jul-06	7,148,045.69	513,834.66	445.46	10,347	314	2.47	0.62	0.73	-0.84	-0.16	-0.19
	9-Jul-08	7,148,045.97	513,835.72	445.06	11,059	712	3.56	1.09	0.56	-1.24	-0.39	-0.20
	20-Jul-10	7,148,046.19	513,836.62	444.73	11,800	741	4.50	0.93	0.46	-1.57	-0.33	-0.16
	25-Sep-10	7,148,046.23	513,836.74	444.67	11,867	67	4.62	0.12	0.65	-1.63	-0.06	-0.35
	11-Aug-11	7,148,046.31	513,837.14	444.50	12,187	320	5.03	0.41	0.47	-1.80	-0.16	-0.19
NL-Base	17-Sep-05	7,148,154.79	513,836.26	431.47	0	0	0.00			0.00		
	28-Jul-06	7,148,154.78	513,836.23	431.38	314	314	0.03	0.03	0.04	-0.09	-0.09	-0.10
	9-Jul-08	7,148,154.80	513,836.28	431.40	1,026	712	0.02	0.05	0.03	-0.07	0.02	0.01
	20-Jul-10	7,148,154.82	513,836.31	431.41	1,767	741	0.06	0.04	0.02	-0.06	0.01	0.00
	25-Sep-10	7,148,154.81	513,836.32	431.38	1,834	67	0.07	0.02	0.11	-0.09	-0.03	-0.16
	11-Aug-11	7,148,154.81	513,836.34	431.38	2,154	320	0.08	0.01	0.02	-0.09	0.00	0.00
2005-06	17-Sep-05	7,147,999.72	513,865.78	433.29	0	0	0.00			0.00		
	28-Jul-06	7,147,999.74	513,866.22	433.22	314	314	0.44	0.44	0.51	-0.07	-0.07	-0.08
	9-Jul-08	7,147,999.88	513,867.02	432.94	1,026	712	1.25	0.81	0.41	-0.35	-0.28	-0.14
	20-Jul-10	7,147,999.95	513,867.68	432.73	1,767	741	1.91	0.66	0.33	-0.56	-0.21	-0.10
	25-Sep-10	7,147,999.94	513,867.77	432.66	1,834	67	2.00	0.10	0.54	-0.63	-0.07	-0.38
	11-Aug-11	7,147,999.96	513,868.08	432.55	2,154	320	2.31	0.31	0.35	-0.74	-0.11	-0.12
2005-01	17-Sep-05	7,148,100.15	513,757.89	463.73	0	0	0.00			0.00		
	28-Jul-06	7,148,100.13	513,758.45	463.64	314	314	0.56	0.56	0.65	-0.09	-0.09	-0.10
	9-Jul-08	7,148,100.09	513,759.38	463.46	1,026	712	1.49	0.93	0.48	-0.27	-0.18	-0.09
	20-Jul-10	7148100.073	513760.156	463.304	1,767	741	2.26	0.78	0.38	-0.42	-0.15	-0.07
	25-Sep-10	7148100.044	513760.26	463.283	1,834	67	2.37	0.11	0.59	-0.44	-0.02	-0.11
	11-Aug-11	7,148,100.04	513,760.61	463.19	2,154	320	2.71	0.35	0.39	-0.54	-0.09	-0.10

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
2005-02	17-Sep-05	7,148,118.21	513,816.95	447.89	0	0	0.00			0.00		
	28-Jul-06	7,148,118.32	513,817.41	447.77	314	314	0.48	0.48	0.56	-0.12	-0.12	-0.14
	9-Jul-08	7,148,118.56	513,818.22	447.45	1,026	712	1.31	0.84	0.43	-0.44	-0.32	-0.17
	20-Jul-10	7,148,118.75	513,818.89	447.17	1,767	741	2.01	0.70	0.35	-0.72	-0.28	-0.14
	25-Sep-10	7,148,118.77	513,818.98	447.11	1,834	67	2.11	0.10	0.52	-0.78	-0.05	-0.29
	11-Aug-11	7,148,118.85	513,819.28	446.99	2,154	320	2.41	0.30	0.35	-0.90	-0.12	-0.14
2005-03	17-Sep-05	7,148,108.16	513,870.12	428.18	0	0	0.00			0.00		
	28-Jul-06	7,148,108.35	513,870.58	428.04	314	314	0.50	0.50	0.58	-0.14	-0.14	-0.16
	9-Jul-08	7,148,108.74	513,871.41	427.72	1,026	712	1.41	0.91	0.47	-0.46	-0.32	-0.16
	20-Jul-10	7,148,109.06	513,872.11	427.45	1,767	741	2.18	0.77	0.38	-0.73	-0.27	-0.13
	25-Sep-10	7,148,109.08	513,872.21	427.40	1,834	67	2.29	0.11	0.58	-0.78	-0.05	-0.27
	11-Aug-11	7,148,109.22	513,872.53	427.29	2,154	320	2.63	0.35	0.40	-0.89	-0.12	-0.13
2005-04	17-Sep-05	7,148,047.07	513,876.04	428.36	0	0	0.00			0.00		
	28-Jul-06	7,148,047.27	513,876.56	428.26	314	314	0.55	0.55	0.64	-0.10	-0.10	-0.12
	9-Jul-08	7,148,047.65	513,877.50	428.02	1,026	712	1.57	1.02	0.52	-0.34	-0.24	-0.13
	20-Jul-10	7,148,047.97	513,878.33	427.81	1,767	741	2.46	0.89	0.44	-0.55	-0.21	-0.10
	25-Sep-10	7,148,048.02	513,878.45	427.73	1,834	67	2.59	0.12	0.68	-0.63	-0.08	-0.45
	11-Aug-11	7,148,048.13	513,878.80	427.63	2,154	320	2.96	0.37	0.42	-0.73	-0.10	-0.11
2005-05	17-Sep-05	7,148,000.57	513,781.55	464.67	0	0	0.00			0.00		
	28-Jul-06	7,148,000.65	513,782.24	464.51	314	314	0.70	0.70	0.81	-0.16	-0.16	-0.19
	9-Jul-08	7,148,000.83	513,783.44	464.19	1,026	712	1.91	1.22	0.62	-0.48	-0.32	-0.16
	20-Jul-10	7,148,000.98	513,784.48	463.91	1,767	741	2.96	1.05	0.52	-0.76	-0.29	-0.14
	25-Sep-10	7,148,000.97	513,784.61	463.86	1,834	67	3.09	0.13	0.71	-0.81	-0.05	-0.28
	11-Aug-11	7,148,001.04	513,785.08	463.72	2,154	320	3.56	0.47	0.54	-0.95	-0.14	-0.16

Average	Aug 03 to Jul 04	0.81	0.81	0.87	-0.27	-0.27	-0.29
	Jul 04 to Sep 04	0.92	0.11	0.70	-0.33	-0.06	-0.40
	Sep 04 to Sep 05	1.67	0.75	0.76	-0.56	-0.22	-0.23
	Sep 05 to Jul 06	1.20	0.50	0.59	-0.36	-0.12	-0.14
	Jul 06 to Jul 08	2.07	0.88	0.45	-0.63	-0.27	-0.14
	Jul 08 to Jul 10	2.81	0.74	0.36	-0.86	-0.23	-0.11
	Jul 10 to Sept 10	**2.90**	**0.10**	**0.53**	**-0.91**	**-0.05**	**-0.28**
	Sept 10 to Aug 11	**3.28**	**0.37**	**0.42**	**-1.00**	**-0.09**	**-0.11**
Maximum	Aug 03 to Jul 04	0.95	0.95	1.02	-0.16	-0.16	-0.17
	Jul 04 to Sep 04	1.09	0.14	0.89	-0.16	-0.01	-0.06
	Sep 04 to Sep 05	2.00	0.91	0.93	-0.24	-0.08	-0.08
	Sep 05 to Jul 06	2.65	0.70	0.81	-0.07	-0.04	-0.04
	Jul 06 to Jul 08	3.79	1.22	0.62	-0.07	0.02	0.01
	Jul 08 to Jul 10	4.74	1.05	0.52	-0.06	0.01	0.00
	Jul 10 to Sept 10	**4.85**	**0.13**	**0.71**	**-0.09**	**-0.02**	**-0.11**
	Sept 10 to Aug 11	**5.59**	**0.98**	**1.11**	**-0.09**	**0.06**	**0.07**
Minimum	Aug 03 to Jul 04	0.40	0.40	0.43	-0.33	-0.33	-0.35
	Jul 04 to Sep 04	0.43	0.03	0.18	-0.41	-0.11	-0.69
	Sep 04 to Sep 05	0.77	0.34	0.35	-0.68	-0.29	-0.29
	Sep 05 to Jul 06	0.03	0.03	0.04	-0.84	-0.19	-0.22
	Jul 06 to Jul 08	0.02	0.05	0.03	-1.24	-0.40	-0.20
	Jul 08 to Jul 10	0.06	0.04	0.02	-1.62	-0.39	-0.19
	Jul 10 to Sept 10	**0.07**	**0.02**	**0.11**	**-1.68**	**-0.08**	**-0.45**
	Sept 10 to Aug 11	**0.08**	**0.01**	**0.02**	**-1.86**	**-0.17**	**-0.20**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
80-7	21-Aug-03	7,148,344.01	513,890.73	422.54	7,294	7,007	0.00		3.38	0.00		-1.22
	28-Jul-04	7,148,344.00	513,890.89	422.43	7,636	342	0.16	0.16	0.17	-0.11	-0.11	-0.12
	23-Sep-04	7,148,344.01	513,890.89	422.40	7,693	57	0.16	0.01	0.04	-0.14	-0.03	-0.21
	17-Sep-05	7,148,344.00	513,891.07	422.38	8,052	359	0.34	0.17	0.18	-0.16	-0.02	-0.02
	28-Jul-06	7,148,343.99	513,891.16	422.37	8,366	314	0.43	0.09	0.11	-0.17	-0.01	-0.01
	9-Jul-08	7,148,344.00	513,891.36	422.35	9,078	712	0.63	0.20	0.10	-0.19	-0.03	-0.01
	20-Jul-10	7,148,343.96	513,891.47	422.29	9,819	741	0.74	0.12	0.06	-0.25	-0.06	-0.03
	25-Sep-10	7,148,343.95	513,891.51	422.25	9,886	67	0.78	0.04	0.21	-0.29	-0.03	-0.19
	11-Aug-11	7,148,343.95	513,891.56	422.24	10,206	320	0.83	0.05	0.05	-0.31	-0.02	-0.02
350-3A	21-Aug-03	7,148,312.23	513,899.00	417.39	9,064	7,007	0.00		3.51	0.00		-1.44
	28-Jul-04	7,148,312.20	513,899.14	417.31	9,406	342	0.14	0.14	0.15	-0.08	-0.08	-0.08
	23-Sep-04	7,148,312.20	513,899.14	417.28	9,463	57	0.14	0.01	0.03	-0.12	-0.04	-0.25
	17-Sep-05	7,148,312.19	513,899.26	417.28	9,822	359	0.26	0.12	0.12	-0.11	0.00	0.00
	28-Jul-06	7,148,312.16	513,899.34	417.29	10,136	314	0.35	0.09	0.10	-0.10	0.01	0.01
	9-Jul-08	7,148,312.15	513,899.49	417.25	10,848	712	0.50	0.15	0.08	-0.14	-0.04	-0.02
	20-Jul-10	7,148,312.07	513,899.60	417.19	11589.0	741	0.62	0.14	0.07	-0.20	-0.06	-0.03
	25-Sep-10	7,148,312.07	513,899.64	417.16	11656.0	67	0.66	0.04	0.23	-0.23	-0.04	-0.20
	11-Aug-11	7,148,312.06	513,899.67	417.15	11,976	320	0.69	0.03	0.03	-0.24	-0.01	-0.01
1489	21-Aug-03	7,148,305.23	513,928.45	413.70	0	0	0			0.00		
	28-Jul-04	7,148,305.19	513,928.51	413.66	342	342	0.08	0.08	0.08	-0.04	-0.04	-0.04
	23-Sep-04	7,148,305.20	513,928.50	413.64	399	57	0.06	0.01	0.09	-0.06	-0.03	-0.16
	17-Sep-05	7,148,305.15	513,928.58	413.62	758	359	0.15	0.09	0.09	-0.08	-0.02	-0.02
	28-Jul-06	7,148,305.12	513,928.62	413.62	1,072	314	0.20	0.04	0.05	-0.08	0.00	0.00
	9-Jul-08	7,148,305.09	513,928.68	413.60	1,784	712	0.27	0.07	0.04	-0.10	-0.02	-0.01
	20-Jul-10	7,148,305.03	513,928.67	413.55	2,525	741	0.30	0.06	0.03	-0.15	-0.05	-0.02
	25-Sep-10	7,148,305.03	513,928.69	413.52	2,592	67	0.32	0.03	0.14	-0.18	-0.03	-0.19
	11-Aug-11	7,148,305.02	513,928.71	413.53	2,912	320	0.33	0.02	0.02	-0.17	0.01	0.01
NL-1	28-Jul-04	7,148,365.73	513,942.45	413.19	0	0	0.00			0.00		
	23-Sep-04	7,148,365.73	513,942.45	413.16	57	57	0.01	0.01	0.03	-0.02	-0.02	-0.15
	17-Sep-05	7,148,365.72	513,942.59	413.16	416	359	0.14	0.14	0.14	-0.03	0.00	-0.01
	28-Jul-06	7,148,365.70	513,942.70	413.15	730	314	0.24	0.11	0.13	-0.03	-0.01	-0.01
	9-Jul-08	7,148,365.72	513,942.85	413.10	1,442	712	0.40	0.16	0.08	-0.09	-0.05	-0.03
	20-Jul-10	7,148,365.71	513,942.97	413.05	2,183	741	0.52	0.12	0.06	-0.14	-0.05	-0.03
	25-Sep-10	7,148,365.69	513,943.01	413.00	2,250	67	0.56	0.05	0.27	-0.19	-0.05	-0.29
	11-Aug-11	7,148,365.71	513,943.03	412.99	2,570	320	0.58	0.02	0.02	-0.19	0.00	0.00
1083	21-Aug-03	7,148,354.01	513,936.37	414.10	0	0	0			0		
(NL-2)	28-Jul-04	7,148,354.00	513,936.52	414.10	342	342	0.15	0.15	0.16	0.00	0.00	-0.01
	23-Sep-04	7,148,354.01	513,936.52	414.08	33	-309	0.15	0.01	0.09	-0.02	-0.02	-0.11
	17-Sep-05	7,148,354.02	513,936.65	414.05	758	359	0.28	0.13	0.14	-0.05	-0.03	-0.03
	28-Jul-06	7,148,354.03	513,936.74	414.06	1,072	314	0.37	0.09	0.11	-0.04	0.01	0.02
	9-Jul-08	7,148,354.05	513,936.89	414.04	1,784	712	0.52	0.15	0.07	-0.06	-0.02	-0.01
	20-Jul-10	7,148,354.05	513,937.00	414.00	2,525	741	0.63	0.11	0.05	-0.10	-0.04	-0.02
	25-Sep-10	7,148,354.04	513,937.03	413.97	2,592	67	0.66	0.03	0.19	-0.13	-0.03	-0.17
	11-Aug-11	7,148,354.05	513,937.05	413.97	2,912	320	0.68	0.02	0.02	-0.13	0.00	0.00
NL-3	28-Jul-04	7,148,334.73	513,926.88	417.07	0	0	0.00			0.00		
	23-Sep-04	7,148,334.73	513,926.88	417.05	57	57	0.00	0.00	0.03	-0.02	-0.02	-0.13
	17-Sep-05	7,148,334.75	513,926.99	417.08	416	359	0.10	0.11	0.11	0.01	0.03	0.03
	28-Jul-06	7,148,334.75	513,927.08	417.08	730	314	0.20	0.09	0.11	0.02	0.01	0.01
	9-Jul-08	7,148,334.74	513,927.20	417.08	1,442	712	0.32	0.12	0.06	0.01	0.00	0.00
	20-Jul-10	7,148,334.71	513,927.28	417.04	2,183	741	0.40	0.09	0.04	-0.03	-0.04	-0.02
	25-Sep-10	7,148,334.71	513,927.33	417.00	2,250	67	0.44	0.05	0.25	-0.07	-0.04	-0.23
	11-Aug-11	7,148,334.72	513,927.36	417.00	2,570	320	0.48	0.03	0.04	-0.07	0.00	0.00
NL-4	28-Jul-04	7,148,307.20	513,913.00	416.19	0	0	0.00			0.00		
	23-Sep-04	7,148,307.19	513,912.99	416.16	57	57	0.02	0.02	0.13	-0.03	-0.03	-0.20
	17-Sep-05	7,148,307.14	513,913.12	416.11	416	359	0.13	0.14	0.14	-0.08	-0.05	-0.05
	28-Jul-06	7,148,307.12	513,913.19	416.11	730	314	0.21	0.08	0.09	-0.08	0.01	0.01
	9-Jul-08	7,148,307.10	513,913.33	416.07	1,442	712	0.34	0.13	0.07	-0.13	-0.05	-0.02
	20-Jul-10	7,148,307.00	513,913.43	415.98	2,183	741	0.47	0.14	0.07	-0.21	-0.08	-0.04
	25-Sep-10	7,148,307.01	513,913.47	415.94	2,250	67	0.50	0.04	0.21	-0.25	-0.05	-0.25
	11-Aug-11	7,148,306.99	513,913.50	415.92	2,570	320	0.54	0.04	0.04	-0.27	-0.01	-0.01

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

NL-5	28-Jul-04	7,148,275.21	513,896.96	415.46	0	0	0.00			0.00		
	23-Sep-04	7,148,275.17	513,896.96	415.42	57	57	0.04	0.04	0.26	-0.04	-0.04	-0.26
	17-Sep-05	7,148,275.16	513,897.05	415.39	416	359	0.10	0.08	0.08	-0.07	-0.03	-0.03
	28-Jul-06	7,148,275.14	513,897.10	415.41	730	314	0.16	0.06	0.07	-0.04	0.03	0.03
	9-Jul-08	7,148,275.11	513,897.19	415.40	1,442	712	0.26	0.09	0.05	-0.06	-0.02	-0.01
	20-Jul-10	7,148,275.05	513,897.28	415.33	2,183	741	0.36	0.10	0.05	-0.12	-0.06	-0.03
	25-Sep-10	7,148,275.03	513,897.32	415.27	2,250	67	0.41	0.05	0.25	-0.19	-0.06	-0.34
	11-Aug-11	7,148,275.01	513,897.34	415.27	2,570	320	0.43	0.02	0.03	-0.19	0.00	0.00

Average	Aug 03 to Jul 04	0.11	0.11	0.11	-0.05	-0.05	-0.05
	Jul 04 to Sep 04	0.07	0.01	0.09	-0.06	-0.03	-0.19
	Sep 04 to Sep 05	0.19	0.12	0.13	-0.07	-0.02	-0.02
	Sep 05 to Jul 06	0.27	0.08	0.09	-0.07	0.01	0.01
	Jul 06 to Jul 08	0.40	0.14	0.07	-0.09	-0.03	-0.01
	Jul 08 to Jul 10	0.50	0.11	0.05	-0.15	-0.05	-0.03
	Jul 10 to Sept 10	**0.54**	**0.04**	**0.22**	**-0.19**	**-0.04**	**-0.23**
	Sept 10 to Aug 11	**0.57**	**0.03**	**0.03**	**-0.20**	**0.00**	**0.00**
Maximum	Aug 03 to Jul 04	0.16	0.16	0.17	0.00	0.00	-0.01
	Jul 04 to Sep 04	0.16	0.04	0.26	-0.02	-0.02	-0.11
	Sep 04 to Sep 05	0.34	0.17	0.18	0.01	0.03	0.03
	Sep 05 to Jul 06	0.43	0.11	0.13	0.02	0.03	0.03
	Jul 06 to Jul 08	0.63	0.20	0.10	0.01	0.00	0.00
	Jul 08 to Jul 10	0.74	0.14	0.07	-0.03	-0.04	-0.02
	Jul 10 to Sept 10	**0.78**	**0.05**	**0.27**	**-0.07**	**-0.03**	**-0.17**
	Sept 10 to Aug 11	**0.83**	**0.05**	**0.05**	**-0.07**	**0.01**	**0.01**
Minimum	Aug 03 to Jul 04	0.08	0.08	0.08	-0.11	-0.11	-0.12
	Jul 04 to Sep 04	0.00	0.00	0.03	-0.14	-0.04	-0.26
	Sep 04 to Sep 05	0.10	0.08	0.08	-0.16	-0.05	-0.05
	Sep 05 to Jul 06	0.16	0.04	0.05	-0.17	-0.01	-0.01
	Jul 06 to Jul 08	0.26	0.07	0.04	-0.19	-0.05	-0.03
	Jul 08 to Jul 10	0.30	0.06	0.03	-0.25	-0.08	-0.04
	Jul 10 to Sept 10	**0.32**	**0.03**	**0.14**	**-0.29**	**-0.06**	**-0.34**
	Sept 10 to Aug 11	**0.33**	**0.02**	**0.02**	**-0.31**	**-0.02**	**-0.02**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
24D	21-Aug-03	7,148,071.59	513,920.05	422.39	9,103	7,007	0.00		2.63	0.00		
	28-Jul-04	7,148,071.88	513,920.59	422.29	9,445	342	0.61	0.61	0.65	-0.10	-0.10	-0.11
	23-Sep-04	7,148,071.93	513,920.65	422.28	9,502	57	0.69	0.08	0.51	-0.11	-0.01	-0.06
	17-Sep-05	7,148,072.22	513,921.17	422.27	9,861	359	1.28	0.59	0.60	-0.12	-0.01	-0.01
	28-Jul-06	7,148,072.45	513,921.53	422.29	10,175	314	1.71	0.43	0.50	-0.10	0.03	0.03
	9-Jul-08	7,148,072.86	513,922.19	422.25	10,887	712	2.49	0.77	0.40	-0.14	-0.04	-0.02
	20-Jul-10	7,148,073.24	513,922.78	422.22	11,628	741	3.18	0.70	0.34	-0.18	-0.04	-0.02
	25-Sep-10	7,148,073.27	513,922.87	422.18	11,695	67	3.28	0.10	0.52	-0.21	-0.04	-0.21
	11-Aug-11	7,148,073.45	513,923.14	422.18	12,015	320	3.61	0.33	0.38	-0.21	0.00	0.00
25B	21-Aug-03	7,148,065.68	513,948.29	422.02	9,096	7,007	0.00		1.83	0.00		0.06
	28-Jul-04	7,148,065.72	513,948.61	422.03	9,438	342	0.32	0.32	0.34	0.01	0.01	0.01
	23-Sep-04	7,148,065.75	513,948.63	422.03	9,495	57	0.35	0.04	0.26	0.01	0.00	-0.01
	17-Sep-05	7,148,065.78	513,948.89	422.10	9,854	359	0.60	0.25	0.26	0.08	0.07	0.07
	28-Jul-06	7,148,065.81	513,949.05	422.15	10,168	314	0.76	0.16	0.19	0.13	0.05	0.06
	9-Jul-08	7,148,065.90	513,949.39	422.20	10,880	712	1.11	0.35	0.18	0.18	0.05	0.02
	20-Jul-10	7,148,065.96	513,949.65	422.22	11,621	741	1.38	0.27	0.13	0.20	0.03	0.01
	25-Sep-10	7,148,065.96	513,949.68	422.20	11,688	67	1.42	0.03	0.19	0.18	-0.02	-0.13
	11-Aug-11	7,148,065.99	513,949.79	422.21	12,008	320	1.52	0.11	0.12	0.19	0.01	0.01
80-9	21-Aug-03	7,147,996.44	513,970.69	411.11	7,294	7,007	0.00		0.63	0.00		0.16
	28-Jul-04	7,147,996.41	513,970.75	411.09	7,636	342	0.06	0.06	0.07	-0.02	-0.02	-0.03
	23-Sep-04	7,147,996.38	513,970.73	411.04	7,693	57	0.07	0.03	0.20	-0.07	-0.05	-0.33
	17-Sep-05	7,147,996.37	513,970.77	411.06	8,052	359	0.11	0.05	0.05	-0.05	0.03	0.03
	28-Jul-06	7,147,996.36	513,970.80	411.12	8,366	314	0.14	0.03	0.03	0.01	0.06	0.07
	9-Jul-08	7,147,996.33	513,970.82	411.14	9,078	712	0.17	0.03	0.02	0.03	0.02	0.01
	20-Jul-10	7,147,996.32	513,970.82	411.14	9,819	741	0.17	0.01	0.01	0.03	0.00	0.00
	25-Sep-10	7,147,996.31	513,970.82	411.11	9,886	67	0.18	0.01	0.05	0.00	-0.03	-0.16
	11-Aug-11	7,147,996.30	513,970.81	411.14	10,206	320	0.19	0.01	0.02	0.03	0.03	0.03
1484	21-Aug-03	7,148,148.49	513,961.52	417.94	0	0	0.00			0.00		
	28-Jul-04	7,148,149.07	513,961.93	417.98	342	342	0.71	0.71	0.76	0.04	0.04	0.04
	23-Sep-04	7,148,149.18	513,961.98	417.95	399	57	0.83	0.12	0.78	0.01	-0.03	-0.19
	17-Sep-05	7,148,149.71	513,962.36	417.93	758	359	1.49	0.65	0.66	-0.01	-0.01	-0.02
	28-Jul-06	7,148,150.10	513,962.63	417.98	1,072	314	1.96	0.47	0.55	0.04	0.05	0.05
	9-Jul-08	7,148,150.81	513,963.12	417.96	1,784	712	2.82	0.86	0.44	0.02	-0.02	-0.01
	20-Jul-10	7,148,151.41	513,963.53	417.88	2,525	741	3.54	0.72	0.36	-0.06	-0.08	-0.04
	25-Sep-10	7,148,151.47	513,963.59	417.85	2,592	67	3.63	0.09	0.49	-0.09	-0.03	-0.15
	11-Aug-11	7,148,151.72	513,963.77	417.81	2,912	320	3.94	0.31	0.35	-0.13	-0.04	-0.05
SL-1	28-Jul-04	7,148,078.88	513,970.45	419.86	0	0	0.00			0.00		
	23-Sep-04	7,148,079.09	513,970.46	419.76	57	57	0.20	0.20	1.30	-0.09	-0.09	-0.60
	17-Sep-05	7,148,078.87	513,970.86	419.83	416	359	0.40	0.45	0.46	-0.03	0.06	0.06
	28-Jul-06	7,148,078.84	513,971.10	419.84	730	314	0.64	0.24	0.28	-0.02	0.01	0.01
	9-Jul-08	7,148,078.82	513,971.55	419.81	1,442	712	1.10	0.46	0.23	-0.04	-0.02	-0.01
	20-Jul-10	7,148,078.78	513,971.97	419.78	2,183	741	1.52	0.42	0.21	-0.08	-0.03	-0.02
	25-Sep-10	7,148,078.74	513,972.05	419.71	2,250	67	1.61	0.09	0.46	-0.15	-0.07	-0.37
	11-Aug-11	7,148,078.73	513,972.25	419.69	2,570	320	1.80	0.20	0.22	-0.17	-0.03	-0.03
SL-2	28-Jul-04	7,148,086.80	513,956.84	422.53	0	0	0.00			0.00		
	23-Sep-04	7,148,087.01	513,956.88	422.46	57	57	0.21	0.21	1.38	-0.07	-0.07	-0.45
	17-Sep-05	7,148,086.98	513,957.37	422.60	416	359	0.56	0.49	0.50	0.08	0.15	0.15
	28-Jul-06	7,148,087.08	513,957.68	422.65	730	314	0.89	0.33	0.38	0.13	0.05	0.06
	9-Jul-08	7,148,087.23	513,958.26	422.76	1,442	712	1.49	0.60	0.31	0.23	0.10	0.05
	20-Jul-10	7,148,087.39	513,958.80	422.85	2,183	741	2.05	0.56	0.28	0.33	0.10	0.05
	25-Sep-10	7,148,087.37	513,958.88	422.75	2,250	67	2.12	0.09	0.49	0.22	-0.10	-0.57
	11-Aug-11	7,148,087.45	513,959.14	422.76	2,570	320	2.39	0.27	0.31	0.24	0.01	0.02
SL-3	28-Jul-04	7,148,100.47	513,933.11	420.80	0	0	0.00			0.00		
	23-Sep-04	7,148,100.54	513,933.16	420.78	57	57	0.09	0.09	0.59	-0.02	-0.02	-0.13
	17-Sep-05	7,148,100.89	513,933.63	420.83	416	359	0.67	0.58	0.59	0.03	0.05	0.05
	28-Jul-06	7,148,101.13	513,933.98	420.86	730	314	1.10	0.43	0.49	0.06	0.03	0.04
	9-Jul-08	7,148,101.63	513,934.59	420.87	1,442	712	1.88	0.79	0.40	0.07	0.01	0.00
	20-Jul-10	7,148,102.06	513,935.14	420.87	2,183	741	2.58	0.70	0.35	0.07	0.00	0.00
	25-Sep-10	7,148,102.11	513,935.22	420.84	2,250	67	2.68	0.09	0.52	0.04	-0.03	-0.15
	11-Aug-11	7,148,102.31	513,935.47	420.85	2,570	320	3.00	0.32	0.36	0.05	0.01	0.01
SL-4	17-Sep-05	7,148,115.67	513,907.57	416.88	0	0	0.00			0.00		
	28-Jul-06	7,148,115.91	513,907.91	416.82	314	314	0.42	0.42	0.49	-0.06	-0.06	-0.07
	9-Jul-08	7,148,116.34	513,908.56	416.70	1,026	712	1.19	0.77	0.40	-0.18	-0.12	-0.06
	20-Jul-10	7,148,116.72	513,909.11	416.58	1,767	741	1.86	0.67	0.33	-0.30	-0.12	-0.06
	25-Sep-10	7,148,116.76	513,909.19	416.54	1,834	67	1.95	0.09	0.47	-0.34	-0.04	-0.20
	11-Aug-11	7,148,116.92	513,909.44	416.49	2,154	320	2.25	0.30	0.34	-0.39	-0.05	-0.05

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515	60217901
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10	11-Aug-11

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

SL-5	17-Sep-05	7,148,133.63	513,876.08	422.91	0	0	0.00			0.00		
	28-Jul-06	7,148,133.86	513,876.52	422.79	314	314	0.49	0.49	0.57	-0.12	-0.12	-0.14
	9-Jul-08	7,148,134.25	513,877.26	422.53	1,026	712	1.34	0.85	0.43	-0.38	-0.26	-0.13
	20-Jul-10	7,148,134.60	513,877.91	422.30	1,767	741	2.07	0.73	0.36	-0.61	-0.24	-0.12
	25-Sep-10	7,148,134.62	513,877.99	422.24	1,834	67	2.15	0.08	0.45	-0.67	-0.06	-0.31
	11-Aug-11	7,148,134.77	513,878.28	422.15	2,154	320	2.48	0.33	0.38	-0.77	-0.10	-0.11
2005-07	17-Sep-05	7,148,000.11	513,945.37	416.35	0	0	0.00			0.00		
	28-Jul-06	7,148,000.07	513,945.39	416.36	314	314	0.04	0.04	0.05	0.01	0.01	0.01
	9-Jul-08	7,147,999.99	513,945.41	416.36	1,026	712	0.12	0.08	0.04	0.01	0.00	0.00
	20-Jul-10	7,147,999.99	513,945.41	416.37	1,767	741	0.12	0.00	0.00	0.02	0.00	0.00
	25-Sep-10	7,147,999.97	513,945.41	416.33	1,834	67	0.14	0.02	0.11	-0.02	-0.03	-0.19
	11-Aug-11	7,147,999.97	513,945.41	416.34	2,154	320	0.15	0.00	0.01	-0.01	0.00	0.01
2005-08	17-Sep-05	7,148,038.85	513,970.98	415.77	0	0	0.00			0.00		
	28-Jul-06	7,148,038.81	513,971.06	415.79	314	314	0.09	0.09	0.10	0.02	0.02	0.02
	9-Jul-08	7,148,038.79	513,971.22	415.84	1,026	712	0.25	0.16	0.08	0.07	0.05	0.03
	20-Jul-10	7,148,038.76	513,971.34	415.89	1,767	741	0.37	0.12	0.06	0.12	0.05	0.02
	25-Sep-10	7,148,038.75	513,971.36	415.83	1,834	67	0.39	0.03	0.15	0.06	-0.07	-0.36
	11-Aug-11	7,148,038.75	513,971.40	415.85	2,154	320	0.43	0.04	0.04	0.08	0.02	0.03
2005-09	17-Sep-05	7,148,124.38	513,969.23	420.18	0	0	0.00			0.00		
	28-Jul-06	7,148,124.55	513,969.46	420.28	314	314	0.29	0.29	0.34	0.10	0.10	0.12
	9-Jul-08	7,148,124.87	513,969.90	420.40	1,026	712	0.83	0.54	0.28	0.22	0.12	0.06
	20-Jul-10	7,148,125.15	513,970.34	420.45	1,767	741	1.35	0.52	0.26	0.26	0.05	0.02
	25-Sep-10	NOT FOUND										
	11-Aug-11	NOT FOUND										
2005-10	17-Sep-05	7,148,146.69	513,925.39	411.78	0	0	0.00			0.00		
	28-Jul-06	7,148,146.97	513,925.66	411.80	314	314	0.39	0.39	0.45	0.02	0.02	0.02
	9-Jul-08	7,148,147.50	513,926.16	411.83	1,026	712	1.12	0.73	0.37	0.05	0.03	0.02
	20-Jul-10	BURIED										
	25-Sep-10	BURIED										
	11-Aug-11	7,148,148.18	513,926.85	411.817	2,154	1,128	2.08	0.96	0.31	0.04	-0.01	0.00
2005-11	17-Sep-05	7,148,176.10	513,942.17	411.91	0	0	0.00			0.00		
	28-Jul-06	7,148,176.45	513,942.33	411.80	314	314	0.39	0.39	0.45	-0.11	-0.11	-0.13
	9-Jul-08	7,148,177.04	513,942.67	411.99	1,026	712	1.07	0.68	0.35	0.08	0.19	0.10
	20-Jul-10	7,148,177.53	513,942.94	412.00	1,767	741	1.62	0.55	0.27	0.09	0.01	0.01
	25-Sep-10	7,148,177.58	513,942.99	411.97	1,834	67	1.69	0.07	0.37	0.06	-0.03	-0.14
	11-Aug-11	7,148,177.79	513,943.10	411.99	2,154	320	1.93	0.24	0.28	0.08	0.01	0.02

Average	Aug 03 to Jul 04	0.43	0.43	0.46	-0.02	-0.02	-0.02
	Jul 04 to Sep 04	0.35	0.11	0.72	-0.05	-0.04	-0.25
	Sep 04 to Sep 05	0.73	0.44	0.45	0.00	0.05	0.05
	Sep 05 to Jul 06	0.66	0.30	0.35	0.01	0.01	0.01
	Jul 06 to Jul 08	1.21	0.55	0.28	0.02	0.01	0.00
	Jul 08 to Jul 10	1.68	0.46	0.23	-0.01	-0.02	-0.01
	Jul 10 to Sept 10	**1.77**	**0.07**	**0.36**	**-0.08**	**-0.04**	**-0.25**
	Sept 10 to Aug 11	**1.98**	**0.26**	**0.24**	**-0.08**	**-0.01**	**-0.01**
Maximum	Aug 03 to Jul 04	0.71	0.71	0.76	0.04	0.04	0.04
	Jul 04 to Sep 04	0.83	0.21	1.38	0.01	0.00	-0.01
	Sep 04 to Sep 05	1.49	0.65	0.66	0.08	0.15	0.15
	Sep 05 to Jul 06	1.96	0.49	0.57	0.13	0.10	0.12
	Jul 06 to Jul 08	2.82	0.86	0.44	0.23	0.19	0.10
	Jul 08 to Jul 10	3.54	0.73	0.36	0.33	0.10	0.05
	Jul 10 to Sept 10	**3.63**	**0.10**	**0.52**	**0.22**	**-0.02**	**-0.13**
	Sept 10 to Aug 11	**3.94**	**0.96**	**0.38**	**0.24**	**0.03**	**0.03**
Minimum	Aug 03 to Jul 04	0.06	0.06	0.07	-0.10	-0.10	-0.11
	Jul 04 to Sep 04	0.07	0.03	0.20	-0.11	-0.09	-0.60
	Sep 04 to Sep 05	0.11	0.05	0.05	-0.12	-0.01	-0.02
	Sep 05 to Jul 06	0.04	0.03	0.03	-0.12	-0.12	-0.14
	Jul 06 to Jul 08	0.12	0.03	0.02	-0.38	-0.26	-0.13
	Jul 08 to Jul 10	0.12	0.00	0.00	-0.61	-0.24	-0.12
	Jul 10 to Sept 10	**0.14**	**0.01**	**0.05**	**-0.67**	**-0.10**	**-0.57**
	Sept 10 to Aug 11	**0.15**	**0.00**	**0.01**	**-0.77**	**-0.10**	**-0.11**